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FROM THE VALLEY TO THE SUMMIT:  
THE QUIET REVOLUTION THAT TRANSFORMED WOMEN'S WORK

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From the Valley to the Summit: The Quiet Revolution that Transformed Women's Work  
Claudia Goldin  
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**ABSTRACT**

Meaningful discussions about "women at the top" can take place today only because a quiet revolution occurred about thirty years ago. The transformation was startlingly rapid and was accomplished by the unwitting foot soldiers of an upheaval that transformed the workforce. It can be seen in a number of social and economic indicators. Sharp breaks are apparent in data on labor market expectations, college graduation rates, professional degrees, labor force participation rates, and the age at first marriage. Turning points are also evident in most of the series for college majors and occupations. Inflection or break points in almost all of these series occur from the late 1960s to the early 1970s and for cohorts born during the 1940s. Whatever the precise reasons for change, a great divide in college-graduate women's lives and employment occurred about 35 years ago. Previously, women who reached the peaks often made solo climbs and symbolized that women, contrary to conventional wisdom, could achieve greatness. But real change demanded a march by the masses from the "valley to the summit." That march began with cohorts born in the late 1940s.

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Women have reached summits throughout recorded history and their accomplishments have been touted by contemporaries as evidence that women *could* achieve greatness, contrary to accepted wisdom. But it has taken considerably longer for substantial numbers of women, not just a few tokens, to reach the peaks. Until recently the vast majority of women—even college graduate women—occupied the valleys, not the summits. They had jobs, not careers.

The only reason we can have a meaningful discussion today about “women at the top” is because a quiet revolution took place about thirty years ago. It followed on the heels of a noisier revolution, but the quiet one had a greater long-run impact. The revolution, moreover, was accomplished by many who were unaware they were part of a transformation that would affect women and their families for decades to come. Some of the participants were high school students; others were in college. They were the unwitting foot soldiers of an upheaval that transformed women’s employment and the workforce.

The transformation was startlingly rapid, thus the term “revolution” not evolution. We can observe it in a number of social and economic indicators. Many of these time series show sharp breaks and turning points, whereas others reveal a less abrupt transition.

Sharp breaks or turning points are apparent in the data presented on labor market expectations, college graduation rates, professional degrees, labor force participation rates, and the age at first marriage. Turning points are also evident in most of the series for college majors and occupations. The inflection or break points in almost all of these series occur from the late 1960s to the early 1970s and for cohorts born during the 1940s.

Each of the series is related to the others. Advanced degree programs, for example, are necessary for certain occupations. Particular college majors are required for certain advanced degree programs. Only when young women have expectations of high future labor force

participation rates will they alter their college programs and college graduation rates. Career aspirations will encourage women to marry and begin their families later, but, in addition, a later age at first marriage will serve to facilitate women's career development. Therefore the turning points in particular series were caused by and are related to those in other series. I will discuss each of the series in turn and then explore why the quiet revolution occurred.

### *The Quiet Revolution in Expectations, College, Occupations, and Labor Force Participation*

#### *Expectations of Labor Market Work*

In the early to mid-1960s the labor force plans of young women, 14 to 21 years old, reflected the current labor market work of their mothers, their aunts, and possibly their older sisters. The expectations of young women regarding what they planned to do when they were 35 years-old were more in line with what older women were currently doing than with what the younger women would actually be doing in 15 to 20 years.<sup>1</sup> Their expectations about their future employment were inconsistent with what they eventually did.<sup>2</sup> Thus their educational investments, including their college majors and their further training in professional programs, could not have fully anticipated their actual labor force participation rates.

But in the late 1960s and the early 1970s something began to change (see Figure 1, Part A). Young women (14 to 21 years old) when asked by the National Longitudinal Survey Young Women (1968) what they would be doing at age 35 began to offer answers that were more

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<sup>1</sup> When the young women were first interviewed in 1968 and until 1971 their answers to the question "what will you be doing at age 35 years" (and variants of the question) did not vary much by their current age (as shown in Figure 1, Part A for those 14 to 21 years in 1968). Therefore, there is a presumption that those who were 21 years old in 1968 would not have had substantially different expectations seven years earlier in 1961 when they were 14 years old.

<sup>2</sup> For those born from 1951 to 1954, their labor force participation rate when around age 35 (if ever-married) was about 0.75.

consistent with their actual futures.<sup>3</sup> In 1968, independent of their age at the time, about 30 percent said they would be in the labor force at age 35.<sup>4</sup> But in 1975 about 65 percent said they would be. Comparing the responses of the oldest in the group considered here (21 years old) in 1968 with that of the youngest in 1975 (also 21 years old) gives an increase of about 35 percentage points. Thus the reason for the radical change in the expectations of these women during the late 1960s and early 1970s was not their increased age. Inspection of Figure 1, Part A reveals that *all* cohort lines increased over time and that they increased by about the same amount.

By the mid- to late-1970s young women's plans were considerably different from those they had expressed a decade earlier. Their expectations about their future labor market work no longer mimicked those of their mothers. These future predictions, moreover, remained substantial throughout the 1980s. The responses to similar questions asked of the NLS 1979 sample (Figure 1, Part B), reveal virtually no change in the fraction of young women expecting to work when they were 35 years old, either by age or by year. The lines are virtually flat from 1979 to 1984, a very different picture from the upward sloping lines from 1968 to 1978.

By the late 1970s and early 1980s young women's expectations of future market work were in line with, if not somewhat higher than, the actual levels they would achieve when 35 years old. Thus the turning point for young women's expectations of their future labor market employment was in the late 1960s and early to mid-1970s.

Although only part of the group included in Figure 1 eventually attended college, and a smaller fraction graduated from college, the implication for professional advancement is clear.

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<sup>3</sup> The data set used is the National Longitudinal Survey Young Women 1968. The entire sample includes women who were 14 to 24 years old in 1968. Figure 1, Part A includes only those 14 to 21 years old.

<sup>4</sup> Most of the mothers of the NLS Young Women sample members were probably born between 1923 and 1929. Their labor force participation rate when they were 35 years old was between 0.3 and 0.35.

Those who correctly anticipate their future labor market involvement will invest more wisely. In this case, the investments involved attending and graduating from college, the choice of college majors, and enrollment in professional degree programs.

### *College Majors*

In 1966 almost 75 percent of women graduating from a four-year college specialized in, what can reasonably be defined as, a “female-intensive” major and about 10 percent specialized in a “male-intensive” major (see Figure 2).<sup>5</sup> Fully 40 percent of all women college graduates in 1966 were Education majors at a time when Education was 78 percent female and women were 43 percent of all graduates. About 17 percent of women college graduates in 1966 concentrated in English & Literature, and Foreign Languages when the combined major was 68 percent female; 3 percent were in Home Economics and Social Service Professions when that concentration was 92 percent female. Thus 60 percent (40 + 17 + 3) of all female undergraduate majors in 1966 can be accounted for by just three female-dominated concentrations (or combined concentrations), whereas 50 percent of all men in 1966 majored in Science (except “other life sciences”), Engineering, and Business & Management.

Thus even as late as the mid-1960s, when detailed and consistent data on undergraduate concentrations begin, substantial differences existed in the majors of men and women.

Moreover, most of the women’s concentrations were “job” or “consumption” oriented (e.g.,

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<sup>5</sup> “Female-intensive” and “male-intensive” majors are defined here with respect to the enrollment in the major in 1970. See *Notes* to Figure 2 for details. About 15 percent of all female concentrators in 1966 majored in “mixed” or gender neutral fields, such as Math, Psychology, Sociology, Anthropology, Linguistics, History, and Arts & Music. In 1950 the fraction of all female B.A.’s majoring Education, English & Literature, and Foreign Languages was 41 percent. In 1960 it was 57 percent, the same fraction it was at the start of the consistent time-series data in 1966 presented above. Data for 1950 and 1960 are from U.S. Department of Education, NCES (1996). Aggregate B.A.’s by sex are adjusted for the (estimated) number of first professional degrees.

education, literature), whereas those of the men were “career” and “investment” oriented (e.g., engineering, business & management).

