How Anti-Gender Discrimination Law Affects Women's Career across the Lifecycle*

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Abstract

This study examines how Japan's 1986 *Equal Employment Opportunity Law (EEOL)* influenced the employment and wages of women relative to men, particularly focusing on university-educated women in the early and later stages of their careers. Using a regression discontinuity (RD) design and microdata from the decennial Japanese National Census conducted between 1990 and 2020, it is shown that while it improved the employment and wages of women relative to men in the short term, the long-term effects were negligible. We found that while the EEOL increased the probability that women in their 20s would be employed and reduced their probability of being married or full-time homemakers, these effects disappeared as their careers progressed into their 30s, 40s, and 50s. Moreover, analysis of payroll records shows that the EEOL reduced the gender wage gap of women in their 20s but not later. We infer that the significant household responsibilities faced by women such as housework and childcare offset the labor market effects of the EEOL in the long term. This suggests that while legal remedies may create positive short-term effects, a longer-term solution to gender inequality in Japan requires a more fundamental institutional and cultural transformation, especially of the division of roles within the household.

Keywords: Anti-Discrimination Law; Women's Career; Gender Wage Gap; Family Formation.
JEL Codes: J71, J78, J23, J31

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1 Introduction

To combat a persistent gender gap in employment and wages, a number of countries have enacted laws prohibiting gender-based discrimination in hiring, promotion, and pay. These include the 1963 *Equal Pay Act* in the United States, 1970 *Equal Pay Act* in the UK, 1976 *Council Directive 76/207/EEC* in the European Community, and 1986 *Equal Employment Opportunity Law (EEOL)* in Japan. Although these long-standing laws have attracted much academic interest, the literature has not yet reached a consensus on their effectiveness.[1] Taking the U.S. Equal Pay Act of 1963 as an example, Goldin (2006) argues in her 2006 Ely Lecture that legislative changes—such as the removal of the marriage bar and the enactment of anti-discrimination laws—contributed to the convergence in labor market outcomes between men and women during the 1960s and 1970s. In contrast with this positive view, Blau and Kahn (2017) in their review of the literature argue that the 1964 legislation had no discernible impact on narrowing the gender wage gap, as the gender pay ratio remained flat through the late 1970s and early 1980s. Meanwhile, Bailey et al. (2024) revisit the combined effects of the Equal Pay Act and Title VII of the Civil Rights Act, which requires equal employment opportunities, on women's labor market outcomes in the 1960s and find that the anti-discrimination legislation had a substantial impact.[2] The different conclusion of Bailey et al. (2024) from previous research was largely due to its different methodology, exploiting the heterogeneous impacts of federal law due to pre-existing conditions across states or industries, which demonstrates the importance of research design.

The current study examines the impact of the 1986 *Equal Employment Opportunity Law (EEOL)* in Japan. The law was enacted despite strong opposition from business since it prohibited the common early-1980s practice of making career-track jobs available only to men. Despite this resistance, lawmakers and bureaucrats of the Ministry of Labor pushed the proposal because the enactment of anti-discrimination laws was a condition for ratifying the *Convention on the Elimination of All Forms of Discrimination against Women* that the United Nations General Assembly

[1] Beller (1982a), Beller (1982b), and Moran (1970) explore the effects of these U.S. laws observed in the 1970s.

[2] While Holzer and Neumark (2000a) state that there is no strict legal separation between Affirmative Action and Equal Employment Opportunity (EEO) legislation, EEO primarily enforces compliance with laws that prohibit discriminatory practices in employment, while Affirmative Action can encompass broader efforts like targeted recruitment, training, and diversity-enhancing practices. Holzer and Neumark (1999) and Holzer and Neumark (2000b) show that in terms of performance, no evidence was found that women and minorities hired under Affirmative Action perform significantly worse compared to white men. Moreover, even in cases where hiring qualifications are slightly lower, actual job performance often shows no notable differences.

