RECENT EVIDENCE ON THE BROAD BENEFITS OF REPRODUCTIVE HEALTH POLICY

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INTRODUCTION

Abortion policy has been a hot-button issue since the U.S. Supreme Court decided *Roe v. Wade* in 1973.[1] In the last decade, the controversy surrounding abortion has widened to include contraception (Shorto, 2006). Many anti-abortion groups have broadened their challenge of *Roe v. Wade* to the earlier 1965 *Griswold v. Connecticut* decision, which declared states' regulation of private matters (like the use of contraception) unconstitutional.[2]

Proposals to reduce public funding or remove regulations that ensure women's access to contraception have become increasingly explicit in policy discussions.[3] In 2011 and 2012, a caucus of conservative House Republicans proposed defunding Title X of the Public Health Service Act, which supports family planning providers that serve close to 5 million women (Cohen, 2011). Highlighting the recent controversy, the 2010 Affordable Care Act's requirement that contraception be covered free of charge by employer-provided health insurance has spurred over 40 lawsuits nationwide (Barnes, 2013).

What are the broader implications of increasing the regulation of abortion or contraception or decreasing funding for these services? What would happen if *Roe v. Wade* were repealed or Title X funding was cut? We review empirical evidence from the economics literature to shed light on these questions.

A BRIEF HISTORY OF THE PILL, THE INTRODUCTION OF FAMILY PLANNING PROGRAMS, AND THE LEGALIZATION OF ABORTION

In the 1950s, U.S. couples had few *reliable* options to regulate their fertility. To time or limit childbearing, they depended on less effective or costly methods including marriage delay; abstinence (Malthus's "moral restraint," 1798) or sterilization; prophylactics like condoms and diaphragms; and illegal or unsafe abortion.

The Food and Drug Administration's (FDA's) approval of "the Pill" in 1957 for the regulation of menses, and later, in 1960, as an oral contraceptive, decreased

[1] Almost immediately, states tested *Roe v. Wade*'s limits by imposing a variety of state-level restrictions. To date, more than 25 abortion cases have been heard by the Supreme Court, most notably *Planned Parenthood v. Casey* in 1992. That case reaffirmed *Roe v. Wade* but allowed states to impose restrictions like informed consent, a 24-hour waiting period, and parental notification with a judicial bypass option, but did not agree with adding a spousal consent restriction (Devins, 2009; Wilkinson, 2009).

[2] The privacy doctrine in *Griswold v. Connecticut* formed the basis of *Roe v. Wade*.

[3] President George W. Bush's appointee to the FDA Reproductive Health Advisory Committee, Dr. Joseph Stanford, was confirmed despite his views on contraception. Stanford wrote, "Sexual union in marriage ought to be a complete giving of each spouse to the other, and when fertility (or potential fertility) is deliberately excluded from that giving I am convinced that something valuable is lost" (Shorto, 2006, para. 4).

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women's uncertainty related to the timing and circumstances of conception.[4] The Pill was wildly popular. In 1965, 25 percent of white married women and 15 percent of nonwhite married women reported having ever used the Pill; by 1970, these figures reached 50 percent and 60 percent (Bailey, 2010). By 1973, nearly 65 percent of married women aged 15 to 24 using any contraception chose the Pill (Westoff, 1976).

The legalization of abortion, first in a subset of states around 1970 and then in the remaining states in 1973 with *Roe v. Wade*, provided additional insurance against unintended pregnancy and unanticipated circumstances after conception (Levine & Staiger, 2002). According to the Guttmacher Institute, nearly a fifth of pregnancies ended in abortion during the first year of *Roe v. Wade*, with this share rising to 30 percent over the next decade before decreasing through the present (Henshaw & Kost, 2008).

The technology of the Pill and the insurance conferred by legal abortion were revolutionary. For the first time in history, both women and men could plan childbearing around their personal circumstances and human capital investments. Unintended pregnancies could be prevented, and women had options if unforeseen circumstances arose after conception (e.g., a partner chose not to support the pregnancy). This greater control allowed childbirth to be timed to benefit both children and their parents. Women and men could pursue more education, find better jobs and mates, and provide better financial and other support for their children. But estimating the magnitude of individuals' responses to these changes is challenging, even on the most closely related outcome: childbearing.