Instead of applying the somewhat arbitrary cut-offs needed to define “female-intensive” and “male-intensive” majors, a standard “index of dissimilarity” can be computed that utilizes the full range of concentrations.<sup>6</sup> Using the 50 or so concentrations listed from 1966 to 1998, the value of the index in 1966 reveals that 54 percent of all women (or of all men) would have had to change concentrations to create equality by sex in all fields.

Each of the time series that gauge the sex-segregation of undergraduate majors (that is, each of the lines in Figure 2) was markedly altered in the early 1970s. The break is especially sharp for the fraction of women in male-intensive majors, but it is also apparent for the fraction of women in female-intensive majors and in the index of sex segregation by college major.

The proximate reasons for these sharp breaks can be found in the enrollments of two large concentrations: Education, and Business & Management (see Figure 3, Part A). The relative decrease in those specializing in Education depressed the fraction of women in “female-intensive” majors, while the relative increase in those majoring in Business & Management boosted the fraction of women in “male-intensive” majors.

Whereas 40 percent of all women who received a B.A. in 1966 majored in Education, about 20 percent did in 1980 and just 12 percent did in 1998.<sup>7</sup> The reverse trend can be found in Business & Management (B&M). Although just 2 percent of all women B.A.’s majored in B&M in 1966, 22 percent did in 1988 at its height of relative popularity among all undergraduates.

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<sup>6</sup> One of the standard indexes of dissimilarity, and the one used here, is given by:  $I = \sum_i |M_i - F_i|/2$ , where  $M_i, F_i$  = fraction of men, women in field  $i$ .

<sup>7</sup> The number of women majoring in Education actually rose from 1966 to 1973 because of the increase in the college participation rate among women. But the number in Education then declined to 1998, despite the continued increase in the fraction of young women attending and graduating from college. In 1966 89,452 women majored in (non-science) Education. The peak of the series occurred in 1973 when 141,649 women majored in the field. But by 1998 just 80,669 did, lower than 32 years before in 1966.

Because women have increased their numbers as undergraduates relative to men throughout the period (see Figure 4), the ratio of female to male B&M majors increased at an even greater rate than did the fraction of women majoring in B&M. As Figure 3, Part B shows, from 1973 to 1986 the ratio of female to male B&M concentrators rose spectacularly, from 0.12 to 0.84.

Therefore, beginning in the early 1970s, female undergraduates radically changed their concentrations. They moved out of majors that led to traditionally-female occupations, which were compatible with family responsibilities. They moved into those that were career oriented and often led to advanced degrees. Moreover, their majors shifted to subjects that were more similar to those of their male counterparts.

Differences in the college majors of men and women still exist but are considerably less significant than they once were. The segregation index in 1998 was about 0.27 whereas it had been twice that level, 0.54, in 1966.

But some gender differences in college majors have emerged within the group of “career oriented” fields. For example, in 1998 74 percent of all psychology majors were women. Compared with the total number of undergraduates by sex, the average woman relative to a man in 1966 was 0.93 as likely to choose psychology.<sup>8</sup> That is, relative to undergraduate enrollments the field was reasonably gender neutral (where 1 would indicate perfect gender neutrality). But in 1998 the average female B.A., relative to a male, was 2.27 more likely to concentrate in psychology. The increase in female B.A.’s majoring in psychology has served to increase the index of similarity by sex. But it does not indicate that women are pursuing career-oriented

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<sup>8</sup> The statistic is given by:  $(F_i/F)$  in year  $t$ , where  $F_i$  = the fraction in major  $i$  who are female and  $F$  = the fraction of college graduates who are female, all in year  $t$ .



majors to a lesser extent or that their majors lead to fewer advanced and professional degrees than those of their male counterparts.<sup>9</sup>

### *Undergraduate Degrees*

The fraction of women graduating from four-year institutions of higher education increased greatly with cohorts born from 1941 to 1951 (see Figure 4). The increase coincided with that in men's college enrollment which was due, at least in part, to the Viet Nam war draft deferments. But unlike enrollments for men, those for women continued to rise after deferments ended. The enrollment rate for men actually decreased substantially for cohorts born from 1946 to the early 1950s. Thus the ratio of women to men graduating from college soared for cohorts born from 1946 to 1956, rising from 0.65 to more than 0.95.

The ratio of women to men college graduates began to increase precisely for the cohorts that underwent the change in college majors described above. The college B.A. series, therefore, reveals a break or a watershed with cohorts born in the 1940s, thus those graduating college from the late 1960s to the early 1970s.

Another period of increase in the ratio of women to men college graduates preceded the one just deemed a watershed. Figure 4 reveals that the ratio increased from a low point given by the 1924 cohort to that born in the 1940s. That increase, however, simply made up for the large decrease in the ratio of women to men for the cohorts of returning World War II GI's who took advantage of the GI Bill of Rights. That is, the first large jump in female to male college graduates in Figure 4 was mainly a "catch-up" phenomenon. The increase from the mid-1940s to the mid-1950s was due to something else. The sharp break in the time series with cohorts

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<sup>9</sup> At Harvard a large fraction of female pre-meds major in psychology (which has a "mind-brain behavior" sub-field), whereas a large fraction of male pre-meds concentrate in chemistry. Thus the difference in concentrations does not necessarily reflect a difference in career goals or professional preparation.

born after 1946 echoes the breaks found in the series on college majors and labor force expectations.

### *Professional Degrees*

The series for the fraction female among first-year students in professional degree programs also reveals obvious turning points in the early 1970s (see Figure 5, Part A) similar to those for college majors at graduation. That for medical school turned up around 1970, as did that for business school. The series for law school increased sharply a year or two earlier, whereas that for dentistry, long a male bastion, began to increase around 1970. These four series for the fraction female among beginning professional degree students are among the clearest and sharpest breaks in any of the series shown here.

Another revealing way of demonstrating the change in women's career decisions is to express the number of women entering professional degree programs in a year as a fraction of all female four-year college and university graduates in that year, as is done in Figure 5, Part B for law and medical students. The fraction, expressed in that manner, began to increase in about the same year as did the ratio of women to men among first-year professional students. But in the former case a plateau was reached around 1980. That is, all of the growth occurred from 1970 to 1980. In the latter case, that is when expressed as the fraction female in the profession, the series increased throughout the period considered.

### *Occupations*

The time series for the occupations of college graduate women, 30 to 34 years old, closely follow those for college majors (see Figure 5). The series for traditional female occupations (e.g., K-12<sup>th</sup> grade teachers, nurses, librarians, social workers) shows a sharp decrease from around 1970 and bottoms out around 1990. The series for the non-traditional

occupations for women (e.g., doctor, lawyer, college professor, manager) shows somewhat the opposite trend. The largest increase in the fraction of women in non-traditional occupations occurred in the 1980s. Although the change came a bit after the change in college majors the lag is reasonable because of the need to obtain advanced degrees to enter these professions.<sup>10</sup>

### *Labor Force Participation*

As more young women majored in subjects that were “career” oriented and as they entered professional and advanced degree programs, they also increased their labor force participation in their younger years. The participation rates among 25 to 29 year olds and 30 to 34 year olds (see Figure 6) show the greatest increase for women born in the 1940s.<sup>11</sup> Whereas participation rates in these age groups were around 0.50 for women born in the 1930s, they were 0.80 for those born in 1950. Therefore, the greatest change in labor force participation for the younger women was in the 1970s.

It will be recalled from the discussion of expectations that these cohorts were the first to correctly anticipate that their future labor force participation would be considerably higher than that of their mothers. Furthermore, their expectations changed when they were young enough to alter their educational investments. It is likely, therefore, that their actual labor force participation was high precisely because their educational investments made their employment more lucrative and desirable.

### *Demographic Changes*

A host of demographic changes occurred for precisely the same cohorts that altered their college majors and enrolled in professional and advanced degree programs. One of the most

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<sup>10</sup> Decennial census data are used here and thus changes between census years cannot be shown.

