Factors in Fertility Decline

Why Fertility is Falling, and How to Raise It
[A WORKING PAPER]

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The global fertility rate has dropped precipitously for the past half-century: it has fallen by almost 50 percent. In 1960, the average woman bore 4.9 children in the course of her life. The number had fallen to 4.1 children by 1975, 3.3 by 1990, and by 2009 had reached 2.5.

On a national level, governments typically want to keep national fertility at or above 2.1 children per woman, because fertility below 2.1 results in population decline (though this notion needs to be challenged), unless considerable immigration makes up the deficit. When population declines as a result of low fertility, a nation develops an older age structure, with new attendant issues to be confronted.

Some countries have maintained high or replacement levels of fertility. It is not uncommon for an African woman to have four to seven children in her lifetime and for a woman in Asia or South America to have two to three children, though all these numbers are in decline. The United States has recently maintained the replacement rate of 2.1 needed to maintain population levels, but because of immigration continues to increase in population.

Other countries, however, have seen fertility drop below the 2.1 replacement rate. In 2009, fertility had fallen to 2.0 for France, 1.9 for the UK, 1.5 for China, and Spain, 1.4 for Italy and Germany, and 1.2 for Japan; and growth rates for these countries are slowing accordingly. Today, Russian fertility has fallen further to 1.4. Spain and Italy make up their growth deficit with massive immigration, but the German and Japanese growth rates have fallen below zero, and in the past decade Russia’s population has declined by more than four million.

Why Fertility Is Declining

Fertility declines as the result of a variety of related factors. A woman who finds herself at the end of her fertile years with few or no children typically began her adulthood with the seemingly prudent choice to pursue higher education. College attendance usually delays maternity four years, but it is increasingly expected and encouraged for women, especially in developed countries. It is a key factor in measures of gender equality, it broadens horizons, and it equips women for careers, should they want them.

A college education does increase the likelihood that a woman will pursue a workplace career, desired or not. College and subsequent higher levels of education lengthen
employment and delay maternity further. Furthermore, higher education, employment, cohabitation, and divorce, delay or prevent marriage. Delayed marriage, in turn, shorten a woman’s potential fertile years and raises a woman’s age when she first gives birth. Many women at this stage plan to quickly make up for their lost fertile years, but a higher age at first birth complicates first birth and lowers probability of subsequent births. These phenomena lead to higher rates of permanent infertility and infecundity. Higher education and career pursuit have risen alongside the practice of contraception, which lowers fertility and is associated with a higher probability of use of abortion.

Fertility fluctuations result from three groups of factors. Contraception and abortion, which are inherently anti-natal decrease fertility. Frequent and regular religious practice, early marriage, and early maternity are consistently shown to increase fertility. Third, women’s education and employment have compound effects: they can yield great benefits for women, but frequently occur at the cost of reducing or eliminating a woman’s fertility.

Inherently Negative Factors

The introduction of contraception into a society is quickly followed by the practice of abortion. By contraception the child is eliminated from the mind, heart and will, and should it be conceived despite contraception, he or she is at much higher probability of being aborted.

Contraception

Especially in developed countries, contraception is used at extremely high rates. The UN reports that, as of 2009, 63 percent of the world’s women who were married or in a union used contraception. In the least developed countries with high fertility, 31 percent of women used contraception, but contraceptive use climbed to 66 percent in more developed countries and 72 percent in the most developed countries. In Europe, the incidence of contraceptive use was 73 percent; in North America, 78 percent; in Russia, 80 percent.

Studies around the world invariably indicate that contraception decreases fertility. National fertility rates decline as contraceptive prevalence increases, and couples who adopt contraceptive methods are more likely to have low fertility. The effect of contraceptive use on birth intervals is not always clear. Some research has found contraception to lengthen the time between births, typically bringing a woman to the end of her fertile years with fewer children, but women who have used contraception before deciding to have children have been found to space births more closely later, perhaps to make up for lost time.