had adopted in 1979. At the time, the Japanese government viewed ratifying this treaty as necessary to improve Japan's international reputation (Yokoyama, 1996). Accordingly, the EEOL was implemented in 1986 and prohibited Japanese companies from engaging in gender-based human resource management in such areas as recruitment, promotion, retirement, training opportunities, and job assignments. However, while the law covers many aspects of a firm's personnel decisions, it allegedly has been most effective in removing the entry barriers into career-oriented tracks for women graduating from university. The enactment of the law, combined with the particular importance in Japan of job entry timing and conditions for university graduates, sets up an environment to implement a regression discontinuity (RD) design, which compares the labor market outcomes of university graduates who graduated before and after the enactment of the law. This allows us to overcome difficulties experienced in other studies of isolating the effect of legislation from other changes that have occurred.

We draw on 10% sampling data from the quinquennial Japan National Census to examine the discontinuity in labor market outcomes between the cohort who graduated from schools just before and after the enactment of the EEOL. We find that among university graduate women in 1990, approximately four years after graduation, the probability of working for the cohort marginally affected by the new law (those who had searched for positions starting in 1986) discontinuously increased by about 3 percentage points more than for the cohort who were marginally not affected, whose average employment rate was 78%. We do not find such an impact on employment among non-university graduate women or men of any educational background. Further, the significant increase in the employment rate for university graduate women is mirrored by a decrease in their marriage rate. Four years after university graduation, the marriage rate of the marginally treated cohort was 28%, whereas that of the marginally non-treated cohort was 36%. In sum, the enactment of the EEOL increased the employment rate of university graduate women and delayed their marriage timing up to four years after university graduation.

The significant impact of the EEOL on university-educated women immediately after graduation, however, did not persist throughout their careers. Our analysis of the 2000 and 2010 National Censuses shows that the discontinuity in the employment rate between the treated and non-treated cohorts is no longer statistically significant, implying that the treatment effect had disappeared 14 and 24 years after university graduation. An analysis of marital status and

the age of the first child in each cohort indicates that women affected by the EEOL delayed family formation but had caught up with the non-treated cohort by their mid-30s. These results suggest that women affected by the EEOL faced a trade-off between career advancement and family formation in their late 20s and early 30s, and tended to prioritize family formation over continued employment.

In addition to our analysis of the impact of the EEOL on women's employment rate and marriage rate using National Census data, we also used payroll data from the Basic Survey of Wage Structure to analyze the impact of the EEOL on the gender wage differential. As with the employment analysis, we implemented an RD analysis by defining cohorts affected by the enactment of the EEOL as the treatment group and those not affected as the control group. Among university graduates in 1990, four years after the enactment of the EEOL, the gender wage gap of the treated cohort was about 0.02 log points whereas that of the pre-treated cohort was about 0.10 log points. Thus, the enactment of the EEOL substantially contributed to narrowing the gender wage differential in the early career stage of university-educated women. However, consistent with the findings from our employment analysis, the impact on the wage gap completely disappeared in 2000 and 2010, 14 and 24 years after graduation.

Overall, our cohort-based RD analysis shows that the enactment of the EEOL narrowed gender gaps in employment and wages among university graduates during the early stages of their careers, at least within the first four years after graduation. This positive impact on women's career progression was also associated with delayed marriage and childbirth. However, this initial positive impact had completely dissipated by mid-career—14 and 24 years after university graduation—and the marriage rate of the treated cohort had also converged to that of the control cohort. The lack of a persistent effect is likely due to the sociocultural context in Japan, where women faced clear trade-offs between career progression and family formation. The insufficient provision of childcare facilities and the expectation that women should assume primary responsibility for the family rooted in traditional gender norms forced them to choose between career progression and family formation. This dilemma, combined with discrimination in task assignment and promotion, likely resulted in many women prioritizing family formation over their careers. In other words, while the Japanese EEOL initially improved the labor market outcomes of university-educated women, the legislation alone was insufficient to counter the institutional and cultural barriers—particularly inadequate family support systems

and traditional gender norms—that ultimately constrained their long-term career progression.