<sup>11</sup> Participation rates among older women (40 to 59 years) increased the most for the cohorts born in the 1930s. These generations include the mothers of the “baby boom” who increased their labor force participation rates after their kids were older.

important demographic shifts involves marriage.

The age at first marriage began to increase around the 1950 birth cohort of college graduate women (see Figure 8). By the cohort born in 1957 the median age at first marriage for college graduate women had increased by 2.5 years. Whereas the median was about 23 years for the 1949 birth cohort, and had been approximately that level for the previous two decades, by the 1957 birth cohort it was 25.5 years (see also Goldin and Katz 2002).

The median age at first marriage continued to increase until the 1965 birth cohort. But of the 3.5 year increase in marriage age for the full 15 years, 2.5 of them occurred in the first 7 years. It should be noted that the age at first marriage also increased for other education groups but that the increase was somewhat smaller than it was for college women.

#### *Why Caused the Transformation in the Lives and Careers of College Graduate Women?*

Among the more remarkable findings revealed by the many time series just presented is the speed with which the various transformations took place: from jobs to careers, from “consumption” majors to “investment” majors, and from early to later marriages, to mention a few. The synchronicity among the various series is also striking, although not surprising given the relationships among the indicators considered.

To summarize the various findings, the labor market expectations of young women were altered beginning in the late 1960s and by the late 1970s the transformation was complete. Their undergraduate fields of concentration, measured at the time of college graduation, began to change around 1972 and the conversion was mostly finished by the mid-1980s. Similarly, enrollment in professional schools shifted markedly upward around 1970 with the largest relative gains occurring by 1980. Changes in occupations and in labor force participation mirror these

shifts in college majors and enrollment in professional schools. The mean age at first marriage began its upward climb with cohorts born in the early 1950s and the shift to later marriages was complete with cohorts born in the mid-1960s. Of the full 3.5 year increase, 2.5 of them were accomplished by the birth cohorts of the early 1950s.

The only reason that we are able, today, to speak about a significant group of women who are “leaders” and who are “at the top” (or who should be “at the top”) is because of the educational changes that took place beginning in the late 1960s to early 1970s. When young women planned primarily for lives as wives and mothers, their college majors reflected their expectations. As their expectations changed, their investments in higher education and advanced degree programs grew closer to those of their male counterparts. Women began their climb from the “valley to the summit.”

What can explain why change occurred? The first important clue is that the process described was anything but continuous. Rather, it was episodic. One must, therefore, seek factors that changed discontinuously, and several possibilities can be offered. But before discussing them, it should be noted that any set of social changes as wide-ranging as those just mentioned cannot be explained by a single factor alone.

Among the more likely contenders are: (1) government mandates, such as anti-discrimination policy in hiring and promotions that followed the passage of Title VII and those that concerned institutions of higher education after the implementation of Title IX, (2) social change spurred by the resurgence of feminism that came on the heels of the Civil Rights movement in the 1960s and was reinforced by the democratization crusades of the anti-war movement, and (3) the contraceptive innovation, known as the Pill, which gave young women the ability to delay marriage and child-bearing and plan for a career. Other possible causes

include abortion reform which was decided in some states before *Roe v. Wade*, the baby boom which may have forced women to postpone marriage, and the declining economy of the mid-1970s which may have produced the same effect.

I will say a bit more the Pill, (3), not because I think that government mandates, (1), and social change, (2), were not contributory factors. The reason concerns the weight of the evidence. Factor (2) has been hard to prove quantitatively since it is difficult or impossible to find exogenous variation in a factor that is related to the resurgence of feminism yet not to college majors, college graduation, and enrollment in professional programs. Various research papers on anti-discrimination laws, factor (1), have not uncovered a meaningful effect on women's employment and earnings, although the literature points to a strong impact with regard to race.<sup>12</sup> The Pill has proven amenable to empirical exploration and appears to have made an important contribution in changing women's careers and the age at first marriage.

How did the Pill affect the expectations of young women, their desire to pursue college, male-dominated majors, and professional degrees? The answer is that the Pill lowered the costs to young, unmarried women of pursuing careers, particularly those involving substantial, up-front investments of time. The Pill fostered women's careers in two ways. A young college woman in the mid-1960s who was considering whether or not to enter a program involving a considerable investment in her time had to factor into this decision its impact on her personal life (e.g., social life, marriage chances after the career investment period). Sex was *highly risky* in a world without a highly effective, female-controlled, and easy to use contraceptive such as the

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<sup>12</sup> See, for example, Leonard (1989, 1990). It is curious that anti-discrimination laws passed in several other countries (e.g., UK, Australia) have resulted in greatly improved earnings for women relative to men but *not* greatly increased educational investments and advances in the professions.

Pill.<sup>13</sup> A pregnancy could derail a career. The Pill had a *direct effect* by reducing the risk, and thus the cost, of having sex.

The Pill also had an *indirect effect* because it led to an increase in the age at first marriage and thereby produced a “social multiplier” effect. The Pill virtually eliminated one potent reason for early marriage and for many of the social trappings (e.g., going steady, engagements) that led to early marriage. With more men and women delaying marriage for many years after college graduation, the decision of any one woman to delay marriage to pursue a career meant that she would reenter a marriage market that would not be as depleted. Thus the Pill *could* have influenced women’s careers, college majors, professional degrees, and the age at marriage.

What are the facts? The FDA approved the Pill (for contraceptive use) in 1960. Married women immediately began to use the Pill and within about five years, that is by 1965, their contemporaneous use peaked. But young, single women did not gain full access to the Pill until the late 1960s, early 1970s. The reason for the delay is that most unmarried women were minors and required parental consent to obtain non-life threatening medical care. Both case law and legislation changed that. Age of majority laws and mature minor cases at the state level lowered the age at which a woman could legally receive family planning services by a doctor without her parent’s consent. These changes were driven largely by agitation during our involvement in the Viet Nam war for a lowering of the voting age (“old enough to die, old enough to vote”) and they enable the identification of the impact of the Pill on marriage and career.

To establish a *causal* relationship between the Pill and the age at first marriage and between the Pill and women’s careers, Lawrence F. Katz and I (Goldin and Katz 2002) use variation at the state level in laws and judicial rulings that enabled Pill access (age of majority

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<sup>13</sup> Other contraceptive methods were reasonably reliable but they were not highly reliable and female controlled. See Goldin and Katz (2002) for a discussion of the actual effectiveness of different forms of contraception.

laws and mature minor decisions). We find that laws enabling young women to obtain the Pill *were* strongly and positively related to the age at first marriage and strongly and positively related to the fraction of women pursuing professional careers. Since the laws were related to Pill use, the evidence points to the potential of the Pill in advancing women's careers. The availability of the Pill to young, single women lowered their costs of investing in careers involving long-term, up-front investments.

The Pill was an important factor, but it was only a contributory one and functioned within a changing social and economic environment for young women. Labor force participation rates had been rising for some time. But until the late 1960s young women had not built the increases into their educational investment calculus. The appearance of the Pill may have enabled young women to view investments in up-front, time-intensive careers as less risky. The resurgence of feminism may have awakened young women to the social changes around them and must also have contributed to their uptake rate of the Pill, even though it apparently did not affect the laws and judicial decisions that inadvertently enabled them to obtain it. Anti-discrimination laws affecting hiring, promotion, and education may also have contributed, on the margin, to protect women workers and to encourage schools to admit them.

I mentioned several other factors, but they were not as important as those just discussed. Abortion reform could have acted in concert with the Pill. But in work that Katz and I have done (Goldin and Katz 2002), abortion reform runs a distant second to the Pill for college graduate women in affecting social and demographic change. Similarly, because women tend to marry men who are somewhat older than they are, the baby boom created a sex ratio bulge. But this



factor, as well, does not explain much of the increase in the age at first marriage for the cohorts analyzed here nor can it explain the enormous increase in professional degrees for women.<sup>14</sup>

Whatever the precise reasons for change, a great divide in college-graduate women's lives and employment occurred about 35 years ago. Previously, women who reached the peaks often made solo climbs. They became symbols and tokens demonstrating that women, contrary to conventional wisdom, *could* achieve greatness. But real change demanded a march by the masses from the "valley to the summit." That march began with cohorts born in the late 1940s.

