The Pill and Men's Disappearance from the Teaching Sector

Herdis Steingrimsdottir*
Economics Department, Columbia University
hs2198@columbia.edu
March 20th, 2012

Abstract

In this paper I look at the relationship between increased access to reliable fertility controls and men's disappearance from teaching. As the pill has been found to have a substantial effect on women's family responsibilities, career investments and labor market outcomes, men's bargaining position in the marriage market is likely to have changed considerably. Teaching stands out among the career choices of college freshmen in terms of average income and prestige. The effect of the shift in bargaining power on men's career choices is hence likely to be prominent in the teaching sector. Between 1968 and 1980, the ratio of male college freshmen planning to become a teacher fell from 12.4% to 2.4% and the share of males among those who aspired to teach dropped from 30.6% to 19.7%. Using nationally representative data on the career plans of college freshmen I find that unrestricted access to the birth control pill bears a negative relation to the likelihood that men plan to teach, while changes in the strength of teacher unions and relative wages of teachers have limited effect on their career plans. Men's aspirations shift away from teaching towards occupations that are associated with higher average income like accounting and computer programming. The results are supported by equivalent findings looking at actual career outcomes in the Census Data.

* I thank Jonah Rockoff, Janet Currie and Pierre-André Chiappori for excellent advising and support, and Dan O'Flaherty and Till von Wachter for their helpful comments. All remaining errors are my own.

In the 1960s teaching was a prevalent occupational choice for college-educated men. In 1968, 11% of male college freshmen planned for a career in secondary teaching, making it the second most popular planned occupation after engineering.[1] In contrast, by 1980 less than 2% of male college freshmen planned to teach in secondary schools. Elementary teaching, though a much less common career path for males, also fell in popularity, from 1.1 percent in 1968 to 0.5 percent in 1980. While there was also a decline in the popularity of teaching among women the share of males among those who planned to teach fell from 30,6 percent in 1968 down to 19,7 percent in 1980 (CIRP Freshmen Surveys).

During this period there were major shifts in attitudes and social norms regarding sex, marriage and family formations, in part due to the legalization of abortion and the diffusion of the birth control pill. Although theoretical arguments suggest that changes in access to fertility controls may have affected men as well as women through changed market for marriage and sex (see e.g. Akerlof et al., 1996), they have largely been neglected in empirical analysis. In a related study (Steingrimsdottir, 2011), I find that with unrestricted access to the birth control pill men did indeed shift their career aspirations as well as women, and that their career plans shifted towards occupations associated with higher income and higher male ratios.

Increased access to the pill has been found to have substantial effect on women's family and labor market outcomes. Goldin and Katz (2002) present evidence that early access to the pill increased the age at first marriage and the share of women working in law and medicine. Moreover, Bailey (2006) finds that access to the pill delayed fertility, increased the number of women in the paid labor force, and raised the number of annual hours women worked. The impact on women suggests that there may have been a shift in the relative bargaining power of men and women in the marriage market, and in the intrahousehold framework. In an empirical paper Oreffice (2007) finds that abortion legalization increased the bargaining power of married women who are in their fertile years. Chiappori and Oreffice (2008) point

[1] Source: author's calculations using CIRP Freshmen Surveys, described further in Section 2.

out that with women's increased bargaining power it is likely that they require increased compensation e.g. for having children. The shift in women's bargaining power arising from increased access to fertility controls, may thus have created incentives for men to shift their career plans towards occupations associated with higher income than before. As teaching stands out among the planned careers of college freshmen (see Table 1) in terms of associated average income, this may have especially induced men who planned to become teachers to move to alternative occupations.

Moreover, as the pill is likely to have delayed men's family responsibilities as well as women's, it may have given them more liberty to pursue their careers and human capital investments than before. Akerlof et al. (1996) note how the availability of contraceptives may have changed social norms regarding marriage and pregnancy. Until the early 1970s, it was customary for a couple to marry in the event of a pregnancy. When the availability of oral contraceptives and abortion legalization made having a child a physical choice of the mother, marriage and support became a social choice of the man. The effect of the pill on men could thus have been further emphasized through less responsibility, in the case of an unwanted pregnancy.

In this study I will focus on the effect of increased access to fertility controls on men's career aspirations with a particular focus on the teaching occupation. Whereas several papers have studied the supply of women in teaching (e.g. Bacolod, 2007; Corcoran, Evans and Schwab, 2004; Dolton and Makepeace, 1993; Flyer and Rosen, 1997; Hoxby and Leigh, 2004 and Shin and Moon, 2006) the focus of this paper is on men and why teaching became less popular among them. From a policy perspective, it is important to know how various policies attract different groups of people into teaching. One of the main goals among policy makers is to attract high ability people into teaching, but there is also a reason why policy may be concerned with the gender composition of teachers. Boys are increasingly less likely than girls to attend college and to receive a bachelor's degree, and the dearth of male teachers may be a contributor to this trend. There is evidence suggesting that students perform better when taught by someone of their own gender (e.g. Dee, 2007), perhaps due to the teacher acting as a gender-specific role model, or the teacher's gender affecting communication between the teacher and the student. Hence changes in the gender ratio

among teachers may translate into altered patterns in the educational and labor market outcomes among men and women.

This paper uses college freshmen surveys from the late 1960s and 1970s to examine the effect of increased access to fertility controls on men's teaching aspirations. I use state specific changes in abortion legalization and access to the birth control pill and control for teacher unionization as well as the state and cohort specific relative wages of teacher. In the analysis men are separated by their academic ability to see which men were most affected by these institutional changes. The findings show that increased access to the birth control pill had a significant negative effect on the probability that men planned to teach, in particular among those of medium and low academic ability. Examining other popular career choices among male college freshmen, it appears that men's aspirations shift from teaching and scientific researching towards occupations that are associated with higher income, such as accounting and other business occupations. Using Census Data, I find equivalent effect on actual career outcomes.

Section 1 shortly discusses what determines the supply of teachers, Section 2 considers the relationship between men's career plans and changes in fertility and family formations, Section 3 discusses other factors that potentially influenced men's teaching plans in the 1970's, Section 4 describes the data and the main variables, Section 5 outlines the empirical strategy and presents the results and Section 6 concludes.

1. The Supply of Teachers

When studying the teaching sector it is important to bear in mind some of its specific characteristics. First, the teaching occupation is heavily dominated by women and has been seen as an attractive choice for women who want to combine work and family responsibilities. Secondly, the teaching sector is controlled by the government, with the demand for teachers and wages set by government authorities. Pay schemes and the promotional ladder are fairly rigid, and there is little room for financial rewards for good performance. Thirdly, teaching is a heavily unionized sector. The unions further affect the wages structure of the profession, but also act an important role in shaping the job itself and its non-pecuniary characteristics. Non-pecuniary aspects of teaching such as security,

flexibility, work conditions and prestige are likely to be of significant importance for its attractiveness and thus an important factor to take into consideration when studying the supply of teachers.

