Early Labor Market Outcomes of Gender Non-traditional Baccalaureates: Trends Across Three Cohorts

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Research question

Occupational segregation among the college-educated workforce remains significant in the U.S. despite the growing female advantage in postsecondary degree attainment and the increasing integration of college majors. Baccalaureates who have specialized in gender non-traditional fields – women who earn degrees in traditionally male-dominated fields and males who earn degrees in traditionally female-dominated fields – represent potential momentum toward labor force integration and equity if these graduates transition to employment in their degree field. This analysis aims to assess the extent to which the potential de-segregating momentum such recent graduates represent is realized or dissipated among recent cohorts of baccalaureates.

I use *Baccalaureate and Beyond* (B&B) data for the 1992-3, 1999-2000, and 2007-8 graduating cohorts from U.S. college to (1) measure gender gaps in the employment outcomes of the recent graduates, (2) identify the correlates of those gaps and (3) test for change over time in both. The analysis focuses on three outcomes: educational utilization, i.e., employment in a job that is closely related to the graduate's degree field; salary; and satisfaction with employment. These outcomes are measured within the first 2 years and again at 4 years after degree attainment. The sex-type of each baccalaureate's degree field is the independent variable used to address the focal research questions of this analysis: Are women and men who earn degrees in non-traditional majors as likely as their peers to utilize their educational capital by obtaining employment in their degree field? Do men and women realize the same benefits from working inside or outside of their degree field? Have the gender disparities in early career outcomes changed over the past two decades? Multivariate analyses focus on testing three explanations for the identified disparities: gender differences in work preferences and job values; gender differences in achievement both in degree field and in other areas of study; and gender differences in the influence of family status. In addition, data on job search strategies included in the first B&B cohort allow for indirect tests of the influence of gendered networks on early employment outcomes among men and women in non-traditional fields.

Theoretical Framework

Occupational specificity varies significantly across college majors (Roska and Levey 2010; Shauman 2009). Some majors, like engineering and education, provide specific occupational training and have strong connections to a narrow set of occupational categories. Others impart general skills that are less occupationally specific and have more diffuse occupational outcomes, so the likelihood of working in a job that is related to ones's degree field will vary across majors. Utilizing educational investments by working in a job that is related to one's major affects labor market outcomes (Heijke, Meng and Ramaekers 2003; Morgan 2009; Robst 2007; Roska and Levey 2010) but the character of that effect will also vary across fields.

There is evidence of significant sex differences in the likelihood of educational utilization among college-educated workers (Shauman 2009), and these differences reflect a gendered pattern of occupational sorting that reinforces occupational sex segregation and undermines that potential equalizing effect of degree-field integration: among graduates from female-dominated college majors, men are significantly less likely to utilize their education by entering a related occupation, whereas among graduates in male-dominated fields the disparity in educational utilization disadvantages women

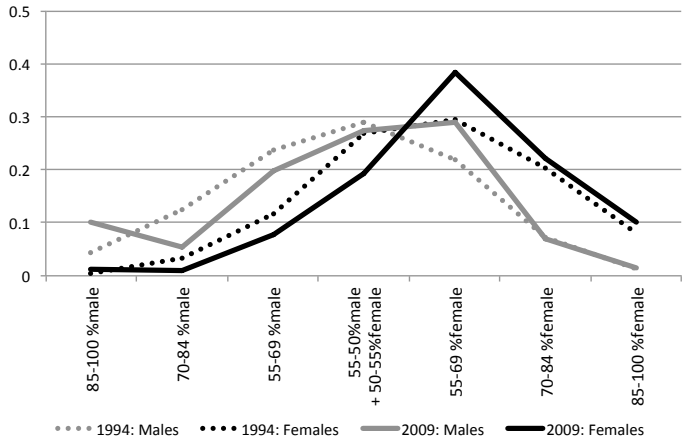
(Shauman 2009). Secular trends toward gender equity, the increasing labor force participation and labor forces attachment of women, and changing gender norms all suggest that gender differences in educational utilization will have declined over time but these trends have not been measured nor have the causes of the observed sex differences in educational utilization and their consequences for other labor market outcomes such as occupational prestige and pay.

Research Design

The data for this analysis are drawn from two sources. The Baccalaureate and Beyond Longitudinal Studies (B&B) of 1994, 2001, and 2009 are the source of the individual-level degree and employment outcome data. Each B&B draws its initial cohorts from the National Postsecondary Student Aid Study (NPSAS) and is representative of graduating college seniors in all majors. The first B&B cohort was drawn from the 1993 NPSAS and surveyed in 1994; it provides a sample of about 4,000 baccalaureates from 4-year public and private institutions who earned their baccalaureate between July 1992 and June 1993 and who reported being employed at the time of the survey. This cohort was surveyed again in 1997. The B&B:2001 cohort (about 10,000 students) was chosen from the 2000 NPSAS and provides a sample of about 5,000 students who earned their first baccalaureate between July 1999 and June 2000 and reported being employed at the time of the 2001survey. The B&B:2009 cohort was drawn from the 2008 NPSAS (about 19,000 students) and provides a sample of over 5,800 baccalaureates who earned their degree between July 2007 and June 2008 and who were employed in 2009. This cohort was re-interviewed in 2012 and the data for that follow-up, which provides employment information at 4 years post-graduation, will be released in the Fall of 2014.