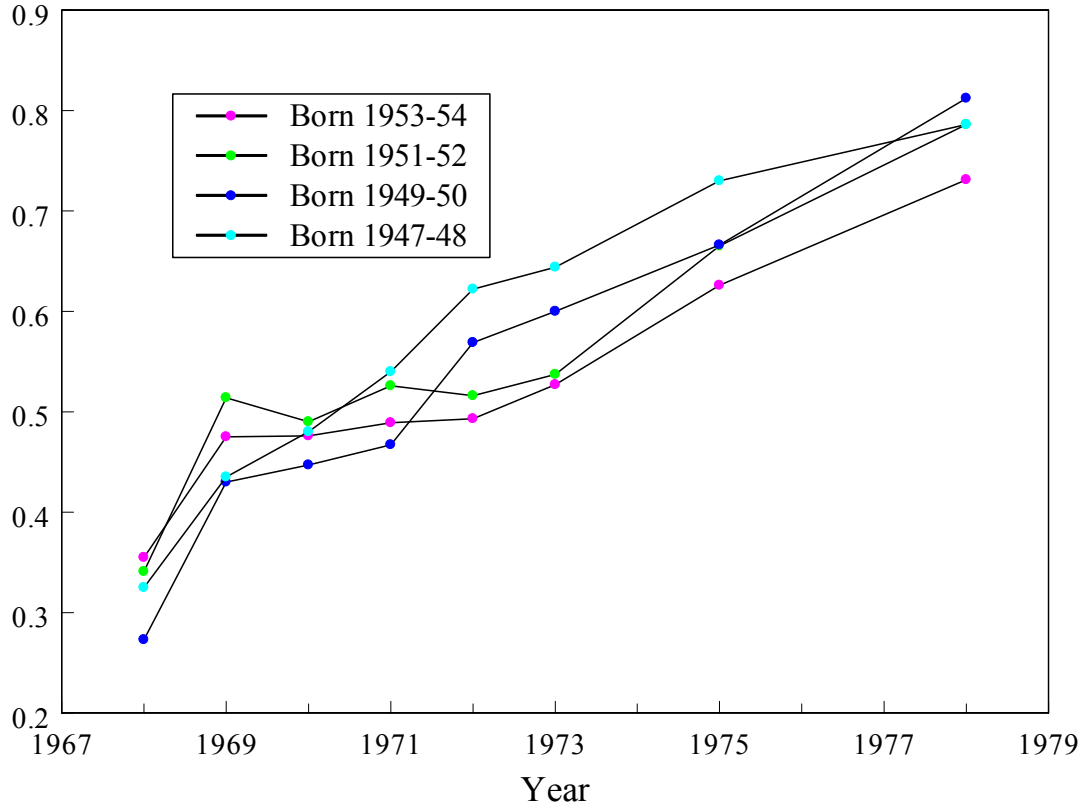
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<sup>14</sup> See Goldin and Katz (2002) for further discussion of the sex ratio explanation for the rise in the age at first marriage.

Figure 1: Fraction Expecting Paid Employment at Age 35:  
Females 14 to 21 Years in 1968 and 1979

Part A:

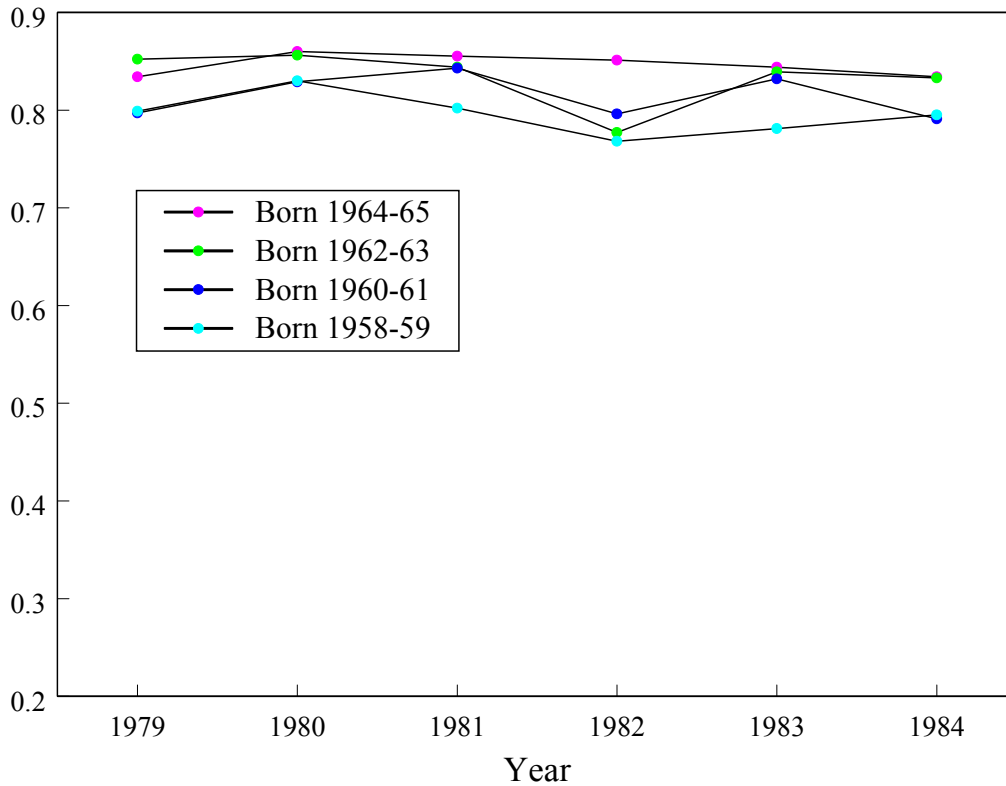
Expectations of Paid Employment at Age 35 (White Women, NLS 1968)



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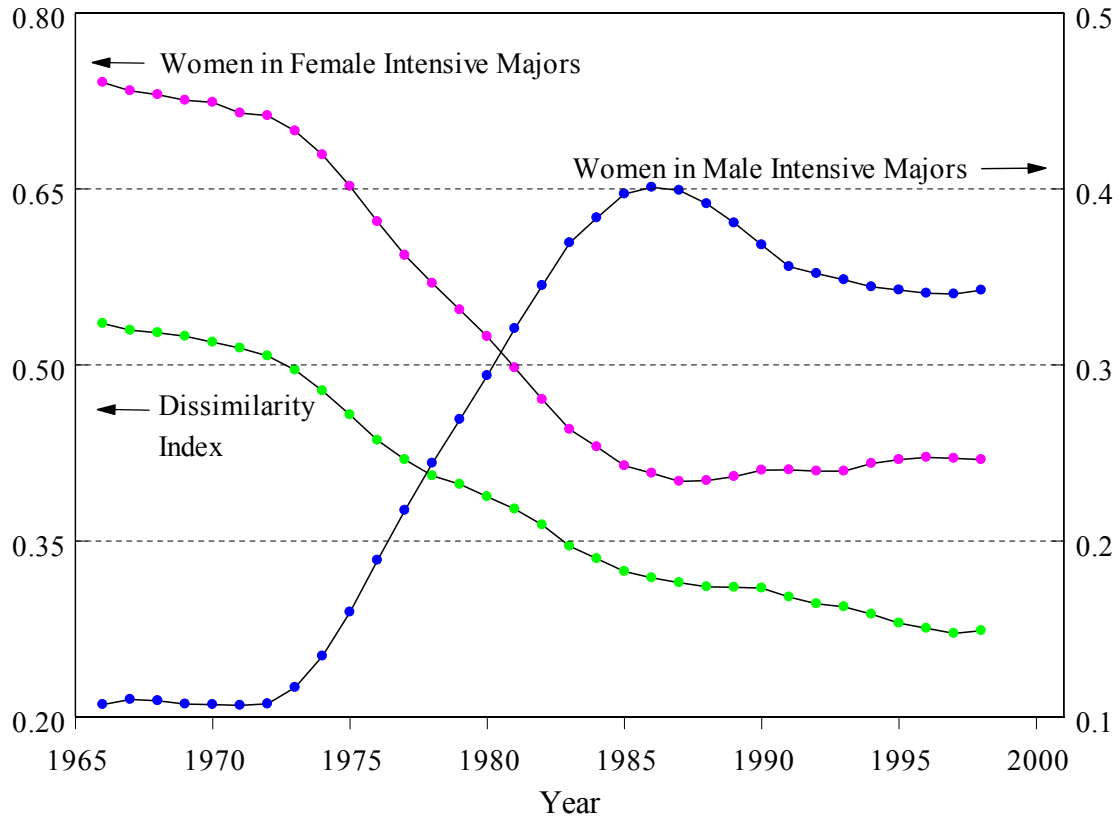
Part B:

