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GENDER DIFFERENCES IN CAREERS, EDUCATION, AND GAMES†

Transitions: Career and Family Life Cycles of the Educational Elite

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Among life's most vital transitions are those concerning family and career. We decide when and whom to marry, how many children to have, whether to further our education, and which occupations and jobs to pursue.

Fundamental aspects of these transitions began to change around the early 1970s for the college educated generally, and for women in particular. The median age at first marriage among college graduate women, which had been stable at about 22.5 years old from the 1950s to the early 1970s (for birth cohorts from the 1930s to about 1950), increased by 2.5 years between 1972 and 1979 (for birth cohorts from about 1950 to 1955). The fraction of women not having a first birth by around 40 years old increased from 20 percent for those graduating in the early 1960s, to 28 percent for those graduating in the 1970s. College graduate women greatly increased their education in professional schools; the fraction female among first-year law and medical school students, for example, was 10 percent in 1970 but rose to 40 percent by 1990.[1]

A considerable amount is known regarding family and career transitions among cohorts of college graduates during much of the past century. But far less is known about whether these transitions have been similar for those who graduated from the more selective institutions of higher education. Focusing on more selective institutions is also called for by many recent issues. Among them is the discussion of "opting out" in the popular literature, which has concerned the possibility that female graduates of highly selective colleges squander their education. In addition, we do not know if the narrowing of the gender gap in earnings has also occurred among those in the upper tail of the educational distribution.

We ask whether the general trends of the past three decades in family and career transitions can be observed, as well, among those graduating from one of the most elite institutions of higher education. We also explore the trade-offs between family and career, particularly for college graduate women.

I. Harvard and Beyond

The data we use are from a recently compiled dataset, Harvard and Beyond (H&B), modeled after the Mellon Foundation's College and Beyond (C&B) data. In assembling H&B, we included all members of 12 Harvard/Radcliffe classes (1969 to 1972, 1979 to 1982, 1989 to 1992), defined by their entry or graduation years, and all the women in one class (1973). The classes cluster in three cohorts, termed here C1970, C1980, and C1990. The oldest (C1970) entered or graduated when Harvard and Radcliffe had separate admissions, dormitories were just becoming coeducational, and social unrest among undergraduates nationwide was widespread. The middle cohort (C1980) is similar in age to the largest C&B cohort and entered

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[1] Marriage age and fraction female among first-year professional students are from Goldin and Katz (2002). Fractions not having a first birth among all female college graduates are from the Current Population Report Fertility Supplements and refer to the average for the 35- to 44-year-old group.

college just as the nation's college graduates were 50 percent female. The youngest cohort (C1990) left Harvard about 15 years ago, affording them enough time to engage in many of the transitions we are studying. Women were just 21 percent of Harvard's undergraduates in C1970 (which is why we also included the women of 1973), 34 percent in C1980, and 41 percent in C1990.

We collected information on these individuals from university administrative records, a survey instrument, and several other sources. The information we have is anchored at various moments in the lives of these cohorts: just after they left college, 15 years out, and contemporaneously. The survey also asked retrospective questions on marriage, children, childcare, employment, occupations, and nonemployment spells, among other variables.

About 21,000 individuals were members of the selected classes, the vast majority of whom graduated from Harvard, and 20,000 of these individuals were matched to administrative records. We obtained regular or e-mail addresses for 16,426 of them and we received Web-based or hard-copy survey responses in the fall of 2006 from almost 7,000 individuals, which yielded 6,554 usable responses for an overall response rate of 40 percent.[2] The mean SAT scores (Table 1) show the obvious fact that this is an exceptional group of individuals.

II. Family

Similar to other college graduates in the years around 1970, Harvard graduates married relatively early: 36 percent of the women, and 34 percent of the men, married within two years of their class graduation. The median age at first marriage was 27 for both. But by the class of 1990, just 9 percent of the women and 11 percent of the men married within two years of graduation, and the median age at first marriage increased to 30 years old for both. The C1970 group also divorced at much higher rates than the other two cohorts: 23 percent for the C1970 women versus 13 percent for C1990. (Summary statistics for the H&B dataset are given in Table 1.)