Although access to contraception lowers fertility directly, it can also lower or stall abortion rates. In the United States, contraceptives are believed to have caused around 43 percent of the abortion decrease from 1994-2000. However both these pieces of research are premised on a changed culture where abortion is now practiced when it was
When a country’s fertility rate decreases, contraceptive use and abortion rates frequently increase simultaneously. When fertility rates remain stable, however, rising contraceptive use or rising contraception effective use, tends to correlate with decreased, but far from low, abortion rates.  

**Europe and Australia:** Contraception has profoundly impacted total fertility rates in Europe. Simulations from one study suggest that the introduction of sterilization in Spain has reduced fertility by 0.2 children per couple and that more effective, reversible contraceptive methods would reduce fertility by up to 0.4 children per couple. In Italy, even ineffective contraceptive methods correlated with very limited fertility. The decline in Australian fertility to 1.7 children per woman has occurred in conjunction with the increasing availability of birth control pills.  

**Asia:** Contraceptive use is correlated with increased willingness to abort children. In rural Bangladesh, easy access to family planning services enabled women to limit fertility and to space the birth of children. As they became more likely to control their fertility with contraceptive methods, they also became more likely to abort children in cases of failed contraception. The increase in abortions resulted not from more unintended pregnancies but from the anti-natal mentality promoted by contraceptive use.  

Similarly, in 1993 and 1998, Turkish women using traditional contraceptive methods were more likely than nonusers to abort if contraception failed. Among Georgian women, 79-91 percent report readiness to abort should a be child conceived despite contraceptive use, compared to 56-60 percent who would abort a child conceived while not using contraception.  

Having more children, having an educated husband, and proximity to schools may increase contraceptive use. A study in Nepal found that each additional child raised a woman’s odds of permanent contraception use by 55 percent. There was also a 57 percent chance that a married couple would limit fertility through contraception if they had more than one son. Growing up near a school raised a woman's chances of contraceptive use, even if she did not attend or live near a school in adulthood, most likely due to interaction with students who had been taught about contraception. Marriage to an educated husband increased a woman's odds of using permanent contraception by 41 percent.  

**North America:** Family planning programs and centers tend to increase contraceptive use and decrease fertility. In the United States, one study found that federal grants for family planning, under the Economic Opportunity Act and Title X, had reduced fertility by approximately 4 percent over a six-year period, and that over a ten-year period, women in communities with family planning programs had an average of 476,500 fewer births. It is also worth noting that the intended recipients of this family planning program, the poor, were the first among whom marriage virtually disappeared. Inner city poor seldom marry in the United States. Instead the average mother who receives welfare changes her cohabiting partner once every 18 months.
**South America:** In Colombia in the late 1960s and early 1970s, national fertility decreased rapidly when Profamilia, one of the country’s largest family planning organizations, was greatly expanding.25

**Africa:** In rural South Africa, adolescents have much higher premarital fertility than older women, and adolescents rarely use contraceptives before maternity. Only 4 and 10 percent of females aged 12-16 and 17-21 (respectively) had ever used contraception, compared to 30 percent of women aged 22-29 and 20 percent of women aged 30-49. After first birth, however, younger women are more likely than older women to adopt contraceptive methods, and 39 percent of those aged 12-21 use contraception, most likely because 75 percent deliver in a clinic or hospital and receive family planning advice. Fertility in these groups decreases substantially after first birth.26

Among some young women in Mali, social networks of family and friends have been found likely to influence decisions regarding contraceptive methods.27 Younger women are more likely than older women to accept contraceptive information from friends or family members, and are also influenced by relatives by marriage encouraging high fertility.28

**Abortion**

Abortion greatly decreases fertility. In 1972, after abortion was legalized in Germany, the total fertility rate of the country went from just over two to well below two.29 In Turkey, legalization of abortion sparked a huge increase in abortions and a corresponding decrease in fertility from 1983 to 1988, when abortion levels began to gradually decline.30 In the 1980s and 1990s in rural Bangladesh, a one-third decline in fertility accompanied a 30 percent abortion rate increase.31 Today, Western Europe's low fertility is accompanied an abortion rate that varies by country, from 10 to 30 percent of births.32 In the United States, the latest reports show that in 2005, there were 4,138,000 live births, compared to 1,206,000 abortions (i.e. 23 percent of conceptions end in abortion).33