Expectations of Paid Employment at Age 35 (White Women, NLSY 1979)



*Sources and Notes:* See Data Appendix. Because these graphs are in color and the diagrams may be printed in black and white, it should be noted that the cohorts are in the reverse order as in the legend in 1972 for Part A (meaning from top to bottom) and in precise order as in the legend in 1983 for Part B. The lines for Part B are nearly identical. For Part A they differ, generally, such that the older cohorts have higher expectations than the younger cohorts although that is not always the case.

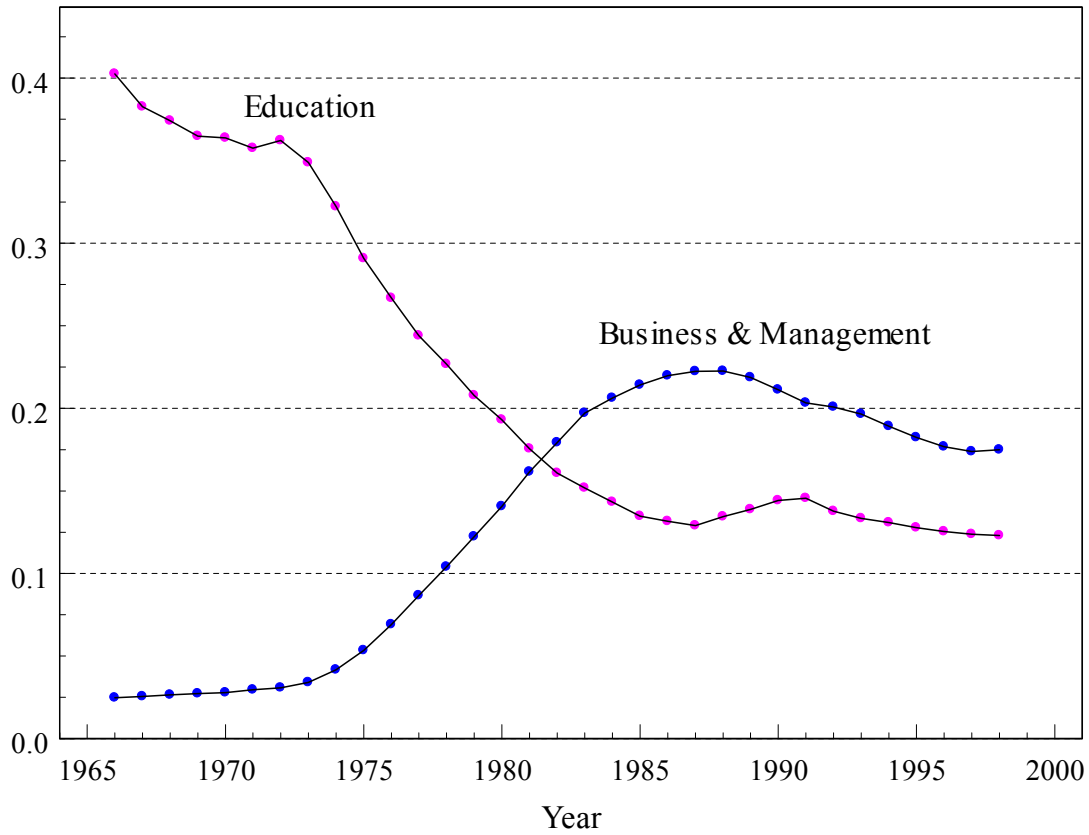
Figure 2: Fraction of Women Undergraduates in Female-Intensive Majors, Male-Intensive Majors, and an Index of Sex Dissimilarity among All Majors



Sources and Notes: See Data Appendix

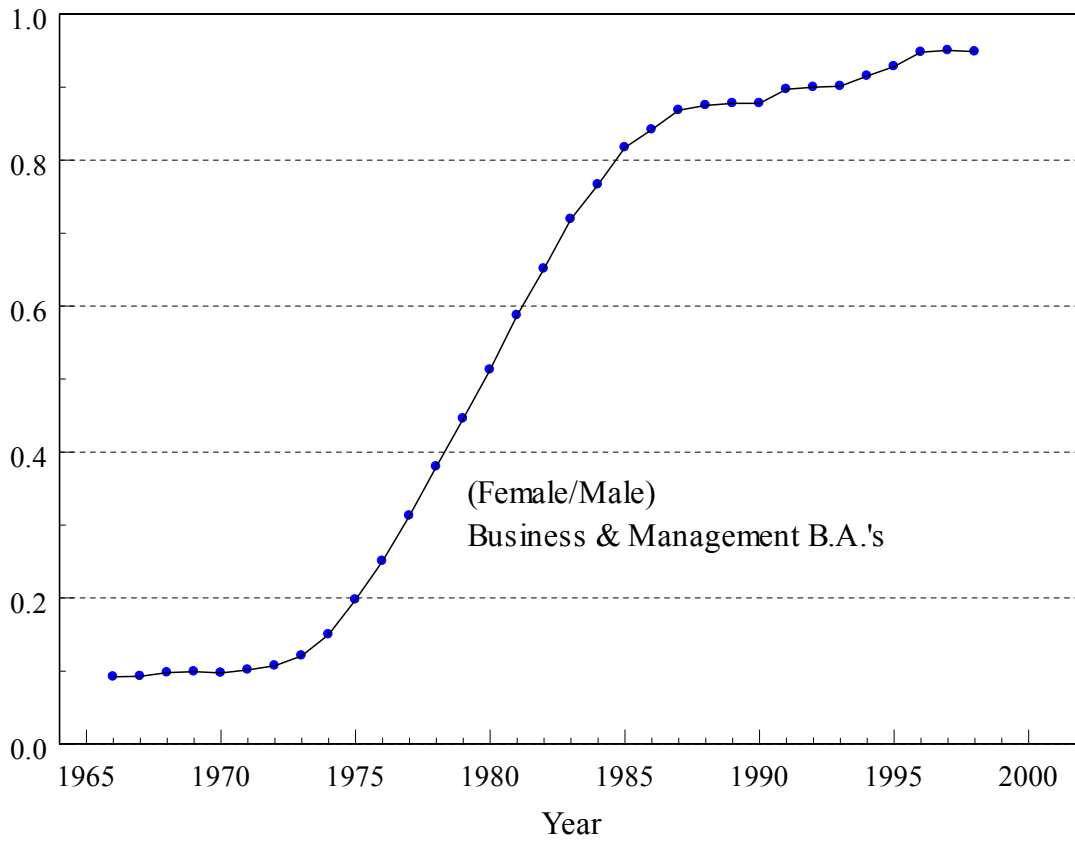
Figure 3: Fraction of All Female B.A.'s in Selected Majors and the Ratio of Women to Men B.A.'s in Business and Management Fields