Even though the transition to marriage changed *pari passu* with other college graduates, the transition to having children in the H&B sample differed in important ways from national data. Even for the oldest cohort, the members of which married at the youngest ages, first births for women were significantly delayed. In fact, various measures of fertility are practically identical across the three cohorts, although the total number of births increased from 1.17 to 1.35 and then down slightly to 1.31. The median age at first birth, conditional on having a birth, was 31 to 32 years old, and the fraction of women having no births 15 years after their class graduated was hardly unchanged (37 percent for C1970, 39 percent for C1980, and 38 percent for C1990). Among those having at least one child, the three cohorts are fairly similar in terms of total family size after 15 years. In consequence, birth spacing among those having more than one child was closest for the youngest cohort, which married at the oldest ages.

III. Career

Among all college graduates in the United States, women's entry into various professions soared around 1970. But among the women in the H&B cohorts, the fraction continuing to professional and graduate school was already high even for the oldest cohort (C1970). In fact, those graduating from medical school within 15 years of obtaining a BA decreased slightly across the three cohorts, from 18 to 17 percent. Those with a doctorate, again 15 years out, declined from 20 to 18.5 percent.[3] Counterbalancing these trends is that law degrees increased from 17 to 20 percent and MBAs greatly increased from 5 to 14 percent (all within 15 years of college graduation).

It should not be surprising that the H&B figures for professional degrees are far higher than

[2] The response rate was 45.7 percent for women and 37.4 percent for men, similar across cohorts. Survey respondents had a modestly higher mean college grade point average than nonrespondents.

[3] Women's doctorate fields for those completing PhDs by 15 years out underwent modest changes across the two decades. Among the largest changes are the relative decrease in the social sciences (30 to 18 percent from C1970 to C1990) and the relative increase in the physical sciences (5 to 11 percent). Few received education doctorates in any of the cohorts, and the relative decline in the humanities was not large (23 to 19 percent).

TABLE 1—SUMMARY STATISTICS FOR HARVARD AND BEYOND DATASET

Variables measured at 15 years out, unless otherwise noted [a]	C1970 Female	C1980 Female	C1990 Female
Mean college SAT verbal	718	667	673
Mean college SAT math	700	670	694
Family			
Percent married, within 2 years of BA	35.7	16.8	9.4
Percent ever married	87.5	82.2	82.0
Percent ever divorced	22.9	13.9	12.9
Percent with a first birth	62.5	60.8	62.0
Mean number of births	1.17	1.35	1.31
Career			
Percent completing medical school	18.2	15.0	16.6
Percent completing law school	17.3	19.7	20.4
Percent completing business school	5.4	14.7	14.0
Percent completing doctorate	20.1	14.0	18.5
Percent with at least one professional degree or doctorate [b]	58.0	60.0	65.5
Percent employed full time, full year	62.0	63.5	60.3
Percent with no employment	9.0	10.5	10.1
Mean number of months nonemployed	16.4	14.2	14.3
Number of observations	672	858	1,013
	Male	Male	Male
Mean SAT verbal	678	659	671
Mean SAT math	702	703	723
Family			
Percent married, within 2 years of BA	34.2	13.3	10.5
Percent ever married	88.2	86.5	86.2
Percent ever divorced	18.2	9.2	9.0
Percent with a first birth	65.7	66.0	64.9
Mean number of births	1.28	1.42	1.41
Career			
Percent completing medical school	18.5	18.0	14.3
Percent completing law school	24.8	24.1	20.4
Percent completing business school	10.9	20.0	19.4
Percent completing doctorate	18.1	17.3	18.2
Percent with at least one professional degree or doctorate [b]	66.1	70.8	65.4
Percent employed full time, full year	93.0	94.1	89.9
Percent with no employment	1.1	0.9	1.0
Mean number of months nonemployed	4.2	3.5	5.3
Number of observations	1,453	1,363	1,195

Notes: C1970 = Harvard undergraduates who graduated, or whose incoming class graduated, from 1969 to 1972, and 1973 for women; C1980 = 1979 to 1982; C1990 = 1989 to 1992.