Restrictions on abortion may lower the abortion rate and increase fertility. In Eastern Europe, when countries instituted moderate abortion restrictions, disallowing abortions on request but allowing them in serious medical circumstances, the pregnancy rate fell 10-45 percent and the abortion rate fell 25 percent. Maternal mortality rates did not fluctuate, suggesting no rise in illegal abortions. Stricter abortion laws that permitted abortion only to save the mother's life or for other specific medical reasons corresponded to birth rate increases of 9-17 percent, compared to countries with abortions available on request.34 In the United States, parental involvement laws reduced the incidence of abortion with varying degrees of effectiveness. Parental consent laws are the most effective. Laws requiring consent by both parents led to a 31.4 percent drop (35.3 percent among 17 year olds), compared to one-parent consent, which led to a 13.5 percent decline.35
In Russia, the Ministry of Health reports numbers of abortions falling: 4.7 million in 1970, 4.5 in 1980, 3.9 in 1990, and 1.8 in 2002. In 2004, the UN reported 53.7 abortions per thousand women in Russia.

In sum, contraception and legal abortion have a large negative impact on fertility rates. Contraceptive use and unrestricted abortion correlate with low fertility in every region of the world, and increasing contraceptive use and abortion rates correspond to decreases in fertility. Furthermore the introduction of contraception leads to a changed, anti-natal culture that increases and encourages abortion. Fertility increases are seen when contraceptive access is limited, when contraceptive use is discouraged, and when abortion access is limited.

**Inherently Positive Factors**

**Religious Practice**

Religious practice correlates with increased fertility. Both men and women who identify themselves as religious have higher fertility than those who do not identify with any religion. Men and women who were raised in a large family and who had religious parents during their adolescence are more likely to regard childbearing as an essential component in their lives. They are also likely to have traditional pro-natal attitudes. Those who identify with a religion in adulthood are more likely to have larger families, stay married, and make family oriented decisions in life. In the United States, very religious women typically expect to have 2.7 children, compared to 2.3 children for somewhat religious women and 2.0 children for non-religious women.

From 1977 to 1987, among white women aged 15-39 in the United States, regularly worshipping Mormons averaged 3.1 children, compared to 2.1 for regularly worshipping Protestants and Catholics, 1.6 children for those with infrequent religious participation, and 1.1 for those with no religious affiliation.

Even the religious practice of only one partner raises fertility: Couples with a religious female partner and a non-religious male partner were found to have 45 percent higher odds of having a child at an early age than non-religious couples.

Among Mormons, couples married in a temple had 0.6 more children and lower odds of divorcing than couples married outside a temple. Highly educated non-practicing Mormons are likely to have lower fertility than highly educated religious Mormons. Mormons who worshipped once a week and came from a larger families had higher fertility than those who did not worship regularly. Mormon women are more likely to have larger families than Catholic and Protestant women, even though they are more likely to use contraception. In 1975, 96 percent of Mormon women had used contraceptives, but Mormon women still had higher fertility than women in other religious groups.
Early Marriage

Data from the demographic and health surveys of 45 developing countries indicate that declining marriage rates also decrease fertility rates. Studies typically show that marriage, especially early marriage, corresponds to increased fertility. Married men have higher fertility levels than cohabiting and unmarried men. Married females have an even higher fertility rate than married men, due to a higher marriage rate among women than men. In the United States, married men expect to have 2.5 children and unmarried men expect to have 1.9 children.