This paper contributes to the literature in several ways. First, we implement a cohort- based research design to assess the impact of anti-gender-discrimination legislation based on the setting that the EEOL had a particularly strong impact at career entry. This cohort RD approach, combined with repeated cross-section data, allows us to assess the impact of antidiscrimination law on employment and wage outcomes over the career stage. Numerous studies on scarring effects, which are in contexts different from this study, consistently report that the business cycle at the entry to the labor market has a persistent effect on subsequent labor market outcomes (Kahn, 2010; Genda et al., 2010; Altonji et al., 2016; Wachter, 2020; Rothstein, 2023). Our study is the first application of cohort-based RD to assess the impact of antidiscrimination legislation and, given the prevalence of the scarring effect across countries and time periods, this method should be applicable to a wide range of cases.

Second, this study sheds light on the dynamic effect of anti-discrimination laws on women's employment and wages over their life cycle. Much of the existing literature assesses the average impact of antidiscrimination laws on employment and wages of women across age groups (Manning, 1996; Neumark and Stock, 2006; Blau and Kahn, 2017; Bailey et al., 2024), while a different strand of literature reports that the crucial role of family formation and heavier family responsibilities placed on women's shoulders are important sources of the gender gap in employment and wages (Kleven et al., 2019; Cortés and Pan, 2023; Kleven et al., 2024). Given the reported importance of life events on the gender gap, the impact of antidiscrimination law on the gender gap can well be different across life stages, and this paper indeed sheds light on the heterogeneous impacts of antidiscrimination laws over the life cycle.

Third, this study also contributes to the relatively meager literature assessing Japan's 1986 EEOL by integrating two disparate threads of the literature. Abe (2010) finds that highly educated women who entered the labor market after the enactment of the EEOL are more likely to be in regular full-time employment, but did not experience wage gains relative to their male counterparts, while Abe (2011) finds that the cohorts of women who graduated from university after the EEOL married later or were less likely to marry than previous cohorts. The findings that EEOL cohorts of university-educated women were more likely to be employed and less likely to marry are similar to this study, though the observed impact on wage effects is different. Because Abe (2010, 2011) used a single cohort defined over a five-year range, disentangling the

impacts of EEOL from the long term convergence in employment and wages is difficult. Our study overcomes this limitation by exploiting the sharp discontinuity created by policy intervention, which allows for separating trends in gender gaps in employment and wages across different cohorts.

2 Background

2.1 Japan's 1986 Equal Employment Opportunity Law (EEOL)

In December 1979, *the Convention on the Elimination of All Forms of Discrimination against Women* (CEDAW) was adopted at the 34th United Nations General Assembly. In 1980, concerns about Japan's international reputation prompted the Japanese government to sign CEDAW. However, to ratify it, Japan was required to address gender inequality issues in three areas: nationality, education, and employment.

With respect to employment, CEDAW Article 11 specifically outlined the obligations of signatory countries,[3] which included ensuring equal rights for men and women in promotion, job security, all benefits and conditions related to employment, and access to training. It also explicitly prohibited dismissal based on maternity or parental leave as well as discriminatory dismissal based on marital status. In Japan, it was recognized that for CEDAW ratification, appropriate domestic legal measures needed to be implemented to ensure equal opportunities and treatment for men and women in employment.

Discussions on the topic had been ongoing for some time. Before CEDAW was adopted in 1980, deliberations had already begun in the spring of 1978 at the Women's Labor Subcommittee of the Women's and Minors' Problems Council, an advisory board to the Minister of Labor, on measures to ensure equal employment opportunities and treatment for men and women. These discussions, set against the backdrop of a global movement toward gender equality inspired by International Women's Year, included consideration of a possible legal framework but it was not until the 1980s after CEDAW was adopted that domestic debates on legal enactment gained momentum. In Japan, where gender norms were deeply rooted, there was strong opposition, particularly among business organizations, to treating women the same as men in employment. After considerable difficulties, a draft bill was finalized and submitted to the Diet

[3]The explanation in this section is based on Akamatsu (2003) and Iki (2011).

in May 1984. The Diet deliberations were also contentious, and the bill was not passed until the end of the 1984 session, but it was carried over to the following year's Diet deliberations, and was finally approved in May 1985.