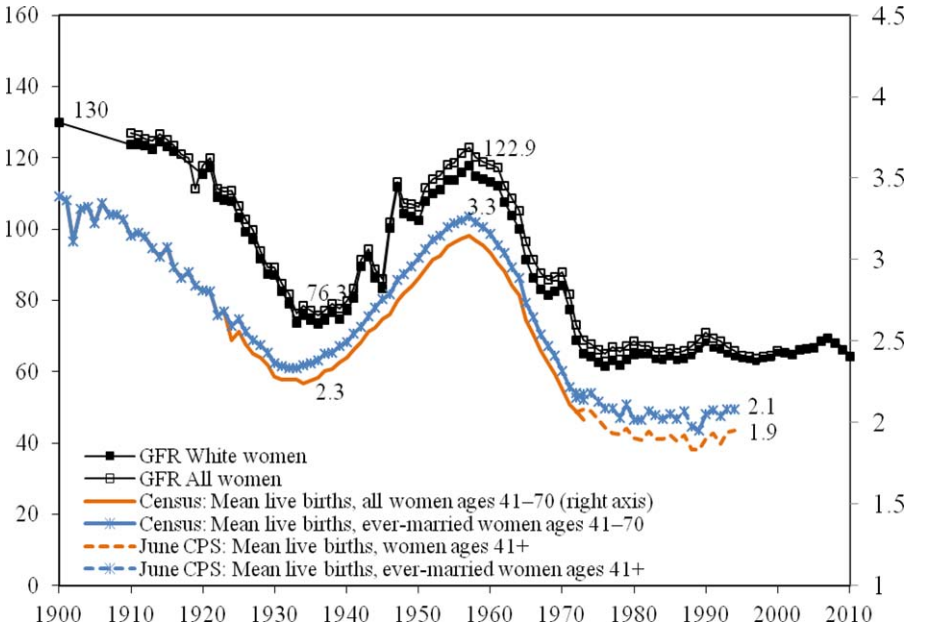
Figure 1 illustrates the empirical challenge. The general fertility rate declined for most of the nation's history; however, it increased by nearly 50 percent during the U.S. baby boom. The peak of the baby boom in 1957 coincided with the introduction of the Pill, and the Pill's diffusion corresponded to subsequent increases in the funding of family planning programs and the legalization of abortion. Another complication is that the Vietnam War temporarily raised fertility rates just before the first states legalized abortion in 1970 (as draft deferments could be obtained by fathering a child; Tatum & Tuchinsky, 1970). The abrupt decline seen in fertility rates after 1970 corresponds to President Nixon's implementation of a draft lottery in 1969 and his elimination of deferments for paternity. It also corresponds to the legalization of abortion in five states around 1970. A final surprising feature in Figure 1 is that fertility rates barely changed after *Roe v. Wade* legalized abortion nationwide in 1973. In 2007, just before the Great Recession, the fertility rate was almost identical to what it was from 1974 to 1976.[5]

QUASI-EXPERIMENTAL EVIDENCE FROM HISTORICAL POLICY CHANGES

The inadequacy of the aggregated time series evidence has led researchers to use policy changes to construct estimates of the effects of the Pill and abortion on a variety of outcomes. Under the assumptions that a policy change is (a) relevant (it affected contraceptive use or abortion), (b) excludable (it did not directly affect the outcome except through its impact on abortion or preventive contraception), and (c) valid (it is uncorrelated with other determinants of the outcome of interest), it

[4] The first modern intrauterine device (IUD) made from plastic, the Margulies Spiral, was introduced in 1960, but IUDs with copper were not brought to market until the 1970s (Hutchings et al., 1985).

[5] The age composition of new mothers has changed more than aggregate rates suggest. See Kearney & Levine (2012) on teen birth rates and Bailey, Guldi, and Hershbein (in press) for age-specific birth rates over the last century.