Furthermore, a woman’s age at marriage correlates to her age at the birth of her first child. From 1988-2002, for example, in Austria, Great Britain, the United States, Ireland, Germany, and the Netherlands, fewer respondents agreed that “people who want children ought to get married.” Illustrating the decline in the association between marriage and children

This attitude manifests itself in the rise of single parenthood. The norm for Western childrearing has shifted from married parents to single mothers. In West Germany from 1971-2004, the likelihood of marriage during one’s lifetime dropped from 93 to 77 percent for women and from 87 to 67 percent for men. In the United States, out-of-wedlock births increased almost six times without interruption from 1940-1990, and in the 1990s, more unmarried women and fewer married women had children, as a result of more women delaying marriage, rising birth rates among single women, or declining fertility among married women. Out-of-wedlock births have increased in the United States for all ages and racial groups, especially for younger women, and in 2008 accounted for 41 percent of all U.S. births. Single U.S. women who become pregnant are unlikely to marry their partner, often opting instead to remain single or cohabit.

Cohabitation is also on the rise. The 1970s saw the rise of a pattern of cohabitation and delayed maternity, as well as the extension of some institutional rights to cohabiting couples, and during the 1980s and 1990s it was frequent for single women who became pregnant to already be cohabiting or to decide to cohabit rather than marry. In the EU, the incidence of premarital births increased from 5 percent in the 1960s to 33 percent in 2005, but these births increasingly took place within cohabiting relationships. More births for cohabiting parents, however, do not increase overall fertility. Men and women who have ever cohabited are 7.6 and 11.6 times more likely to remain childless than men and women who have ever married. In Italy, cohabiting women are more likely to have lower fertility and delay childbearing. In twenty-one European countries, single women are more likely to have a child than cohabiting women.

The widespread delay in transitions to adulthood, such as completing education, starting work, and leaving the parents’ home has increased not only the rate of cohabitation, but also the mean age at marriage. Though women who marry later are less likely to delay maternity once married, they are likely to have fewer children.
For instance, in the Netherlands, every additional year a man or woman is without a partner increases his or her odds of remaining childless.\(^6\) This pattern has manifested itself in fertility-poor Germany, where nearly 20 percent of women aged 30-39 have no partner.\(^7\) Monogamy is also essential for high fertility. Engaging in multiple relationships has been shown to increase odds of childlessness 1.6 times for women and 2.2 times for men.\(^7\)

**Early Maternity**

More than almost any variable does, higher age at maternity decreases fertility.\(^7\) A higher age at first maternity shortens a woman's fertility window, thereby decreasing her likelihood of bearing multiple children.\(^7\) Furthermore, women who delay maternity are more likely to delay subsequent childbirth as well,\(^4\) with some exceptions (see earlier finding).

In the United States, for example, women are now likely to delay maternity until their late twenties and thirties.\(^7\) The mean age at first birth exceeds 30 years in the Netherlands and Ireland,\(^7\) and mean age of childbearing is rising in all Western European countries except Finland and the United Kingdom, where first-birth ages have already risen and stabilized at 29.3 and 28.2, respectively.\(^7\) In Sweden, more women over 40 are having their first child; Swedish women have low fertility levels because they will have fewer children overall.\(^7\) Delayed maternity, by resulting in fewer children for some women and no children for others, reduces total fertility by 10 percent in Italy and 5 percent in the United States.\(^7\) It is closely related to low fertility rates across Europe.\(^7\)

The number of births in women over age 40 has risen, for example, but it corresponds not to an overall rise in fertility but a widespread delaying of maternity and decline in fertility.\(^7\) In some countries, a decreasing number of large families has also decreased the mean age at childbearing, since women are ending childbirth early, after only a few children. In most industrialized countries, however the age at first birth and subsequent births is rising so rapidly that the mean childbearing age has risen over the past two decades.\(^8\)

Childbearing at younger ages corresponds to greater fertility and historically, higher fertility has corresponded to earlier maternity.\(^8\) Women who have children early typically have more children, and women who give birth sooner are more likely to give birth again sooner.\(^8\)

In summary, religious practice, marriage, early marriage, and early maternity typically increase fertility rates.