The enacted *Law of Equal Opportunity and Treatment between Men and Women in Employment* (EEOL) was announced on June 1, 1985, and came into effect on April 1, 1986. The purpose clause of the law explicitly states that its aim is to promote equal opportunities and treatment for men and women in the field of employment in accordance with the principles of equality under the law as guaranteed by the Japanese Constitution. Specific provisions prohibiting discrimination are also stipulated, including prohibition of discriminatory treatment against women in areas such as major formal training programs (excluding practical training), welfare benefits related to financial advantages, and retirement, resignation, and dismissal. Furthermore, dismissals on the grounds of marriage, pregnancy, childbirth, or maternity leave are also prohibited. However, in its initial form, the law required only that employers "make efforts" to provide equal opportunities and treatment for men and women in recruitment, hiring, placement, and promotion. The EEOL is still in effect today, but has undergone several amendments over the years, including changes to convert items that previously only required employers to make efforts into mandatory requirements.

This study uses Japan's enactment of EEOL as the policy shift in our Regression Discontinuity (RD) design methodology. Women's birth year and quarter is the forcing variable, and it is crucial that this variable has not been manipulated. As explained below, the main analysis sample of this study is women born between April 1961 and March 1967 who performed job searches three years before and after the introduction of EEOL. As explained above, the enactment and implementation of EEOL stemmed from the 1979 adoption of CEDAW, so it is unlikely that parents in the mid-1960s could have anticipated this and manipulated the timing of pregnancies. Therefore, the assumption that the forcing variable used in this study has not been manipulated is reasonable.

2.2 Employment of Women in Japan before EEOL

The working situation of Japanese women in the mid- to late 1970s around a decade before EEOL was implemented shifted dramatically after EEOL. In 1974, while the number of employed women had increased to 19.7 million, or 37.8% of Japanese workers, the treatment of

women in corporate employment management often differed from that of men. For instance, many Japanese companies had adopted a mandatory retirement system and, in 1974, 29.5% of companies with a retirement age system had gender-specific retirement ages.[4] Additionally, 64.6% of Japanese establishments had occupations or departments where women were not assigned, 10.9% did not provide training or education programs to women, and 25.0% offered no opportunities for women to advance or be promoted. Furthermore, women's average monthly wages in companies with 30 or more employees amounted to 114,067 yen in 1975, which was only 55.8% of men's wages of 204,295 yen ($1 = 150 JPY).[5]

Focusing now on highly educated women, by 1979, only 12.9% of Japanese female workers were graduates of junior colleges, technical colleges, or universities, indicating that highly educated women made up only a small fraction of the Japanese workforce,[6] and among these, female university graduates were particularly few. Before the EEOL prohibited gender-based employment practices, Japanese companies managed their employees by separating roles into core positions for men and auxiliary positions for women. At that time, women with high school or junior college education were primarily employed in women's auxiliary roles. Meanwhile, female university graduates, who made up only 7.1% of the female labor force and were part of a small elite group, endured an especially challenging task in securing employment because the roles expected of women in companies were auxiliary in nature.[7] Evidence supporting this includes a survey conducted among graduates of a Japanese women's university[8] revealing that, among those who graduated between 1968 and 1985 prior to EEOL implementation, 57.8% agreed or somewhat agreed with the statement that there was no position in the companies for four-year university graduates of women at the time of their graduation.[9]

Lastly, regarding Japanese society's attitudes toward gender roles at the time, the per- centage of Japanese people who agreed with statements such as "Married women should be at home" or "After giving birth, married women should be at home" was 70.6% in 1978, reflecting

[4]In 1973, all companies set the retirement age for men at 55 or older but only 27.1% of companies set the retirement age for women at 55, with the majority setting it below 55. Moreover, 7.9% had adopted retirement policies applicable only to women, including mandatory retirement upon marriage or pregnancy and childbirth (Ministry of Labor, "Employment Management Survey 1974," and the Bureau for Women and Minors, Ministry of Labor, (1974) "The Current Situation of Working Women").