While some suggest that higher income among teachers would attract more people into the occupation (see e.g. Manski, 1987; Dolton 1990) others find little or no effect of relative teacher earnings (see e.g. Hanushek and Pace, 1995). The literature on teachers' supply focuses largely on women (e.g. Dolton and Makepeace, 1993; Flyer and Rosen, 1997; Corcoran, Evans and Schwab, 2004) or looks at the pooled results for men and women. Separating the effect of an increase in teachers' relative pay, Chevalier, Dolton and McIntosh (2007) find that while having a significant effect on both men's and women's decision to teach, men are more likely to react to a wage hike than women. The results of Dolton and Kidd (1995) suggest that difference in characteristics and labor market barriers between the genders explain the gap in their propensity to become teachers. If men made decisions "like" women, more of them would enter teaching, while women who acted "like" men would move from teaching to the private sector. As pointed out by Dolton (2006) "examination of the pattern of life cycle earnings for men in the USA and the UK in teaching and nonteaching alternative shows that if earnings were the only criteria used to decide a career then no men would become teachers in these countries." It is thus important to consider other factors that may affect the decision to become a teacher.

There are a few studies that address the issue of the relationship between teacher unions, teacher wages and teacher supply. Baugh and Stone (1982) find that teacher unionism produced relatively small wage gains in the early 1970s but that the gains increased substantially in the late 1970s. Hoxby (1996) finds that teachers' unions increase teacher salaries and the teacher-student ratio but reduce productivity. On the other hand Lovenheim (2009) finds teachers' unions to have no effect on teacher pay, per-student district expenditures or per-student revenues, but they increase teacher employment between 5 and 10 percent. Looking at the ability composition of the teaching workforce, Hoxby and Leigh (2004) find that unionization caused high aptitude women to move out of the teaching occupation.

2. Access to Fertility Controls and Men's Decision to Teach

During the 1960s and 1970s the legalization of abortion and the diffusion of the birth control pill affected young men and women in many ways. While changes in women's labor supply over this period have been studied extensively, little attention has been paid to shifts in men's careers. In an earlier paper (Steingrimsdottir, 2011) I find that both men's and women's career plans were affected by unrestricted access to the birth control pill and that men's overall aspirations shift towards more male dominated occupations. When separated by ability, the effect stems from those of medium and low ability.

As can be seen in Table 1 teaching stands out among the career plans of male college freshmen, in terms of average income, the share of males in the occupation and the occupational prestige score. It is thus of particular interest to examine how an innovation like the pill, which had sizable impact on both family responsibilities, and the conditions in the marriage market, affected men's decision to choose a career in teaching.

a. Female Empowerment

When discussing the effect of the pill on labor market outcomes and human capital investments, the main focus is typically on the increased control that women gain over their lives. As they were able to control and time their fertility more accurately, women's human capital investments became more profitable and the pay-off less uncertain than before. Goldin and Katz (2002) present evidence that early access to the pill increased the share of women working in law and medicine and Bailey (2006) finds that early access to the pill delayed fertility, increased the number of women in the paid labor force, and raised the number of annual hours women worked.

Additionally, with the increased access to reliable fertility control women gained power through their increased decision rights within the household (see e.g. Chiappori and Oreffice, 2008 and Oreffice, 2007). Women's increased bargaining power and higher human capital investments, should mean higher transfers to women in the household, e.g. higher compensation to leave the labor market for childbearing. This could hence put a pressure on men to earn higher income than before, and hence shift their aspsirations to careers associated with higher income.

Furthermore, it may have been the case that if increased access to birth control enabled women to pursue more education and more competitive careers than before, wages became a more important factor for men, as they may have felt a psychological need to withold their role as breadwinners in the household. This is related to an argument detailed in Edlund and Korn (2002) where marriage is thought of as a contract between men and women, in which men compensate women for *reproductive sex* and foregone market earnings. By enabling women to pursue their careers and human capital investments, the pill may have made wives *more expensive*, motivating men to obtain higher wages than before.

b. Delayed Family Responsibilities

Another reason that men may have shifted their career aspirations with increased access to fertility controls, is simply through delayed marriage and fatherhood. Teaching may in particular have been an important outlet for college-educated men who because of family responsibilities, did not have the opportunity to choose careers that required intensive human capital investments and labor market attachment.

The compatibility of teaching with family responsibilities is oftend mentioned in the context of female's decision to teach – but it may also have been an important factor for the appeal of the teaching occupation to men. The teaching hours, the timing and quantity of holidays, and the possibility to work partly at home (e.g. preparing and grading) allow teachers to combine their parental responsibilities and work more easily than is possible in many other occupations. Furthermore, career interruptions are penalized to less extent in teaching than in most other occupations held by college graduates. Flyer and Rosen (1997) find that while on average the wages of female college graduates take wage hits of approximately 9 percent for each year spent out of the labor force, teachers do not suffer any wage penalty when temporarily leaving the occupation.

Akerlof et al. (1996) relate the decline in shotgun marriages and the increase in out-of-welock births, to the legalization of abortion and the diffusion of the birth control pill. They note how the availability of contraceptives may have changed social norms regarding marriage and pregnancy. Until the early 1970s, it was customary for a couple to marry in the event of a pregnancy. When the availability of oral contraceptives and abortion legalization

made having a child a physical choice of the mother, marriage and support became a social choice of the man, providing men more freedom to choose to focus on their education and careers if they wished.

3. Other Important Changes in the 1970s

There were other changes happening during the 1970's that may have played a role in the decreased popularity of teaching among men:

a. Unions

From 1955 onward, various states passed laws that facilitated or forestalled teachers' unionization. The presence of a union may change the characteristics of the teaching occupation along several dimensions. It may ensure more pleasant work environment for teachers, e.g. through lower student-teacher ratios, more job security and higher minimum salary, while unions' collective bargaining may also result in increasingly compressed pay and benefits, and thereby less room to reward ability within the occupation. Arguing that unionization compressed wages in the teaching sector, Hoxby and Leigh (2004) find that unions played an important role in pushing high aptitude women away from teaching, between 1963 and 2000. In the empirical analysis I include controls for changed union laws.

b. Vietnam

Between 1940 and 1973, the U.S. Army relied on a sustained military draft. All 18 to 25 year old men were judged by local boards, with the most common classifications being I-A (ready for duty), II-S (student deferment), III-A (hardship deferment), and IV-F (unfit for servoce). Technically men were draft-elgiable until their 26th birthday, but the average age was between 19 and 20, and very few men were drafted after their 23rd birthday (Kuziemko, 2007).