Note: The general fertility rate (GFR) is the number of births per 1,000 women (all women or white women only) ages 15 to 44. Mean live births is the mean self-reported number of children ever born for each birth cohort as measured between the ages of 41 and 70 (indexed to year by adding 25 years to mother's year of birth). Computations use population weights.
Sources: GFR are from Historical Statistics, http://www.cdc.gov/nchs/data/statab/ t001×01.pdf. Mean live births are computed using the 1940 to 1990 Integrated Public Use Microdata Series (IPUMS) of the decennial censuses (Ruggles et al., 2010) and the 1995 to 2010 June Current Population Survey.

Figure 1. U.S. General Fertility Rate and Completed Childbearing, 1900 to 2010.

can be used as an instrument or "natural experiment" to recover the effects of the Pill and abortion on birth rates and other outcomes.

The first such research strategy uses state-level restrictions on the sale of the Pill before *Griswold v. Connecticut* and *Griswold*'s weakening of these restrictions to estimate the Pill's effects on fertility rates. When the Pill was introduced, anti-obscenity statutes (Comstock laws), which had existed for almost three quarters of a century, varied significantly in their language regarding the *sale* of contraceptives. These legal restrictions in 24 states affected the diffusion of oral contraception and reduced the speed of fertility declines in restrictive states from 1958 to 1965. After the *Griswold* decision, however, Bailey (2010) shows that fertility rates in states with sales bans dropped sharply relative to those without these bans. There is little reason to expect the demand for children to change with this pattern, but it is clear that the supply of contraceptives did. Counterfactual estimates imply that, without sales bans, the marital fertility rate could have been 8 percent lower in states that had sales bans and 4 percent lower in the United States as a whole. Bailey (2010) uses a back-of-the-envelope calculation to show that as much as 40 percent of the decline in the marital fertility rate from 1955 to 1965 might be attributable to the Pill.

The second research strategy uses the early, county-level expansion of federally funded family planning programs to quantify the effects of subsidized contraception on the childbearing of lower-income women. Beginning with the 1964 Economic Opportunity Act and continuing with the passage of Title X, over 650 family planning programs began or expanded from 1964 to 1973. Bailey (2012) uses the idiosyncratic

timing of the granting process at the county level to estimate the program's effects on the fertility rate using models that also account for the availability of abortion. The results show that family planning programs, which reduced the cost of contraceptives and increased the availability of contraceptive-related services, led to substantial and sustained declines in fertility rates. The general fertility rate fell by roughly 2 percent within five years of the establishment of federal family planning programs and remained almost as low up to 15 years after the programs began. Because family planning programs served mostly lower-income women and operated in only one-fifth of all counties in this period, these programs accounted for a small portion of the overall decline in fertility rates over the 1960s. Assuming that these programs were used only by low-income women implies a reduction in fertility rates among treated women of 20 to 30 percent within a decade—magnitudes large enough to account for half of the 1965 gap in childbearing between poor and nonpoor women. Follow-up work by Bailey, Malkova, and McLaren (2012) shows that children born after these family planning programs began were significantly less likely to grow up in poverty or reside in households collecting public assistance. In summary, family planning programs reduced birth rates among poor women and increased economic resources available to children.

A third approach exploits state-level restrictions on contraceptive access for unmarried, younger women. Even as older, married women gained legal access to the Pill, younger, unmarried women were limited by a number of state laws. Using variations of these laws across states (see Bailey et al., 2011; Guldi, 2011), Goldin and Katz (2002), Bailey (2006, 2009), Guldi (2008), Hock (2008), and Bailey, Hershbein, and Miller (2012) show that legal access to the Pill affected marital and birth timing and had broad effects on women's and men's education, career investments, and lifetime wage earnings.[6] Affected women and men were more likely to enroll in and complete college. Women were more likely to work for pay, invest in on-the-job training, and pursue nontraditional professional occupations. And as women aged, these investments paid off. Thirty percent of the convergence of the gender wage gap in the 1990s can be attributed to these changing investments made possible by the Pill (Bailey, Hershbein, & Miller, 2012). Additionally, Ananat and Hungerman (2012) show that access to contraception at younger ages improved the economic resources of their children.