**Compound Factors**

**Education**

Education is a primary factor delaying maternity.\(^8\) It universally correlates with decreased fertility\(^8\) and increased odds of childlessness.\(^8\) In studying women from
1985-1989 with a college degree, nearly half of the fertility rate was accounted for by women over age 29.88

Education does not decrease women’s desire for children; on the contrary, intended fertility for college-educated women has risen steadily.89 Education delays maternity, which indirectly, because of increased age at first birth, lengthens birth intervals, and increases age at each birth, decreasing desire for further childbearing.90 One study that interviewed college-educated women aged 22-44 found that 47 percent of them were childless, but that only 11 percent desired to remain so.91

Women who are currently in school are less inclined to have children,92 and after obtaining a Bachelor’s degree, the effects continue; further education delays maternity still more,93 and a college degree often launches a lengthy career trajectory that delays maternity even more.94 The delay in maternity consequent to increased education lengthens intervals between births and increases age at given parities, decreasing desire for further childbearing,95 and each level of education increases rates of childlessness.96 For instance, it diminishes childbearing by as much as 14 percent per level of education in the Netherlands.97

Once out of school, women still have to find a partner before reproducing, but as women increasingly outnumber men in college, they improve their economic and employment position and decrease their odds of finding a suitable partner who matches their level of education and income.98

One of the most effective ways to increase fertility is for a woman to use her early fertile years for fertility rather than education. A lower level of education correlates with earlier maternity while higher education correlates with delayed maternity.99 For instance, in one interview of U.S. women aged 22–44, only 6 percent of those without a high school diploma had never been pregnant, compared with 36 percent of college graduates, and only 9 percent of those without a high school diploma were childless, compared with 47 percent of college graduates. Large families are also more common for women with less education; 47 percent of those without a high school diploma have three or more children, compared with only 12 percent of college graduates.100

Educational composition is a key determinant of overall fertility. Unschooled women bear more children than women with primary education, who bear more children than women with secondary education or more; and countries with large proportions of unschooled women are unlikely to decline below replacement fertility.101 Mothers with lower levels of education are more likely to have a second child,102 and women with less education and income tend to space their pregnancies more closely together.103

Education determines fertility even more directly than ethnicity does. Among U.S. women, educated whites and blacks have 1.6-1.8 children, less educated whites have 2.0-2.1 children, and less educated blacks have 2.2-2.4.104 Ethnicities with fewer average years of education tend to have higher fertility. Of women with a college degree, more white women expect to remain childless (10 percent) than do black women (7 percent) or
Hispanic women (5 percent). For both women and men, unmarried Hispanics and blacks are more likely to have higher fertility than unmarried whites. Married and unmarried Hispanic men anticipate having 2.6 children, compared to 2.0 children for white men. Only 19 percent of unmarried white men aged 15-44 have had a child, compared with 33 percent of unmarried Hispanic and black men.

Employment
Since the 1960s, the movement of women entering the workforce has diminished fertility. Studies show that women who work before marrying are more likely to delay maternity, and in Spain, Greece and Italy, for example, it is common for women and men to delay having children until they have attained full-time employment and purchased their first home. Currently employed women, on the other hand, delay maternity less frequently, perhaps due to the security of employment and income, but they do reduce their fecundity. At high wage levels, however, employed women also tend to delay childbearing, and better-paid women delay it even longer. As their human capital rises, both men and women tend to emphasize quality over quantity in childrearing, believing that fewer children will cut their costs and allow further increases to income and human capital.

Delaying maternity for a job, however, results in lower fertility and more infertility. Women who work are more likely to have low fertility, and high income in the United States correlates both with delayed maternity and low fertility. Continuously employed Dutch women are 1.3 times more likely to remain childless, and childlessness is 10 percent higher among work-oriented than family-oriented women.

Holding a full time job and caring for a family are generally incompatible; women have a choice between the two. Those who have already chosen a career, however, change their course only with difficulty. For instance an Australian study showed employed women developing more egalitarian attitudes and losing interest in motherhood, but if they are childless, they may not lose desire for children so easily. Childless career-oriented women, who often have borne repeated maternity delays with frustration, frequently desire or are willing to have a birth in the near future. Their desire for maternity may not materialize, however: in Germany, highly educated and qualified younger women were more likely to choose a career over maternity, but even younger, less qualified women delayed maternity or remained childlessness due to inability to reconcile family and work.