Part A: Fraction of All Female B.A.'s in Selected Majors



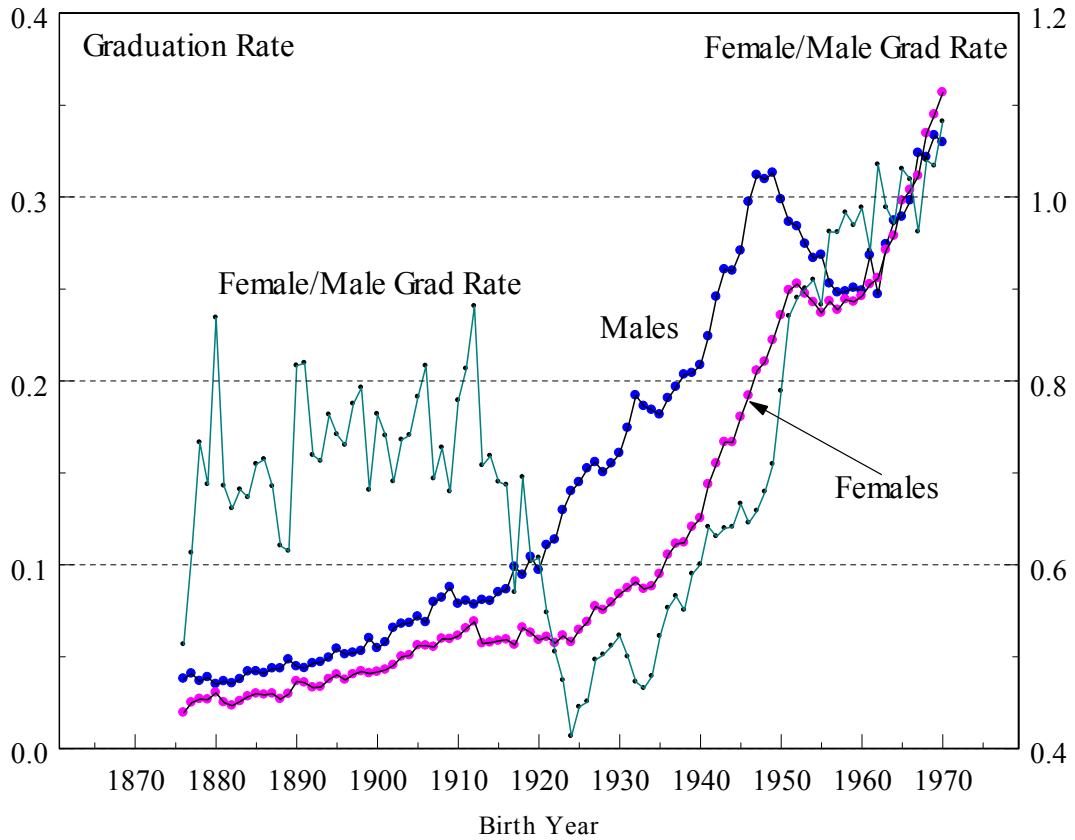
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Part B: Ratio of Women to Men B.A.'s in Business and Management Fields



Sources and Notes: See Data Appendix

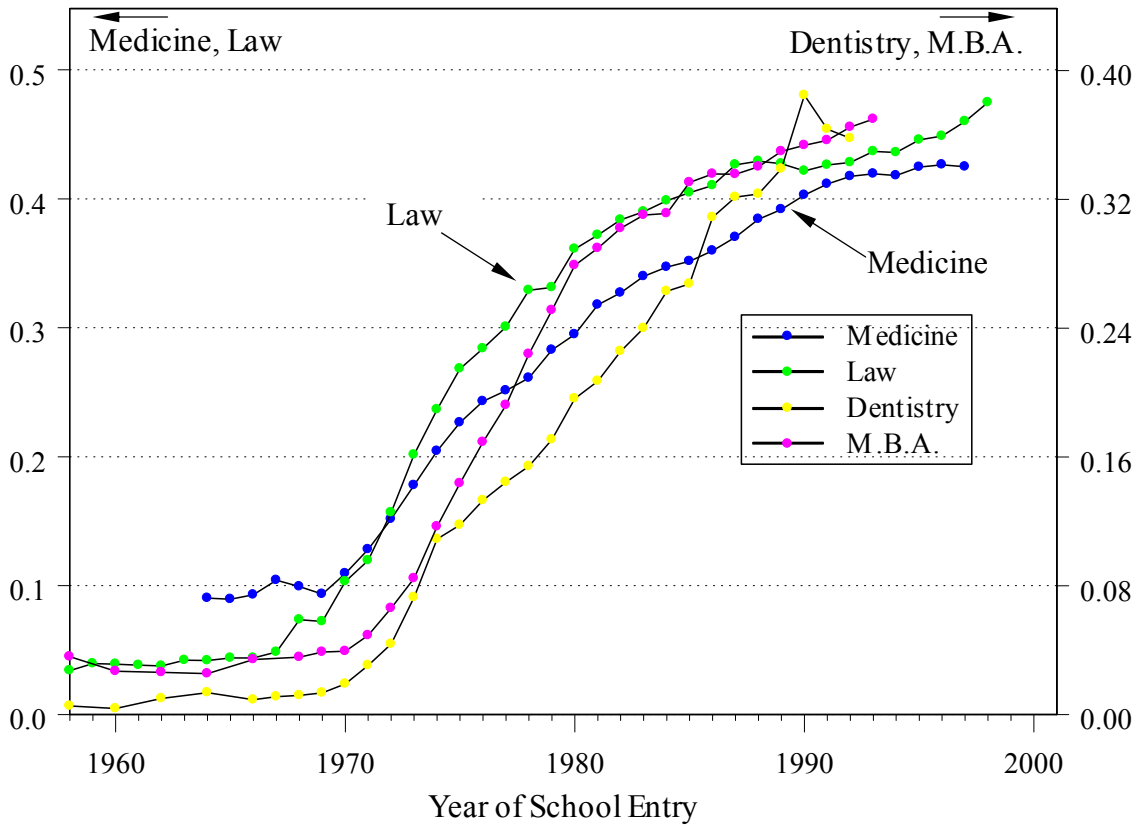
Figure 4: College Graduation Rates for Men and Women (by age 35 years) and the Ratio of Women to Men among College Graduates by Birth Year



Sources and Notes: See Data Appendix

Figure 5: Female First-Year Students in Selected Professional Programs as a Fraction of All Students and as a Fraction of All Female B.A.'s

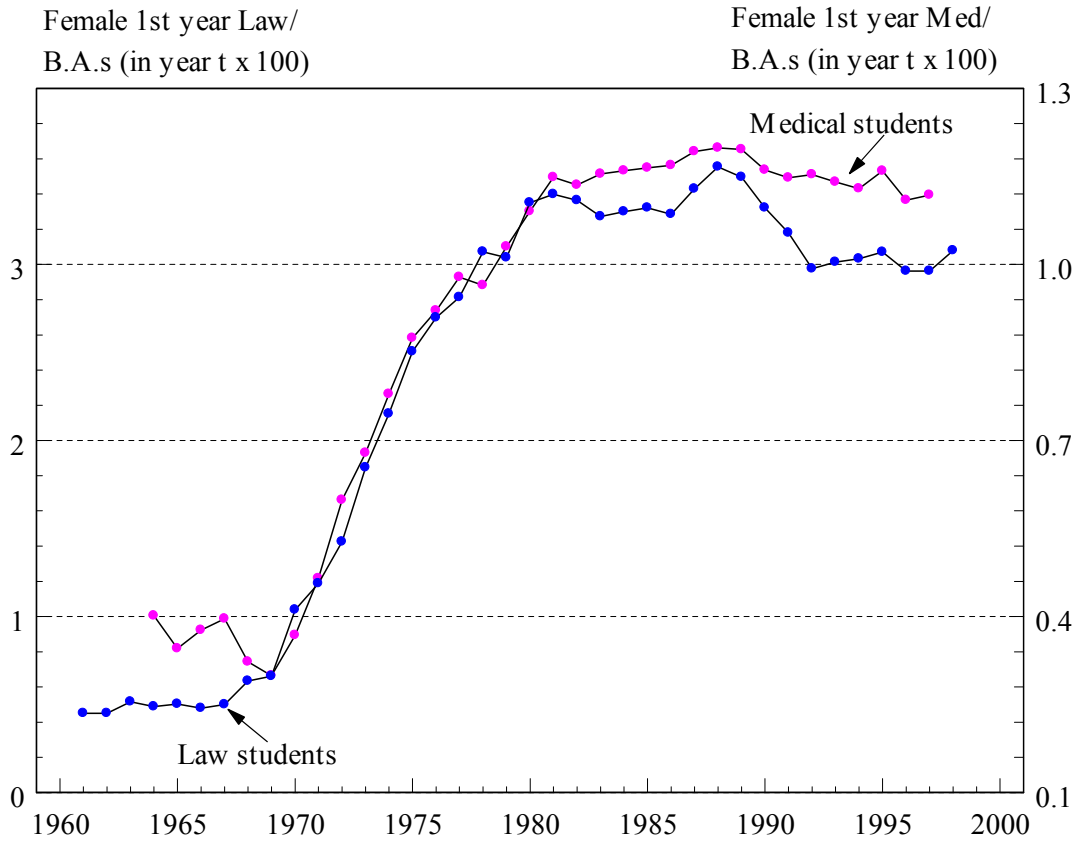
Part A: Fraction Female among First-Year Students in Selected Professional Programs