Initially it appears to have been quite easy to get deferments and exemptions. For example, in 1964 one-third of 18 year old men were deemed unfit for service. Moreoever, being drafted seldomly led to combat duty. However as the Vietnam War escalated, quotas shot up and deferments became more difficult to obtain. After 1967, anyone enrolled as a

full-time undergraduate student at a college or university was granted II-S status. Card and Lemieux (2001) find that draft avoidance raised college attendance rates by 4-6 percentage points in the late 1960s, introducing a potential selection problem, when studying college students during this period. There is furthermore anectodal evidence that one could get an exemption by teaching high schools in underprivileged areas. While there was some state-specific variation in draft avoidance, the riks that was believed to be known ex ante was year specific (see Malamud and Wozniak, 2008). This should hence be captured by the year fixed effects. For further robustness, I have repeated my main analysis using only survey years after the draft ended (not reported here). While only significant for men of medium academic ability, the results are consistent with the findings in the paper. Furthermore, the results in the Census Analysis are robust to including all men, not just men with college education, avoiding at least part of the potential selection problem.

c. Title IX

In 1972 the Title IX of the Education Amendments was enacted. It states that "No person in the United States shall on basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity receiving Federal financial assistance..." (United States Code Section 20).[2] While some activities were exempt from Title IX, such as fraternities and sororities, and sex-specific youth clubs such as Gril and Boy Scouts, Title IX did apply to athletics, and its main effect may in fact have been on high-school and college sport activities. The law meant that if a particular sport was available within the school, there had to be teams for both girls and boys, or students of both sexes should be allowed to try out for the same team. Many have contended that this lead to the dismantling of some of men's popular sport programs. Consequently, Title IX may have reduced the opportunities for high school teachers to coach boys, and in that way perhaps decreased the attractiveness of teaching for males. The empirical analysis includes year fixed effects as well as state specific time trends, which should capture the effect of Title IX on men's decision to become teachers.

[2] See e.g. http://law.cornell.edu/uscode/20/1681.html

4. Data

The primary source of data in the analysis is the Cooperative Institutional Research Program's (CIRP) Freshman Surveys, which have been conducted annually by the UCLA Higher Education Research Institute since 1966. Each year, the survey is administered to all incoming freshmen at more than 700 colleges and universities. Nearly 90 percent of the institutions in the CIRP Freshman Surveys are repeat participants, and, to ensure consistency and minimize response bias, each cohort is stratified and weighted to be a nationally representative sample of first-time, full-time students entering institutions of higher education in each year.[3] The analysis includes surveys from 1968, 1969, and 1972 through 1980. The 1966 and 1970 surveys were not accessible. The 1967 survey is excluded from the empirical analysis as it does not include a measure for college selectivity and the 1971 survey is omitted as information on the state of the institution is missing. The analysis is restricted to students who were between 17 and 19 years old at the end of their first year of college.[4] Notably, these surveys were quite large; they contain around 270,000 students per survey year on average and, pooled across years, almost 3.5 million students in total.

To compare the changes in career plans to actual changes in labor market outcomes, I use the 5% Public Use Microdata Samples of the 1980 and 1990 Censuses. In the Census analysis I include the 1942-1958 birth cohorts. The Census Data does not have information on state of college attended or state of residence during the diffusion of the birth control pill, so it is therefore assumed that people attended college or resided in their reported states of residence. The Census person weights are used to obtain nationally representative statistics and results.

[3] The defined population consists of all "eligible" institutions of higher education listed by the U.S. Office of Education in its annual Education Directory. An institution is considered "eligible" if it is functioning at the time of the survey and has the equivalent of a first-time entering freshman class of at least 30 students. The data is stratified into 37 cells based on institution's characteristics. The data is weighted by these stratification cells to account for diproportionate sampling. Moreover the weights adjust for less than 100% participation of students within individual institutions. This is done separately by sex (see American Council on Education, 1970).

[4] 89% of the students in the sample are between 17 and 19 years old.

a. Career Plans

Table 1 shows the the occupational characteristics for the top ten career plans, as well as elementary teaching, among male college freshmen in 1968 and 1980. It shows the average income among college educated men within a particular occupation, drawn from the 1970 Census. It also shows the share of males for each occupation in 1970, and the Siegel prestigs score, which is based on series of surveys conducted at the National Opinion Research Center, where respondents were asked to evaluate either "general standing" or "social standing" of occupations. The surveys were conducted from 1963 to 1965 and are therefore likely to capture young people's sentiment towards various occupations right before the period studied here.

As can be seen in the table, the popularity of teaching among males dropped considerably during this period. Furthermore, one can see that teaching stands out among the occupations in terms of income, prestige and the share of males – all of these being particularly low. There is little change in the popularity of the occupations with the highest income and prestige scores, such as doctors and lawyers. On the other hand, occupations such as engineering, accounting and computer programming become increasingly favored as men's planned careers over the period.

b. Who Plans to Teach?

Figure 1a shows how the share of males among 25-35 year old teachers in the Current Population Survey (CPS) decreased steadily from 1970 and until the early 1980s. In 1970 the share of males was 38.5%, dropping down to 25.3% in 1985. Figure 1b shows the share of males among each birth cohort of teachers.[5] While it appears somewhat noisy, the downward trend is evident among the cohorts affected by the diffusion of the birth control pill, i.e. the cohorts born between 1942 (18 year olds in 1960 when access to the birth control pill among unmarried 18-21 year olds became unrestricted in the first two states; Alska and Arkansas) and 1958 (18 year olds in 1976 when restrictions in the last state, Missouri, were removed).

[5] The calculations in Figure 1b use data from the 1962-1999 surveys, restricting the sample to 25-55 year olds, who are in the labor market at the time of the survey.

Figure 2 graphs the share of males among those who plan to teach, and the share of male college freshmen who plan to teach, in the CIRP Freshman Surveys.[6] As was also clear from Table 1, the percentage of college freshmen who plan to teach falls constantly over the period, and while the trend in the gender ratio among teachers apsirants is less stable, the share of males falls from 27.3% in 1967 to 19.1 % in 1980.

Table 2a compares the characteristics of male students who plan to teach to those who plan on other careers. Men who aspire to become teachers are disproportionally drawn from the lower end of the academic ability distribution. They are less likely to come from a high income household and less likely to have college educated parents than other male college freshmen.

Table 2b considers the characteristics of men who plan to teach in 1968 and in 1980. While there are considerably fewer observations in 1980 (2,248 observations compared to 12,580 observations in 1968) the average level of academic aptitude among them appears to be higher. The teacher aspirants in 1980 are also more likely to have college educated parents, which is likely to be mostly explained by increased level of education over time.

c. Academic Ability

There are two measures of academic achievement available in the CIRP surveys: high school grade point average, and college selectivity. The college selectivity measure is a categorical variable based on the median SAT composite scores of the entering class, and takes one of six values: very high, high, medium, low selectivity and no selectivity.[7] High school grades are self-reported and take values from 1 (D or lower) to 8 (A/A+). Both aptitude measures are imperfect and each gives a somewhat different picture of students' abilities: the correlation between high school grades and college selectivity is only .234.

[6] The dotted line between 1969 and 1971 indicates the missing value for 1970.

[7] The approximate range of mean SAT scores of students entering institutions with low selectivity is 999 or less, 1,000 – 1,149 for medium selectivity, 1,150 – 1,249 for high, and 1,250 or higher for institutions that are very highly selective.