Women may often choose employment over maternity if they are without public childcare or parental leave benefits. In Canada, for example, where such benefits are scarce, low fertility may result from increasing employment of married women. Some suggest that since the 1980s the correlation between women’s employment and low fertility has weakened due to greater availability of childcare, state-mandated maternity leave, and greater acceptance of working mothers. However, governments concerned about falling fertility have implemented family-friendly policies with little success, and gender equality policies aiming to make work and childrearing compatible help increase fertility at later ages, but their effect on total fertility is minimal. In Western
Europe, family-friendly government programs failed to influence fertility rates. One program increased maternity- and parental-leave benefits by 10 percent, but decreased childlessness at ages 36-40 by only 3.2 percent. Another program increased childcare subsidies by 10 percent, but increased completed fertility by only 0.4 percent. Still other programs intended to encourage childbirth by subsidizing the cost of children, but they could not cover the opportunity cost of leaving the workplace, and few women left their careers.125

The expense of children may limit fertility. Once in the workplace, as women secure better jobs, promotions, and higher pay, career interruptions for bearing children become more onerous and expensive. Women’s incomes are often increasingly necessary to maintain a middle-class lifestyle, but maternity and full-time employment each demand too much time to be compatible.126 Further, as the cost of childrearing increases, women tend to remain childless or have fewer children, and even when they leave work, they are more likely to limit fertility.127

Women in countries with traditions of democracy and feminism are more likely to value financial independence and gender equality, but gender inequality in the home may hinder fertility regardless of nationality. A survey of French and Japanese women, for example, initially makes Japan seem more family-friendly, despite its lower fertility rate. In France, 79 percent of women agreed with the statement, “both the man and woman should contribute to household income,” compared with 49 percent in Japan. Correspondingly, 75 percent of women in Japan agreed that being a housewife was just as fulfilling as working for a salary, compared to 29 percent in France.128

These findings foster an expectation of higher Japanese fertility, because the women do not expect to contribute to their household in the same monetary way as their husband, they believe working in the home is rewarding, and they are supported financially by their spouse, who works 56 hours per week, compared with 39 hours in France. French men and women, however, expect to share career and household work, whereas Japanese women expect equality in the workplace, but not at home.129

Women who choose a lifestyle of maternity and childrearing rather than a career have higher fertility rates. Home-centered women aged 20-54 have twice as many children at home as do work-oriented women. For highly educated women, the difference between home-centered and work-oriented fertility is even greater: home-centered women are three times as fertile as work-centered women. Among family-oriented women, 16 percent have three or more children, compared with 8 percent among the career women.130

Regarding income, higher income for the husband predicts higher fertility for the couple,131 and women with less income of their own tend to space their pregnancies more closely together and have higher fertility.132

CONCLUSION
In the competition between a religious/family vs. an income/career focus for women the income/career focus has an increasing hold and with it the inevitable decrease in fertility rates. What beckons is the effort to restore a religious/family focus that also honors women’s education.


2 U.S. Census Bureau, International Data Base. Available at www.census.gov/ipc/www/idb/country.php [June 26, 2011]
5 MARRI will have a synthesis paper on the effects of contraception in the near future. Check www.marri.frc.org for the release of this paper or email marri@frc.org for a copy.
13 A forthcoming synthesis paper from MARRI will explore the literature on this point.
14 C. Marston and J. Cleland, “Relationships Between Contraception and Abortion: A Review of the Evidence,” *International Family Planning Perspectives* 29, no.1 (March 2003): 11; This study examined countries fertility levels: Kazakhstan, Kyrgyz Republic, Uzbekistan, Bulgaria, Turkey, Tunisia, Switzerland, Cuba, Denmark, Netherlands, US, Singapore, South Korea.


118 H. Englehardt, T. Kogel, and A. Prskawetz, “Fertility and women’s employment reconsidered: A micro-level time-series analysis for developed countries, 1960 – 2000,” Population Studies 58, no. 1 (2004): 111; the data used for this paper is by a cross-national comparison of macro-level time-series data from 1960 to 2000 for France, West Germany, Italy, Sweden, the UK, and the US.