[a] "15 years out" = 15 years after the individual's original college class graduated.

[b] Professional degrees include those in law, business, and medicine.

Source: Harvard and Beyond dataset (see text). Further information about the data collection can be found at: http://kuznets.fas.harvard.edu/~goldin/harvardandbeyond.html.

those for the nation as a whole. Just 1 percent of all female college graduates entered law school in 1970 and only 0.4 percent entered medical school. Also not unexpected is that the fractions pursuing professional degrees in the H&B for 1990 remain far higher than national averages, which were 3.3 percent for law school and 1.2 percent for medical school. What is surprising is that 58 percent of the oldest female cohort in the H&B obtained one of the four degrees—MD (also DVM, DDS, etc.), JD, PhD, and MBA—and that the H&B aggregate figures for professional degrees increased by just 7.5 percentage points over two decades.

For the men across these three cohorts, medical school graduates decreased from 18.5 to 14

percent, law school graduates from 25 to 20 percent, and doctorates remained constant at 18 percent. A marked shift to the MBA, from 11 to 19 percent, is apparent. Receipt of any one of these degrees varied somewhat more than for women, increasing from 66 percent to 71 percent from the first to the second cohorts (C1970 to C1980) and then decreasing substantially to 65 percent for C1990, all anchored at 15 years out.

The main findings with regard to post-BA education are that even around 1970 female graduates in the H&B were earning professional degrees in fields such as medicine and law at levels similar to those found 20 years later for graduates of the same institution. The similarity, moreover, is not due to late entry to professional and graduate schools. Rather, it is related to the fact that the oldest cohort delayed having children, even though it married early, and many had no children. The women of C1970 had one foot in the past and one firmly planted in the future; they conformed in some respects yet led the way in many others. Finally, the changes for both the men and the women concern less the fraction obtaining at least one of the post-BA advanced degrees and more which of the degrees they obtained.

The most striking changes with regard to occupations concern the ascendancy of finance and management. Among the oldest cohort (C1970), 22 percent of the men were in occupations in these fields 15 years after their class graduated. But for the youngest cohort (C1990), 38 percent were. The change, moreover, was driven primarily by positions in finance, which increased from 5 to 15 percent of the total.[4] The relative growth in business occupations for men came largely at the expense of those in law and medicine, which declined from 39 to 30 percent as a combined total. These changes, therefore, are mirrored in the increase in MBA degrees relative to those in law and medicine. The overall changes are also apparent in women's occupations: 12 percent of the women in C1970 were in management and finance occupations, but 23 percent were by C1990.

[4] See Thomas Philippon and Ariell Reshef (2007) for an analysis of national trends in the growth of employment, relative earnings, and relative education intensity in the financial sector since 1970.

IV. Earnings

The members of the H&B cohorts earn exceptionally large amounts, in general, and their distribution of earnings has a long right tail, particularly for the men.[5] Median earnings in 2005 were $90K for women but $162.5K for men. Among full-time full-year workers, median earnings were $112.5K for women and $187.5K for men.[6] Almost 8 percent of the men and 2 percent of the women had labor market earnings in excess of $1 million. These are not average workers, not even typical college graduates, and the gender gap in earnings is extremely large despite the fact that women in the sample earned considerable amounts.

The gender gap in earnings is a whopping 0.852 log points (see Table 2), including only graduation class dummies in the regression. The gap is reduced to 0.517 with controls for weeks and hours worked in 2005. A further decline, to 0.396, results after adding college concentration (major) and graduate degrees, among other educational factors. Differences in college majors by sex (e.g., about 12 percent of the men, but 4 percent of the women, were economics majors) account for about half of the decreased residual, and the composition of graduate degrees (e.g., men earned more MBAs) accounts for most of the other half. The inclusion of controls for noneducation spells out of work since college graduation lowers the gap further to 0.359 log points, and the addition of occupation dummies reduces it to 0.301. Similar findings exist for the three cohorts separately. Even with our rich set of controls for educational performance, time out of work, and occupation, a residual gap of substantial magnitude remains.[7]

[5] Earnings data cover pre-tax earnings from all jobs in 2005. The earnings question was categorical, with 18 earnings categories ranging from less than $20,000 to $5 million or more. We impute earnings at the mid-point of each interval and follow the standard procedure of multiplying top-coded earnings by 1.4.