However, both measures are likely to provide partial indication of students' academic ability.[8]

I use these two variables in the Survey Data to divide students into high, medium, and low ability groups. To be in the high ability group a student from a highly selective institution needs to have a GPA of B or higher, a student from a medium selective institution, needs a B+ or higher, and a student from an institution with low or no selectivity needs to have a GPA of A- or higher. To be in the medium ability group, a student from a highly selective institution needs to hava a GPA between C and B-, a student from a medium selective institution from C+ to B, and a student from an institution with low or no selectivity need to have a GPA of B or B+. Students with lower GPAs are placed in the low ability category. Using the sample weights discussed above, this categorization gives an ability distribution where 26.8% are in the high ability group, 39.2% in the medium ablity group and 34.0% in the low ability group.

d. Access to the Birth Control Pill and Abortion Legalization

Although the birth control pill was approved by the FDA in 1960, there were considerable restrictions on access to it. In particular, it was limitied by the age of majority, which was 21 in most states, as unmarried minors could not obtain medical care and prescriptions without parental consent. During the 1960s and 1970s the age of majority was lowered from 21 to 18 or 19 in most states, mainly in order to fix legal inconsistencies, following the 26th Amendment to the Constitution, but sometimes due to mature minor doctrines that allowed legal infants to consent to medical care as long as they were mature enough to understand "the nature and the consequences of the treatment", or comprehensive family statutes that allowed or did not explicitly restrict physicians from treating legal

[8] In addition, there is the possibility that these measures could be endogenous, as e.g. unrestricted access to birth controls may encourage people to work hard in high school and apply to more selective institutions. However, empirical results, not reported here, indicate that access to the explanatory variables of interest did not have a significant effect on the overall distribution of grades or college selectivity in the sample.

minors.[9] Bailey (2006) provides dates for when unrestricted access to the birth control pill was availiable in each state, and the analysis here follows her classification.

Following earlier work (e.g. Angrist and Evans, 1999) abortion is considered to be available in 1971 in Alaska, Hawaii, New York and Washington and California. In the rest of the states abortion is considered to become available in 1974, following the Roe v. Wade decision. Assuming that the Roe v. Wade decision becomes effective in 1973 does not change the results from the analysis. As the variation in this variable is quite limited, it mainly serves as a control in the empirical analysis.

e. Unions

Access to unions may be of particular importance when it becomes to the non-pecuniary benefits of the teaching occupation. From 1955 onward, various states passed laws that facilitated or forestalled teachers' This paper uses passage of a law extending the right to meet or to engage in collective bargaining as an instrument for unionization, as well as laws allowing teachers' unions to have agency shops and union shops (see Hoxby, 1996 and Hoxby and Leigh, 2004). The empirical analysis includes a union variable containing these three types of law passages.

Union Rights: After 1960 there was a legal transition in the environment for public sector unions. Between 1960 and 1990 most states extended collective bargaining rights to teachers' unions. For some states the right was limited to the right to organize for purposes of collective bargaining while other states teachers' unions obtained the right to meet with administration representatives.[10]

Union Agency and Union Shop: Additionally, some states passed laws allowing teachers' unions to have agency shops and union shops. Union is said to have an agency shop if it collects dues from all teachers in the bargaining unit, regardless of whether they

[9] The Twenty – Sixth Amendment limited the minimum voting age to no more than 18. It was adopted on July 1st, 1971, as a response to student activism against the Vietnam War and the fact that 18 year olds could be drafted to the military, without having the rights to vote.
[10] For detailed discussion see Hoxby (1996)

are union members. A union shop exists if the school district cannot employ teachers who do not become union members (see Hoxby, 1996, p683).

f. Relative Wages

I use the Current Population Survey (CPS) to calculate teacher wages relative to other male college educated workers. I restrict the sample to workers aged 25 to 55, to eliminate problems associated with joint school and work activities and retirement. As the relative wages are calculated by year and state, some of the cells include too few observations to calculate meaningful statistics. Hence when including the control for relative wages, the sample that can be used in the analyzis becomes considerably smaller. I therefore show the results results for specifications both including and excluding the relative wages of teachers.

g. Census Data: Family Outcomes

To give some indication of whether access to the pill delayed men's family responsibilities I look at the effect on two family outcomes in the Census: the age of first marriage, and age when oldest child in the household was born. As men are not asked about their age when they had their first child, the age of the oldest child is used here as a proxy. It is however likely to be a very noisy measure, as the oldest child may not be the father's and furthermore he may have an older child that does not live in the household.

5. Empirical Strategy and Results

I estimate a fixed effect logit model of the following form:

$$P\left(y_{isc}=1 \mid \alpha_s,\alpha_c,\beta_{Pill},\beta_{Abortion},\beta_{Union},\gamma\right)=\frac{\exp(\alpha_s+\alpha_c+\beta_{Pill}Pill_{sc}+\beta_{Abortion}Abortion_{sc}+\beta_{Union}Union_{sc}+\mathbf{x}_{isc}\gamma)}{1+\exp(\alpha_s+\alpha_c+\beta_{Pill}Pill_{sc}+\beta_{Abortion}Abortion_{sc}+\beta_{Union}Union_{sc}+\mathbf{x}_{isc}\gamma)} \quad (1),$$

where y_{isc} takes value 1 if an individual *i* from state *s* and cohort *c* plans to teach, and zero otherwise. α_s and α_c are state and cohort fixed effects, respectively. $Pill_{sc}$ is an indicator variable for whether an individual in state *s* and cohort *c* had unrestricted access to the pill when starting college. $Abortion_{sc}$ takes value 1 if an individual is in state and cohort such

that abortion is legalized, and $Union_{sc}$ takes value 1 if a student is in a cohort and state where teachers' unionization has been facilitated through one of the law passages discussed in Section 3.e. The variable X_{isc} includes controls for individual characteristics such as race, religion, students' high school grades and their college selectivity. To address concerns that the parameter of interest is mainly capturing other gradually evolving, unobserved state characteristics, I add state specific time trends. Standard errors are heteroskedasticity-robust and are clustered by state to reflect the nature of the variation in the explanatory variables.

The reported estimates are the odds ratios, i.e. the estimated proportional change in the probability choosing teaching as a planned career, when the explanatory variable changes from zero to one. Columns 1 and 2 of Table 3 report baseline estimates, pooling all men. The union and variable and the relative wages of teachers do not have a significant effect on the probability that men choose teaching as their planned career. The effect of abortion legalization appears to positive, but not signficant in the first specification and only marginally significant when relative wages of teachers are included. Increased access to the birth control pill significantly decreases the probability that a male college freshman chooses teaching as his planned career.[11] The estimated odds ratio, i.e. the relative probability of choosing teaching when one has access to the birth control pill, to the probability of choosing teaching when access to the birth control pill is restricted, is .760, which means it explains about one third of the drop in the fraction of men who plan to teach. In columns 3 to 8 of Table 3, estimates are reported separately for males in different ability groups (based on high school GPA and college selectivity), showing that the effect of increased access to the birth control pill is concentrated on men from the medium and low ability groups.