A fourth strategy uses the staggered timing of abortion legalization to estimate its effects on birth rates and children's living circumstances. Levine et al. (1996, 1999) show that the early legalization of abortion in five states around 1970 led to a 5-percent reduction in the birth rate of women of childbearing age relative to the decline in the rest of the United States.[7] The effects are larger for teens, women over age 35, and for nonwhites, and they also vary systematically in control states based on their distance to states legalizing abortion (Angrist & Evans, 1999; Levine et al., 1996, 1999). Once Levine et al. (1996) account for cross-state travel to early repeal states, they estimate that the legalization of abortion reduced birth rates by almost 8 percent. Joyce, Tan, and Zhang (2013) collect detailed data on abortions in New York by state of residence and use cross-sectional regressions to describe the role of travel costs to obtain an abortion in New York in the era before *Roe v. Wade*. They show that being 100 miles farther from the nearest abortion provider decreased state-level abortion rates by around 12 percent and increased birth rates by 2 to

[6] In a recent working paper, Myers (2012) argues that the effects of changes in legal access to the Pill for younger women differ from Goldin & Katz's (2002) and Bailey's (2006, 2009) estimates when she changes the legal coding. While smaller, the magnitudes of her updated estimates are not statistically different from published estimates.

[7] The five states were Alaska, California, Hawaii, New York, and Washington.

3 percent. Gruber, Levine, and Staiger (1999); Ananat, Gruber, and Levine (2007); and Ananat et al. (2009) show that legalized abortion led to decreases in completed childbearing—largely due to increases in childlessness—and improvements in the material living circumstances of children.[8]

A fifth method exploits more recent changes in funding restrictions, regulations, or program interventions to estimate the effects of access to family planning or abortion. In contrast to estimates using variation in the 1960s and early 1970s, subsequent restrictions on abortion, like parental involvement or mandatory waiting periods, have been found to have minimal effects on fertility rates, with some evidence showing a slight reduction in abortion rates (and increased contraceptive use) among teens (Bitler & Zavodny, 2001; Levine, 2003). Similarly, limiting the use of Medicaid funding for abortion does not appreciably affect birth rates and lowers abortion rates only slightly, as many women are induced to travel to nearby states for an abortion (Blank, George, & London, 1996). These limitations on Medicaid funding made teens less likely to get pregnant (Kane & Staiger, 1996). A recent study also shows that increased Medicaid eligibility for family planning services for the near poor leads to reduced birth rates for teens and older women, and these effects appear to be driven by increased contraceptive use (Kearney & Levine, 2009).

Each of these reported findings rests upon the internal validity of the research methodology employed. In this regard, it is reassuring that findings by different authors using different data and methodologies come to similar conclusions. First, large decreases (primarily in the 1960s and 1970s) in the regulation of contraception and abortion or increases in subsidies for contraception through family planning programs reduced birth rates by allowing women to delay childbearing and, in some cases, prevent further childbearing. Policy changes in more recent years have been smaller in scope and have likely had smaller effects that are more difficult to detect. Second, these large policy changes have increased the likelihood that children are born into households with greater material resources. Some of the improvements in the material resources of children reflect the greater earnings capacity of both men and women,[9] and some reflect changes in the population who select into parenthood at different times. Third, the effects of greater access to family planning and abortion services vary by age and demographic group. Individuals with different characteristics respond differently to changes in these programs and services, as they face different constraints and incentives to do so.

IMPLICATIONS FOR CURRENT POLICY

How does this evidence inform the current policy debate? A variety of reasons—changes in the social and economic context; advances in safety, delivery, and variety of family planning methods; and reduced travel and information costs—recommend caution in extrapolating too much from these older policy experiments.

The diffusion of the Pill, family planning services, and legal abortion occurred during periods of historically high fertility rates, both due to the baby boom ending and anomalous increases in birth rates related to the Vietnam War. In addition, the age and racial distributions of women giving birth and seeking abortions have

[8] Specifically, the marginal children not born due to abortion would have been more likely to live with a single parent, be in poverty, and receive welfare, and would have been less likely to graduate from college. Others have argued that abortion legalization reduced crime (Donohue & Levitt, 2001), though claims that abortion legalization reduced crime have been questioned (Donohue & Levitt, 2004; Foote & Goetz, 2008; Joyce, 2004, 2009).