[6] In contrast, 2005 national median annual earnings of full-time full-year workers (25 years old and over) with at least a BA degree were $46,948 for women and $66,166 for men (US Census Bureau 2007).

[7] The findings in Table 2 are not driven by earnings outliers, and the results for the gender earnings gap and educational differentials are similar in median regressions using the same specifications.

Table 2—Annual Earnings in the Harvard and Beyond Sample: Gender Gap and Determinants

	(1)	(2)	(3)	(4)	(5)
Female	−0.852	−0.517	−0.396	−0.359	−0.301
	(0.031)	(0.029)	(0.028)	(0.028)	(0.026)
MBA			0.518	0.525	0.264
			(0.038)	(0.038)	(0.038)
JD			0.380	0.363	0.182
			(0.034)	(0.033)	(0.043)
MD, DDS, DVM, etc.			0.378	0.333	0.160
			(0.041)	(0.041)	(0.069)
PhD			−0.216	−0.237	−0.090
			(0.034)	(0.033)	(0.035)
Any no work spell				−0.253	−0.246
				(0.032)	(0.030)
Share of no work spells				−0.587	−0.429
				(0.132)	(0.125)
Graduation class dummies	yes	yes	yes	yes	yes
FTFY status dummies	no	yes	yes	yes	yes
Controls	no	no	yes	yes	yes
Occupation dummies	no	no	no	no	yes
R^2	0.123	0.304	0.419	0.433	0.509
Number of observations	6207	6207	6207	6207	6207

Notes: Each column is a separate regression. The dependent variable in all regressions is the natural log of annual earnings in year 2005. Controls include college grade point average (GPA), SAT math, SAT verbal, missing variable indicators for GPA and SAT, 48 college concentration (major) dummies, dummy variables for other masters and other professional degrees; there are three full-time, full-year (FTFY) status dummies and 19 occupation dummies. Standard errors are in parentheses.

Source: Harvard and Beyond dataset (see text).

The premium to an MBA is 0.518 log points (column 3) relative to the base group with no graduate degrees, and substantial labor market returns also exist for law and medical degrees. In contrast, those with PhDs have lower earnings than other comparable Harvard graduates. The most lucrative college major is economics, which has an earnings premium of 0.33 log points and a premium of 0.19 including occupation controls. The highest earnings by occupation are garnered by those in finance, for which the earnings premium relative to all other occupations is an astounding 1.08 log points, or 195 percent (column 4 specification, but not in table).

Male earnings are strongly and positively related to the number of children in the family, whereas female earnings are negatively related, especially for those having three or more. But the negative impact of children on women's earnings is entirely accounted for by hours worked. In fact, a *positive* relationship between children and earnings exists for women working full time full year, suggesting higher reservation wages for those with more children and positive selection into the labor force based on numbers of children.

V. Career and Family Trade-offs

The degree to which highly educated women take time off from their careers and occupations has been a topic of recent speculation.[8] We find, across the three cohorts, a great similarity in the number of months that women take off, for reasons ranging from family responsibilities to job changes to personal health issues. In fact, rather than rising over time, nonemployment spells have declined somewhat.

Children, to be sure, account for most of women's nonemployment spells. Even among those with at least one child, slightly more than 50 percent (15 years after graduation) of all

[8] See, e.g., *The New York Times* article that coined the phrase the "opt out revolution" (Lisa Belkin, Magazine Section, October 26, 2003).