If men from the low and medium ability groups shifted away from teaching when access to the birth control pill became unrestricted, then where do they go? In a related paper (Steingrimsdottir, 2011) I consider the effect of the birth control pill on the general career plans of young men and women, where I find that men in the medium and low ability groups who were in states and cohorts such that access to the pill was unrestricted, move to career

[11] Separating the analysis for elementary and secondary teaching yields similar results and in particular a strongly significant, negative effect of birth control access in both cases. Repeating the analysis for women, I find no significant effect on their plans to become teachers.

aspirations associated with higher average income and higher share of males, but lower prestige scores. To provide further detail on these changes in career plans, I estimte here the effect of unrestricted access to the birth control pill on the likelihood of men choosing particular careers among the most popular career options listed in Table 1. The results are presented in Table 4, where the occupations are ordered by their average income in 1970, with physicians having the highest average income, and computer programmers the lowest among these occupations. Increased access to the birth control pill does not appear to have an effect on men choosing the top tier occupations associated with the highest income, i.e. physician, lawyer, architect, business executive, or engineer. On the other hand men seem to shift their plans towards careers ranked just above teaching in terms of average income. Men from the low ability group move towards computer programming which is the lowest ranked occupation after teaching. Men of medium academic ability move from plans to become teachers or scientific researchers towards becoming accountants or business owners. As was seen in Table 3, unrestricted access to the birth control pill did not have a significant effect on the teaching plans among men in the high ability group. However, in column 2 of Table 4, one can see that there is a decreased probability of men in this group choosing scientific researcher as their planned occupation, and increased probability that they choose accounting. Overall, there is a pattern observed in all ability groups, of men shifting their career plans from the occupations with the lowest income, with a notably strong effect on their plans to become teachers, towards occupations associated with higher income.

Tables 5 and 6 use Census Data to look at men's actual career and family outcomes. The results in Table 5 show little effect on the timing of men's family responsibilites, although there is a marginally signficant negative effect on the probability that a man is married when he is 20 years old. Hence there is not much evidence of delayed family responsibilities among men. However as noted in Section 4 g., these measures, in particulare age when first child is born, are likely to be subject to substantial measurement errors.

The results in Table 6 show that having early access to the birth control pill signficantly decreased the likelihood that men became teachers, but increased the probability that they became business executives and accountants, supporting the results from the Freshmen Surveys.

6. Conclusion

The popularity of teaching has decreased considerably in the last decades. Men have left the profession disproportionatly making teaching a heavily female dominated occupation. As evidence emerges that students are more responsive to teachers of their own race and gender, it should be the aim of policy makers to not only attract high ability people into teaching, but to attract good people from all demography groups. As male high school students are being outperformed by their female peers in the classroom, and the female favoring gender gap in college enrollment and college completion rates is widening, it may become increasingly important to attract able men into the teaching sector.

My results show that with increased access to a reliable birth control men in particular moved away from teaching and into better paid occupations. Although the empirical literature on the effect of fertility controls has largely focused on women, the theoretical arguments suggest that men may have been affected through delayed fertility and changes in the market for sex and marriage, as well as women. It may however seem surpricing that the main effect appears to be on men rather than women. While having a child surely affects men's ability to invest in their human capital, one would think that the chief effect is on the mothers.

As discussed in Section 2, one possible reason for the seemingly greater impact on men is that some women may have become worse off with the introduction of the birth control pill. In particular, those who failed to adopt the new technology, e.g. because of moral or religious reasons, and may consuequently have become more likely to deal with a premarital pregnancy on their own (see e.g. Akerlof et al. 1996). Another potential reason is that there may have been a bigger effect on women on the extensive margin, i.e. on their decision to go to college. If access to the birth control pill increased the probability that women enrolled in college, and thereby entered the sample of college students, that may bias the results. However it does not appear that access to the birth control pill is associated with changes in the observed characteristics of the college sample (see Steingrimsdottir, 2011). A third possibility is that while the birth control pill enabled women to pursue more education and better careers, the income effect due to the shift in bargaining power, meant that they had less incentive to invest in their human capital. For men on the other hand, both of these

mechanisms work in the same direction, i.e. shifting men's career aspirations towards jobs associated with higher salary.

In contrast to the strongly significant effect of unrestricted access to the birth control pill, unionization and the relative wages of teachers have negligible effect on the teaching plans of college freshmen – perhaps signaling the particularity of the allure of the teaching occupation. It has been emphasized that teaching is an attractive alternative for women who want to combine work with family responsibilities, as teaching provides both more flexibility and security than most other careers. The findings here suggest that this may also have been an important factor in men's decision to teach. When family responsibilities became less restrictive, at the same time as the pressure to earn higher income may have gone up, the value of these properties is likely to have diminished. It is thus likely that with other policies seeking to make it easier on people to combine work and family, e.g. with increased parental leaves and daycare provision, teaching is becoming even less competitive.

Another implication of the results presented in the paper is that when analyzing changes and policies that affecte fertility and other family factors, the impact on men should not be ignored. It is likely that they experience both direct and indirect effects from such changes, e.g. through shifts in bargaining power in the marriage market and in the intrahousehold framework.

References

Akerlof, George, Janet Yellen and Michael Katz, 1996. "An Analysis of Out-of-Wedlock Childbearing in the United States," *The Quarterly Journal of Economics*, 111(2): pp 277-317.

American Council on Education, 1970. "National Norms for Entering College Freshmen-Fall 1970," *ACE Research Reports*, 5(6).

Angrist, Joshua D. and Bill Evans, 1999. "Schooling and Labor Market Consequences of the 1970 Abortion Reforms," *Research in Labor Economics*, 18: 75-114.

Bacolod, Marigee P., 2007. "Do Alternative Opportunities Matter? The Role of Female Labor Markets in the Decline of Teacher Quality," *The Review of Economics and Statistics*, 89(4): pp 737-751.

Bailey, Martha J., 2006, "More Power to the Pill: The Impact of Contraceptive Freedom on Women's Life Cycle Labor Supply," *The Quarterly Journal of Economics*, 121(1): pp 289-320.

Baugh, William H. and Joe A. Stone, 1982. "Teachers, Unions, and Wages in the 1970s: Unionism Now Pays," *Industrial and Labor Relations Review*, 35(3): pp 368-376.

Card, David and Thomas Lemieux, 2001. "Going to College to Avoid the Draft: The Unintended Legacy of the Vietnam War," *American Economic Review*, 91(2): pp 97-102.

Chevalier, Arnaud, Peter J. Dolton and Steven McIntosh, 2007. "Recruiting and Retaining Teachers in the UK: An Analysis of Graduate Occupation Choice from the 1960s to the 1990s," *Economica*, 74, Issue 293: pp 69-96.

Chiappori, Pierre-André and Sonia Oreffice, 2008. "Birth Control and Female Empowerment: An Equilibrium Analysis," *Journal of Political Economy,* 116(1): pp 113-140.