The Integrated Postsecondary Education Data System (IPEDS) provide the data used to operationalize the sex-type of each detailed major field for each cohort of baccalaureates. The IPEDS data provide a reliable estimate of the relative representation of women and men in each of 77 detailed major fields (a slightly aggregated version of the CIP 4-digit classification) in the years 1992 and 1993 (for the B&B:94 cohort), 1999 and 2000 (for the B&B:01 cohort), and 2007 and 2008 (for the B&B:09 cohort).

Figure 1: Distribution of male and female baccalaureates by sex-type of degree field and graduation cohort



Operationalization of key variables: The sex-type of each baccalaureate's degree field is the focal independent variable for this analysis. It is measured for each category of a detailed classification of degree fields using IPEDS data and is specified in statistical models as a piecewise polynomial (spline) that distinguishes varying levels of field sex-typing. This operationalization allows tests for nonlinear associations that are predicted by theories, such as Kanter's (1977a, 1977b) tokenism theory and Ridgeway's (2011, 2012) expectation states theory, which posit that the relative representation of women and men within groups directly affects the success of individuals. Further, this operationalization allows for gender-symmetric tests for disparities in the outcomes of

those who major in gender non-traditional fields: i.e., the analysis will examine and compare the outcomes for women in male-typed majors and men in female-typed majors. Figure 1 presents the distribution (weighted to adjust for sampling design) of the B&B:94 and B&B:09 cohorts of recent college graduates by the sex-type of their degree field as indicated by discrete segments of this variable: fields that are 85-100% male, 70-84% male, 55-69% male, those that are "neutral" or 50-55%male + 50-55%female, fields that are 55-69%female, 70-84% female, and 85-100% female. The slight rightward shift of the distributions (of the 2009 compared to the 1994 cohort) to the higher levels of %female reflects the increasing relative representation of women in postsecondary education (DiPrete and Buchmann, 2013) as well as some movement of male student away from male-dominated majors, but the level of sex segregation of college majors changed little between these cohorts.

Employment in a job that is closely related to a baccalaureate's degree field is the focal dependent variable of this analysis. This variable is derived from a survey item that distinguishes respondents who report their job is "closely," "somewhat," or "not at all" related to their degree field and is measured consistently across the B&B cohorts. For this analysis the variable is collapsed to a binary indicator that is coded 1 for "closely" and zero otherwise. Figures 2a and 2b present the proportion (weighted to adjust for sampling design) of employed male and female baccalaureates from the B&B:94 and B&B:09 cohorts who report that their job is closely related to their degree field by the sex-type of their college major. These descriptive statistics indicate that women and men who earned degrees in fields that are non-traditional for their gender tend to be less likely than those for whom the field is traditional to enter jobs that are closely related to their degree field.

Figure 2a: Proportion reporting their job is closely related to their degree field by sex-type of degree field and gender: 1994

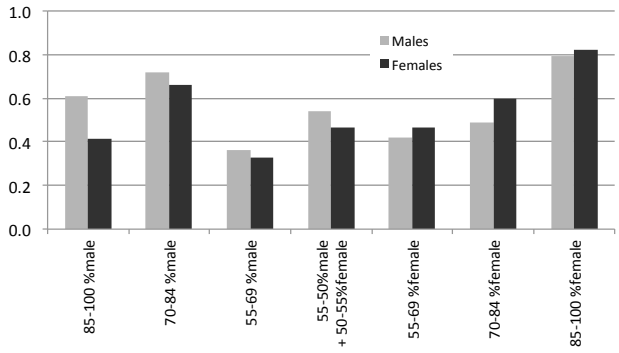
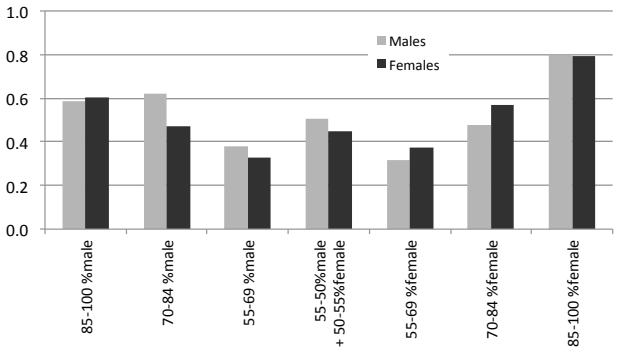


Figure 2b: Proportion reporting their job is closely related to their degree field by sex-type of degree field and gender: 2009



Methods:

The analysis will employ multivariate methods appropriate to the measurement of the dependent variables and will include a rich set of explanatory variables that include GPA in specific fields during college, pre-college measures of aptitude, and baccalaureates' demographic characteristics, as well as measures of labor market conditions, such as unemployment rates, keyed to the state of residence of the individual baccalaureates in the sample. Logit models will be used for the analysis of employment and attainment of a job in a field related to degree field and linear models will be used for salary. Models of employment will contrast that outcome with unemployment and will include controls for field-specific variation in the likelihood of enrollment in graduate education. Models of employment in a job closely related to degree field will include controls for field-specific selectivity into employment.

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