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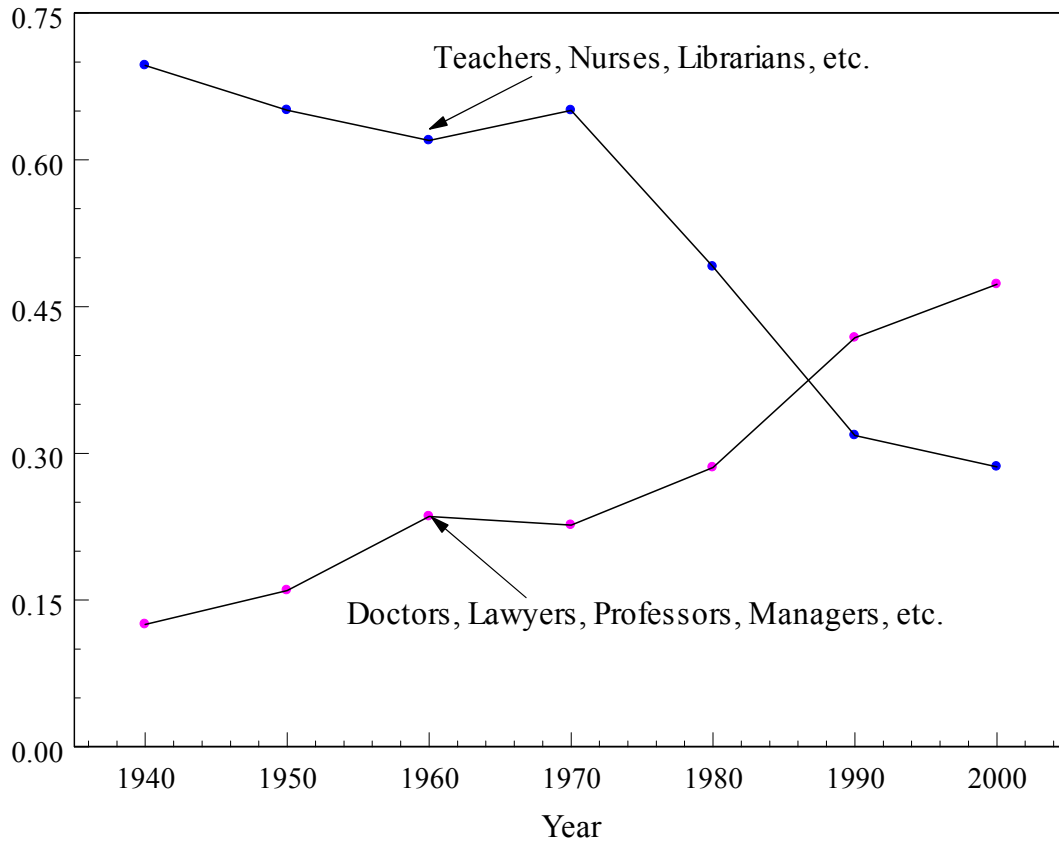


Part B: Percentage First-Year Professional Students among Female B.A.'s



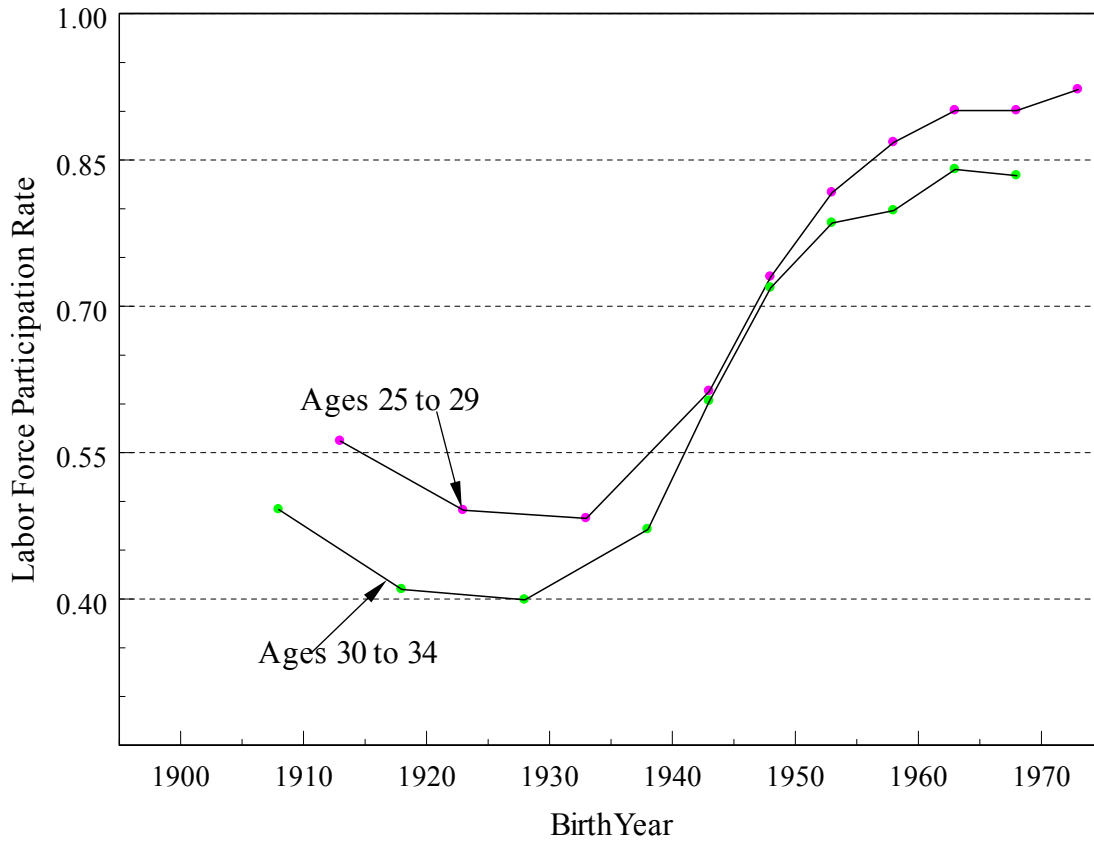
Sources and Notes: See Data Appendix

Figure 6: Employment Shares of Traditional (Teachers, Nurses, Librarians, etc.) and Non-traditional (Doctors, Lawyers, Professors, Managers, etc.) Occupations, College Graduate Women 30 to 34 Years Old