Corcoran, Sean P., William N. Evans and Robert M. Schwab, 2004. "Women, the Labor Market, and the Declining Relative Quality of Teachers," *Journal of Policy Analysis and Management*, 23(3): pp 449-470.

Dee, Thomas S., 2007. "Teachers and Gender Gaps in Student Achievement," *Journal of Human Resources*, 42(3): pp 528-554.

Dolton, Peter J., 1990. "The Economics of UK Teacher Supply – the Graduate Decision," *The Economic Journal*, 100(400), Conference Papers: pp 91-104.

Dolton, Peter J., 2006. "Teacher Supply," *Handbook of the Economics of Education*, Elsevier.

Dolton, Peter J. and Michael P. Kidd, 1994. "Occupational Access and Wage Discrimination," *Oxford Bulletin of Economics and Statistics*, 56(4): pp 457-474.

Dolton, Peter J. and Gerald H. Makepeace, 1993. "Female Labor Force Participation and the Choice of Occupation – The Supply of Teachers," *European Economic Review*, 37(7): pp 1393 – 1411.

Edlund, Lena and Evelyn Korn, 2002. "A Theory of Prostitution," *Journal of Political Economy*, 110(1), pp 181-214.

Flyer, Fredrick and Sherwin Rosen, 1997. "The New Economics of Teachers and Education," *Journal of Labor Economics*, 15(2): pp 104-139.

Goldin, Claudia and Lawrence Katz, 2002. "The Power of the Pill: Oral Contraceptives and Women's Career and Marriage Decisions," *Journal of Political Economy,* 110(4): pp 730-770.

Hanushek, Eric A. and Richard R. Pace, 1995. "Who Chooses to Teach (and Why)?" *Economics of Education Review*, 14(2): pp 101-117.

Hoxby, Caroline M., 1996. "How Teachers' Unions Affect Education Production," *The Quarterly Journal of Economics*, 111(3): pp 671-718.

Hoxby, Caroline M. and Andrew Leigh, 2004. "Pulled Away or Pushed Out? Explaining the Decline of Teacher Apittude in the United States," *American Economic Review,* 94(2): 236-240.

Kuziemko, Ilyana, 2007. "Going Off Parole: How the Elimination of Discretionary Prison Release Affect the Social Cost of Crime," *NBER Working Papers* 13380, NBER, Inc.

Lovenheim, Michael F, 2006. "The Effect of Teachers' Unions on Education Production: Evidence from Union Election Certifications in Three Midwestern States," *Journal of Labor Economics*, 27(4): pp 525-587.

Malamud, Ofer and Abigail Wozniak, 2008. "The Impact of College Graduation on Geographic Mobility: Identifying Education Using Multiple Components of Vietnam Draft Risk," *IZA Discussion Papers*

Manski, Charles F., 1987. "Academic Ability, Earnings and the Decision to Become a Teacher: Evidence from the National Longitudinal Study of the High School Class of 1972." In: Wise, D. (Ed.), *Public Sector Payrolls.* University of Chicago Press, Chicago.

Oreffice, Sonia, 2007. "Did the Legalization of Abortion Increase Women's Household Bargaining Power? Evidence from Labor Supply," *Review of Economics of the Household*, 5(2): pp 181-207.

Shin, Jaeun and Shangho Moon, 2006. "Fertility, Relative Wages, and the Labor Market Decisions: A Case of Female Teachers," *Economics of Education Review*, 25(6): pp 591-604.

Steingrimsdottir, Herdis, 2011. "Access to the Birth Control Pill and the Career Plans of Young Men and Women," *unpublished.*

Steven Ruggles, Matthew Sobek, Trent Alexander, Catherine A. Fitch, Ronald Goeken, Patricia Kelly Hall, Miriam King, and Chad Ronnander. Integrated Public Use Microdata Series: Version 4.0 [Machine-readable database]. Minneapolis, MN: Minnesota Population Center [producer and distributor], 2008.

University of California-Los Angeles. Graduate School of Education. Higher Education Research Institute, and American Council on Education. Cooperative Institutional Research Program (CIRP) [United States]:

> Freshman Survey, 1968 - 1980 [Computer file]. ICPSR02398-v1; ICPSR02414-v1. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor], 2002. doi:10.3886/ICPSR02398 - doi:10.3886/ICPSR02414