[9] This is especially the case for the Pill; there is less evidence in the case of abortion (Angrist & Evans, 1999).

changed. In 1970, women aged 20 to 24 had birth rates twice as high as women in their early 30s. Today, their birth rates are *lower* than those of women ages 30 to 34. In the early 1970s, one-third of abortions were to teens and one-quarter were to nonwhites; today, only one-sixth are to teens and half are to nonwhites (Henshaw & Kost, 2008).[10] Finally, women's investments in their careers and lifetime earnings capacity have increased dramatically since the 1960s. In 1970, 43 percent of women participated in the labor force and full-time, year-round working women earned 60 percent as much as the same group of men. Today, 60 percent of women participate in the labor market and full-time working women earn 80 percent as much as men (Bureau of Labor Statistics, 2008, 2013). Women are more likely to attend and complete college than men, and enrollment rates in professional schools like pharmacy, law, business, and medicine are at or approaching gender parity. With these changes have come increases in women's bargaining power that have altered women's demand for contraception and abortion.

Alternatives to abortion and more traditional methods of contraception have also grown. Nonmedical contraceptive options like the rhythm method can be more carefully implemented with the assistance of mobile devices and smart phones. Advances in medical contraception, such as implants, injections, patches, and rings, have provided more convenient and effective contraceptive alternatives to the Pill. In addition, the greater availability of emergency contraception (Plan B) and medical abortion (mifepristone or RU486) interacts with the use of both contraception and surgical abortions. While the vast majority of women had legal access to the Pill and abortion in the 1970s, none had access to the broad set of family planning services and technologies available to women today. This is relevant because most of the empirical literature considers the effects of contraception and abortion separately—examining the contribution of one while holding access to the other constant. Recent evidence, however, demonstrates how demand is interrelated. Ananat and Hungerman (2012), for instance, find a 20 percent reduction in abortion rates among teens after they gained legal access to the Pill in the 1970s, and in a recent, unpublished paper, Madestam and Simeonova (2012) find that subsidized contraception for young women in Sweden led to a 10 percent reduction in the abortion rate.[11] To some extent, these significant interactions suggest that contraception and abortion are substitutes. With the cost of contraception expected to fall further as the contraception mandate of the Affordable Care Act is implemented, this research suggests that abortion rates may fall (Levine, 2003).

Travel and information costs have also fallen substantially in recent decades. Hoxby (2009) estimates that real airline revenue per 100 passenger miles declined by 60 percent between 1970 and 2005, and the Consumer Price Index (CPI) for "Other intercity transportation" (bus and rail) has increased only two-thirds as fast as the overall CPI. These lower travel costs imply that the historical relationship between distance to an abortion provider (which largely reflects travel costs) and the propensity to have an abortion is appreciably weaker today. To the extent that distance also captures the cost of obtaining information, those costs have fallen as well. With the availability of the Internet, obtaining information related to contraception and abortion is easier. Interactive maps of family planning centers and

[10] The shift in the abortion distribution is not just due to population changes: the abortion rate for teens has fallen from 23 to 19 (per 1,000 women); for 20 to 24 year olds, it has risen from 26 to 39. The abortion rate for nonwhite women is also higher today than it was in the early 1970s. Similar trends are found for the abortion ratio, the number of abortions divided by the sum of abortions and live births.

[11] Durrance (2013) also finds modest reductions in abortion rates for some young women based on the availability of emergency contraception in Washington State in the late 1990s.

abortion providers and their services are even accessible on mobile devices such as smart phones.[12]

Prior studies still have important lessons for policy today. If *Roe v. Wade* were repealed or Title X funding cut, would birth rates rise? Probably, at least in the short run. But there are good reasons to doubt birth rates would rise by as much as they fell in the 1960s and early 1970s. Moreover, this narrow focus on birth rates ignores the literature's broader findings. A preponderance of evidence using different data sets, methodologies, and policy changes indicates that increasing access to contraception and legal abortion has had large and enduring effects on the material resources of families and children and has promoted the economic equality of women—benefits that should factor prominently in informed discussions of reproductive health policy.

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[12] For example, http://www.thedailybeast.com/articles/2013/01/22/interactive-map-america-s-abortion-clinics.html

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