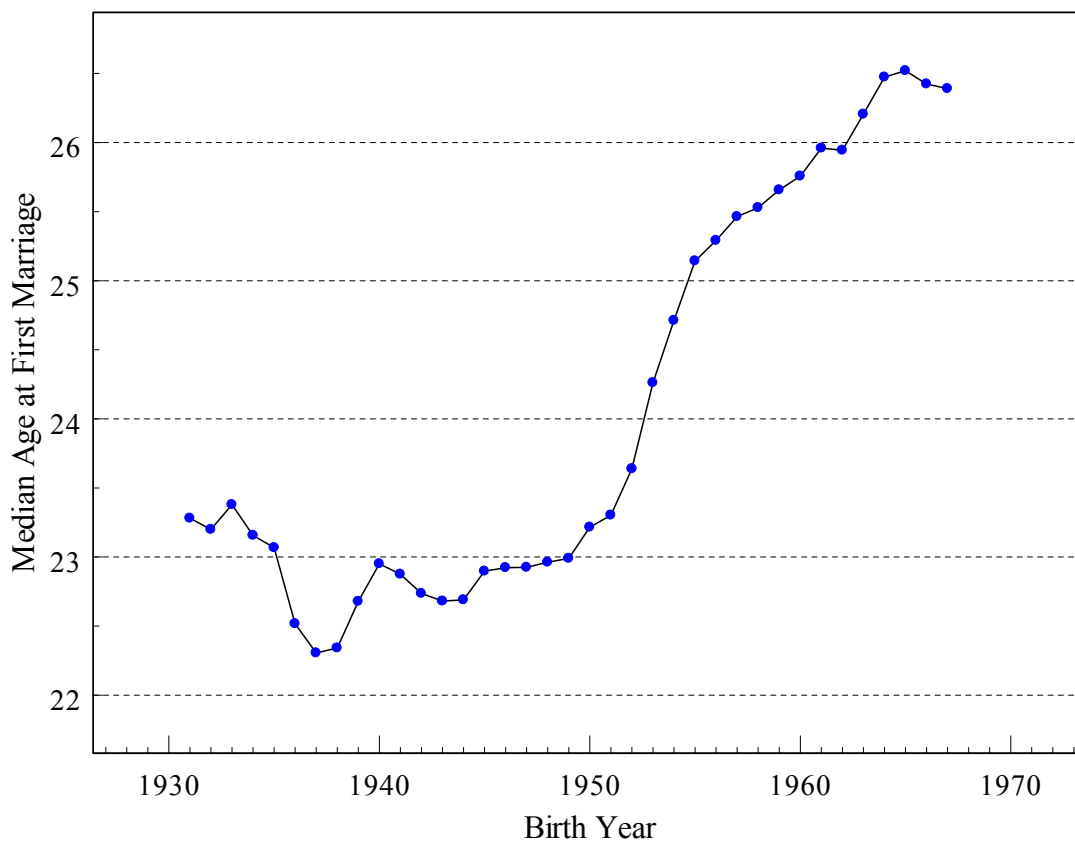
Sources and Notes: See Data Appendix

Figure 7: Labor Force Participation Rates of College Graduate Women by Age Group



Sources and Notes: See Data Appendix

Figure 8: Median Age at First Marriage for (White) College Graduate Women Born 1931 to 1967



Sources and Notes: See Data Appendix

## Data Appendix

Figure 1: Fraction Expecting Paid Employment at Age 35: Females 14 to 21 Years in 1968 and 1979

*Sources:* National Longitudinal Survey of Young Women, 1968 and National Longitudinal Survey of Youth, 1979.

*Notes:* The Part B sample is a balanced panel (“non-attriters”) of white, non-Hispanic women. The data given include as “will be working at age 35” those individuals who said they would be married and raising a family at age 35 but, when further questioned, said they wanted to be working. Excluding this group as “working at age 35,” reduces the average answer to around 0.65 to 0.70 rather than 0.80 to 0.85.

Figure 2: Fraction of Women Undergraduates in Female-Intensive Majors, Male-Intensive Majors, and an Index of Sex Dissimilarity among All Majors

*Source:* Department of Education, National Center for Education Statistics (NCES), IPEDS (Integrated Post-Secondary Education Data System) from the NCES web-site using the NSF CASPAR system.

*Notes:* The IPEDS lists from 47 to 53 fields of concentration, depending on the date, for a four-year degree (e.g., B.A., B.S.). A standard index of dissimilarity (I) is used, where  $M_i, F_i$  = fraction of men, women in field  $i$ :  $I = \sum_i |M_i - F_i|/2$ . The computations of the fraction of women in female-intensive majors and the fraction of women in male-intensive majors use 1970 weights. The definition employed for “female-intensive” and “male-intensive” is about 0.5 standard deviations above the mean in 1970. A “female intensive” major = 1 if the fraction female in 1970  $> 0.552$  and a “male intensive” major = 1 if the fraction male in 1970  $> 0.701$ .) If no data existed for a major in 1970, data from the first available year were used. In most cases these majors were too small to matter. Out of the 53 majors given, 11 were female-intensive, 31 were male-intensive, and 11 were neither. The female-intensive majors are: anthropology, arts & music, non-science education, English & literature, foreign languages, health technologies, linguistics, other life sciences, social services professions, sociology, and vocational studies & home economics.

Figure 3: Fraction of All Female B.A.’s in Selected Majors and the Ratio of Women to Men B.A.’s in Business and Management Fields

*Source:* Department of Education, National Center for Education Statistics (NCES), IPEDS (Integrated Post-Secondary Education Data System) from the NCES web-site using their webCASPAR data-base system.

Figure 4: College Graduation Rates for Men and Women (by age 35 years) and the Ratio of Women to Men among College Graduates by Birth Year

*Sources:* ICPSR, 1940 to 1990 Integrated Public Use Microsamples (IPUMS) of the U.S. population censuses; 1999 and 2000 Current Population Survey (CPS) Merged Outgoing Rotation Group (MORG) samples.

*Notes:* The figure plots the fraction of college graduates in each birth cohort, by sex, adjusted to 35 years of age for the U.S. born. College graduates are those with 16 or more completed years of schooling for the 1940 to 1980 samples and those with a bachelor’s degree or higher in the

1990 to 2000 samples. The data for the birth cohorts from 1966 to 1970 are extrapolations from an age-adjustment regression. See De Long, Goldin, and Katz (2002) for details.

Figure 5: Female First Year Students as a Fraction of All Students and as a Fraction of All Female B.A.'s

*Sources and Notes:* Goldin and Katz (2002) figure 4.

Figure 6: Employment Shares of Traditional (Teachers, Nurses, Librarians, etc.) and Non-traditional (Doctors, Lawyers, Professors, Managers, etc.) Occupations, College Graduate Women 30 to 34 Years Old

*Sources:* ICPSR, 1940 to 1990 Integrated Public Use Microsamples (IPUMS) of the U.S. population censuses; 1999 and 2000 Current Population Survey (CPS) Merged Outgoing Rotation Group (MORG) samples.

*Notes:* Sample includes all marital statuses, all races, civilian employed (no armed forces). The occupational coding mainly uses the 1950 scheme. "Traditional Occupations" include teachers (K through 12<sup>th</sup> grades), secretarial (including stenographers and typists), nurses, librarians, social and religious welfare workers. Inconsistencies in the coding of miscellaneous K through 12<sup>th</sup> grade teachers, who were grouped with music, art, and other teachers, were rectified. "Non-traditional occupations" include all professional and managerial occupations except nurses, teachers, librarians, and social and religious welfare occupations. "High Powered" professionals include lawyers, doctors, health diagnosing professionals (e.g., chiropractors, dentists, optometrists, and veterinarians), college professors, psychologists, and architects.

Figure 7: Labor Force Participation Rates of College Graduate Women by Age Group

*Sources:* ICPSR, 1940 to 1960 Integrated Public Use Microsamples (IPUMS) of the U.S. population censuses; 1970 to 2000 Current Population Survey (CPS) Merged Outgoing Rotation Group (MORG) samples.

*Notes:* Includes white, non-Hispanic college graduate women except for 1970 when "white" includes Hispanics. College graduate is defined as 16 years or more of schooling, except after 1990 when it is defined as a bachelor's degree or higher.

Figure 8: Median Age at First Marriage for (White) College Graduate Women Born 1931 to 1967

*Sources:* See Goldin and Katz (2002).

*Notes:* The fraction married by age X was first computed and a linear interpolation between years was used to estimate the median.

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