Figure 1a: % males among 25-35 year old teachers

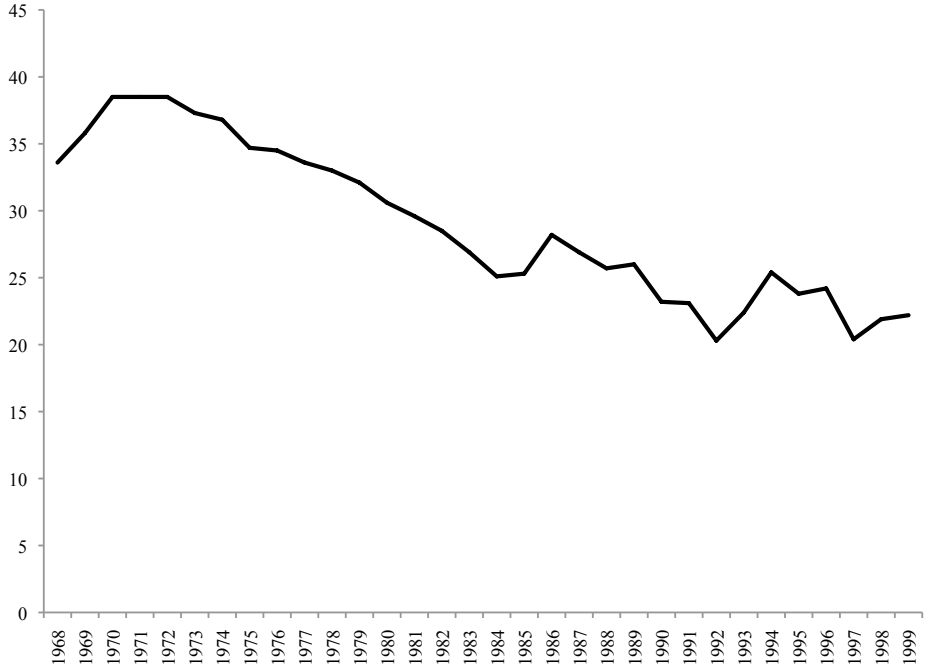
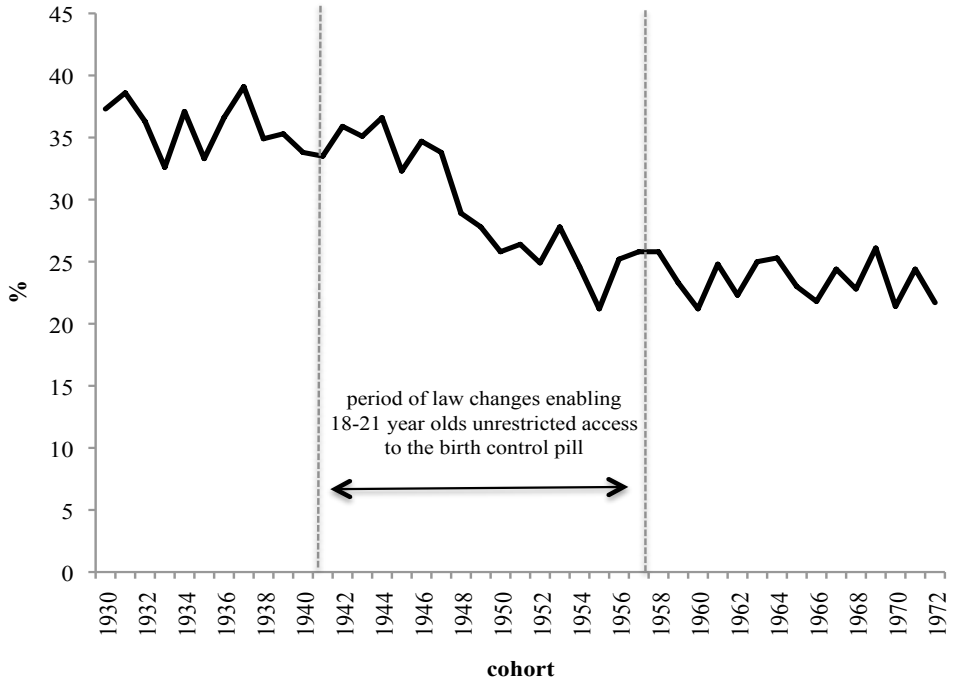
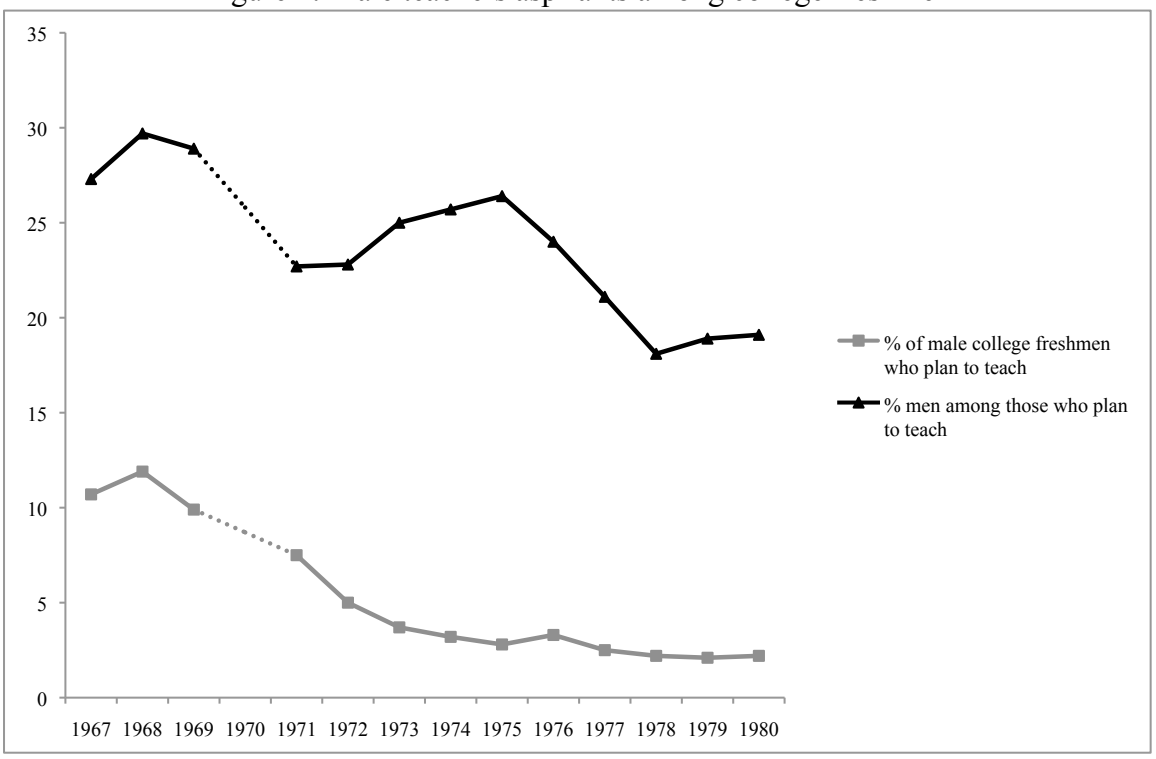


Figure 1b: % males among those who teach in each birth cohort



Source: CPS (1962-1999)

Figure 2: Male teachers aspirants among college freshmen



Source: CIRP Freshman Surveys

Table 1: Summary Statistics: Men's Career Plans and Occupational Characteristics

Planned Career	Rank in 1968	% in 1968	Rank in 1980	% in 1980	Average income in 1970	Share of males in 1970 (%)	Prestige
Engineer	1	15.0	1	18.0	15,174.0	98.6	64.4
Secondary Teacher	**2**	**11.3**	**10**	**1.9**	**8,149.4**	**51.5**	**59.6**
Business Executive	3	10.0	2	11.7	16,646.70	87.2	50.3
Lawyer	4	5.8	5	4.8	21,771.4	95.9	75.7
Physician	5	4.1	6	4.6	26,870.6	92.0	81.5
Scientific Researcher	6	4.0	9	2.4	11,437.6	73.1	78.3
Accountant	7	3.6	3	6.0	12,982.4	92.0	56.7
Architect	8	2.5	8	2.5	16,862.3	96.9	70.5
Computer Programmer	9	2.3	4	5.8	9,555.2	75.5	-
Business Owner/ Proprietor	10	2.0	7	4.0	13,216.50	86.0	37.6
Elementary Teacher	**18**	**1.1**	**24**	**0.5**	**6,933.4**	**16.6**	**59.6**

Notes: The average income and the share of males are calculated from the 1970 Census, using college graduates who are currently employed. The prestige scores are assigned to the 1950 occupational codes in the Census, where there is only one group for non-college teaching; elementary and secondary teaching therefore have the same score. There is no prestige score for computer programmers avaialeble in the Census Data.

Table 2a: Summary Statistics - Men who Plan to Teach vs. Men who Plan for Other Careers

	(i)	(ii)	(iii)
	Teach	Other career plans	Difference (ii)-(i)
# obs.	73,501	1,629,482	
Academic Ability			
High	.267	.427	.160***
	(.002)	(.000)	(.002)
Medium	.408	.342	-.066***
	(.002)	(.000)	(.002)
Low	.325	.231	-.094***
	(.002)	(.000)	(.002)
Race (%)			
White	.884	.878	-.006***
	(.001)	(.000)	(001)
Black	.071	.066	-.006***
	(.001)	(.000)	(.001)
Other	.045	.057	.012***
	(.001)	(.000)	(.001)
Catholic	.273	.225	-.048***
	(.002)	(.000)	(.002)
High Income	.070	.170	.100***
	(.001)	(.000)	(.001)
Father has college educ.	.238	.392	.153***
	(.002)	(.000)	(.002)
Mother has a college educ.	.134	.197	.063***
	(.001)	(.000)	(.000)

Notes: Column (i) presents means for those who plan to teach and column (ii) for thos who o plan on non-teaching careers. Column (iii) presents the difference between those who plan to teach and others. Standard errors are in the parentheses. * indicates significance at the 10 percent level, ** at 5 percent and *** at 1 percent. The p-values correspond to the two-tailed t-test, allowing for unequal variances between groups.