TABLE 3—EMPLOYMENT AT 15 YEARS AFTER GRADUATION FOR HARVARD AND BEYOND WOMEN

	Percent working full time, full year, 15 years after graduation			
	No children	One child	Two-plus children	All
Cohort				
C1970	83.5	54.2	46.4	62.0
C1980	80.6	62.4	47.3	63.5
C1990	78.8	62.7	41.4	60.3
Education				
No graduate degree	69.6	50.4	27.8	50.9
Master's, not MBA	70.9	44.3	30.2	49.6
MBA	84.4	70.9	40.0	62.4
JD	82.5	64.1	48.5	64.3
MD, DDS, DVM, etc.	92.7	80.5	60.4	75.4
PhD	91.5	64.9	57.5	72.4

Notes: Children include all births, adopted children, and stepchildren within the 15-year period. Education data are for all three cohorts (C1970 = 1969 to 1973; C1980 = 1979 to 1982; C1990 = 1989 to 1992).

Source: Harvard and Beyond dataset (see text).

three cohorts *never* had more than a six-month nonemployment spell. The mean of all spells, by 15 years out, for those with one child was about a year for the first two cohorts (C1970 and C1980) and was 9 months for the youngest cohort (C1990). The mean for all who had children by 15 years out was 2 years for C1970, 20 months for C1980, and 19 months for C1990. If anything, the most recent graduates in our sample have taken *less*, not more, time off after having children. The speculation in the popular press that recent female graduates of the elite universities are wasting resources by dropping out of the labor force does not appear supported in these data.[9]

Of equal interest is that certain occupations appear to better equip women to combine career and family. Physicians, for example, took the briefest nonemployment spells after having a child. PhDs were next in terms of length of spell, followed by lawyers, then by MBAs and those with other types of master's or no further degrees, who took the greatest amount of time off for family reasons. The amount of time taken off for each child decreased across the three cohorts, from 18 months per child for C1970 to 12 months per child for C1990. For those with a medical degree, just 2 months were taken per child among those in C1970 and C1990; and 4 months for those with a PhD in C1970 and 5 months in C1990.[10]

The earnings penalty from taking time off also differs greatly by occupation or advanced degree status. Because each group took varying amounts of time off, we have normalized spells to be of the same relative length. Across all three cohorts we have used a normalized value of 0.1 of the time since Harvard graduation. Among those who obtained one of the professional degrees or earned a doctorate, the smallest earnings penalty was for physicians and other medical professionals (0.16 log points). Next in penalty size was that for those with a JD or a PhD (0.34 log points). The largest earnings penalty for time off was for those with an MBA (0.53 log points).

Information regarding full-time, full-year employment given in Table 3 reinforces the results on nonemployment spells. Although women with children have lower full-time, full-year participation 15 years after graduation, those with advanced degrees are considerably more attached to the labor force. The attachment is clear for those in medicine independent of their number of children, somewhat less so for those with doctorates.

[9] See also Goldin (2006) for similar data from the entering class of 1976 (comparable in year to C1980) using the Mellon Foundation College and Beyond data from 34 selective institutions of higher education.

[10] These estimates come from a regression by cohort with the number of children, advanced degree dummies, and an interaction between the number of children and the various advanced degrees.

It is, perhaps, not surprising that women who pursue different career paths and have earned degrees in different fields have different numbers of children. It appears that women in careers with the greatest predictability and the smallest financial penalty for time out have the most children. Across all three cohorts physicians generally had the lowest fraction without children 15 years after their Harvard class graduated, and more births than the average member of their cohort, conditional on having at least one. Those who earned a doctorate in C1980 and C1990, however, had the highest fraction with no children at 15 years out, as well as the smallest number of births conditional on having at least one. The flexibility of work and the predictability of career trajectory are clearly subjects that merit further investigation.

VI. Conclusions

The preliminary results we have presented—on marriage rates, child bearing, advanced degrees, the gender gap in earnings, and the ability to combine career and family—reveal much about the life-cycle transitions of those who graduated from one of the most selective institutions of higher education. In certain regards, the members of the classes we surveyed are similar to other US college graduates, but in many important respects they were enormously different.

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