Table 2b: Summary Statistics - Male Teacher Aspirants in 1968 and 1980

	(i)	(ii)	(iii)
	Teach in 1968	Teach in 1980	Difference (i)-(ii)
# obs.	12,580	2,248	
Academic Ability			
High	.271	.345	-.074***
	(.004)	(.010)	(.011)
Medium	.417	.413	.004
	(.004)	(.010)	(.011)
Low	.312	.242	.070***
	(.004)	(.009)	(.010)
Race (%)			
White	.871	.886	-.014
	(.003)	(.007)	(.007)
Black	.053	.081	-.028***
	(.002)	(.006)	(.006)
Other	.076	.033	.042***
	(.002)	(.004)	(.004)
Catholic			
High Income	.069	.056	.013**
	(.002)	(.005)	(.005)
Father has college educ.	.192	.317	-.125***
	(.004)	(.010)	(.010)
Mother has a college educ.	.118	.161	-.044***
	(.003)	(.008)	(.008)

Notes: Column (i) presents means for those who plan to teach and column (ii) for thos who o plan on non-teaching careers. Column (iii) presents the difference between those who plan to teach and others. Standard errors are in the parentheses. * indicates significance at the 10 percent level, ** at 5 percent and *** at 1 percent. The p-values correspond to the two-tailed t-test, allowing for unequal variances between groups.

Table 3: The Effect on Men's Decision to Teach

	Dependent Variable: Teach = 1							
	All		High Ability		Medium Ability		Low Ability	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Independent Variable								
Pill	.760***	.580***	.924	.863*	.775**	.511***	.769**	.636***
	(.088)	(0.68)	(.132)	(.072)	(.094)	(.068)	(.086)	(.096)
Abortion	1.127	1.217*	1.132*	1.073	1.159	1.398***	.969	1.037
	(.131)	(.142)	(.082)	(.086)	(.126)	(.155)	(.091)	(.153)
Union	.098	.983	.923	.679***	.933	1.003	1.086	1.167
	(.074)	(.076)	(.118)	(.057)	(.078)	(.123)	(.064)	(.128)
Log Relative Wages	-	.966	-	1.141	-	.673*	-	1.188
		(.112)		(.251)		(.161)		(0.186)
State Fixed Effects	√	√	√	√	√	√	√	√
Cohort Fixed Effects	√	√	√	√	√	√	√	√
State Specific Time Trend	√	√	√	√	√	√	√	√
Observations	1,587,037	980,721	668,143	440,766	545,602	325,134	373,292	214,418

Notes: The reported estimates are the odds ratios. Standard errors are robust and clustered by state (*p<.10; **p<.05; ***p<01). All specifications include controls for high school grades, college selectivity, race and for being catholic.

Table 4: The Effect of Unrestricted Access to the Pill on Men's Career Plans

	All	High Ability	Medium Ability	Low Ability
	(1)	(2)	(3)	(4)
Dependent Variable				
Physician = 1	.933	.953	.910	1.143
	(.092)	(.085)	(.096)	(.147)
Lawyer = 1	1.040	1.029	1.063	1.092
	(.071)	(.083)	(.095)	(.095)
Architect = 1	.949	.931	.995	.896
	(.112)	(.119)	(.171)	(.148)
Business Exec. = 1	.955	1.147	.955	.940
	(.058)	(.110)	(.050)	(.070)
Engineer = 1	.963	.844	1.023	.902
	(.133)	(.127)	(.170)	(.123)
Business Owner, Proprietor = 1	1.252***	1.264	1.527***	1.127
	(.072)	(.439)	(.145)	(.105)
Accountant = 1	1.134*	1.202**	1.169**	1.058
	(0.084)	(.106)	(.078)	(.116)
Scientific Researcher = 1	.831***	.820*	.830***	1.031
	(.063)	(.088)	(.053)	(.113)
Computer Programmer = 1	1.276***	1.108	1.118	1.377***
	(.095)	(.128)	(.118)	(.119)
Observations	1,587,037	668,142	545,602	373,292

Notes: The reported estimates are the odds ratios. Standard errors are robust and clustered by state (*p<.10; **p<.05; ***p<01). All specifications include controls for high school grades, college selectivity, race and for being catholic.

Table 5: The Effect of Unrestricted Access to the Pill on Men's Family Outcomes

	OLS coeff.	*Odds Ratio*
Dependent Variable		
Age when first married	-.003	-
	(.032)	
Age when first child	-.206	-
	(.304)	
Married before 20 = 1	-	.947*
		(.031)
Married before 21 = 1	-	.986
		(.026)
Married before 22 = 1	-	1.025
		(.021)
First child before 20 = 1	-	.988
		(.012)
First child before 21 = 1	-	.996
		(.012)
First child before 22 = 1	-	1.009
		(.011)
Observations	483,095	483,095

Notes: The data used here is from the 1980 and 1990 Censuses. It includes those born between 1942 and 1958, with at least one year of college education. Standard errors in parentheses are robust and clustered by state (* p<.10; ** p<.05; *** p<.01). All specifications include state fixed effect, age fixed effect and census year fixed effect, and controls for race. All the regressions include control for abortion legalization and a state specific - cohort trend.

Table 6: The Effect of Unrestricted Access to the Pill on Men's Actual Careers

	(1)	(2)
Dependent Variable		
Physician = 1	1.041	.970
	(.044)	(.078)
Lawyer = 1	.983	1.003
	(.026)	(.040)
Architect = 1	.998	.941
	(.054)	(.110)
Business Exec. = 1	1.035**	1.064**
	(.015)	(.030)
Engineer = 1	1.077*	1.012
	(.046)	(.042)
Business Owner, Proprietor = 1	1.005	.988
	(.013)	(.020)
Accountant = 1	1.080***	1.062
	(.027)	(.044)
Scientific Researcher = 1	.958	.856**
	(.045)	(.055)
Computer Programmer = 1	1.032	1.042
	(.074)	(.097)
Teach = 1	.927**	.912**
	(.033)	(.033)
Addiational Controls	No	Yes
Observations	1,534,110	583,707

Notes: The data used here is from the 1980 and 1990 Censuses. It includes those born between 1942 and 1958, with at least one year of college education . The reported estimates are the odds ratios. Standard errors in parentheses are robust and clustered by state (* p<.10; ** p<.05; *** p<.01). All specifications include state fixed effect, age fixed effect and census year fixed effect, and controls for race. All the regressions include control for abortion legalization and a state specific - cohort trend. Additional controls include controls for union strengths, and relative wages of teachers, when the individual was 18 years old.