[5]The Bureau for Women and Minors, Ministry of Labor, (1974) "The Current Situation of Working Women."

[6]Japan Bureau of Statistics, "Employment Structure Survey, 1979."

[7]In 1974, only 7.1% of female new graduates were university graduates, compared to 34.1% of their male counterparts (Ministry of Education, "Basic School Survey 1974").

[8]Survey on Work and Life of Japan Women's University's Graduates, 2015. See Hara et al. (2015) for details.

[9]In contrast, among the cohort who graduated between 2001 and 2014, only 1.5% agreed with this statement.

a conservative perspective toward the social role of women. In contrast, this figure decreased to 36.9% in 2018.[10] While this shows that there still remains a substantial number of people with conservative views on gender roles in Japan, it also indicates that such attitudes were much more prevalent in the late 1970s.

3 Econometric Framework

3.1 Data

This study utilizes 10% sampling data from the Japanese National Census conducted in 1990, 2000, 2010, and 2020. As the aim of the National Census is to understand the actual conditions of individuals and households in Japan in order to provide foundational data for public policy, it is a complete enumeration survey. The first survey was conducted in 1920 and since then it has been carried out every five years by The Japan Bureau of Statistics, with the most recent data being from the 2020 survey.

This study, which uses a Regression Discontinuity (RD) design, primarily focuses on university-educated women because previous studies suggest that women with four-year college degrees were a small, elite group and were likely not included in typical employment management practices (Wakisaka, 2011). Japan has the unique employment practice of simultaneous recruiting of new graduates in which students search for jobs during the final academic year of their terminal educational institution. Thus, women who would fully benefit from the EEOL would have been those who began their job search after its implementation on April 1, 1986, thereby making career choices based on the premise of EEOL. Note that in Japan the fiscal/academic year begins in April and ends in March of the following year, so EEOL officially took effect in the 1986 fiscal year (FY1986). Therefore, individuals whose final academic year of study was during or after FY1986 are classified as the treatment group while those whose final academic year was in or before FY1985 are classified as the control group (See Table A1 in the Appendix).

In Japan, individuals typically graduate from university at age 22, and cohorts vary little by age. Therefore, those graduating from university in FY1986 were predominantly born in FY1964. Since the 1990 National Census surveyed on birth year and quarter, we were able to use individuals born in the first quarter of FY1964 (April–June 1964) as the cutoff point. The

[10] NHK Broadcasting Culture Research Institute, "The Japanese Value Orientations Survey, 1973–2018."

analysis sample includes individuals born within three years before and after this cutoff point, so the main analysis sample is those born between FY1961 and FY1966.

The National Census of Japan records individuals' highest level of education in categories, with the top category being "university and graduate school graduates." However, of those who graduated from university in FY1986, the proportion of women who pursued graduate studies was only 3.3%, while for men, it was only 7.1%.[11] Since the terminal degree for the majority of women and men in this top category was a baccalaureate degree, but even those who pursued graduate studies are also university graduates, for simplicity, this category will henceforth be referred to as "university graduates."

In Japan, most high school graduates complete their education at age 18. However, when applying for university, students who fail the entrance exams during their final year of high school have no opportunity to enter university immediately after graduation but may attempt again to do so in the year following their high school graduation. As a result, there is a certain number of university graduates who do not graduate at the standard age of 22. The Ministry of Education surveyed data for students enrolling in universities in FY1984 (those born in FY1965), finding that the immediate enrollment rate after high school graduation of women into universities or two-year/technical colleges was 32.6%, and if including those who graduated from high school in previous years, the overall enrollment rate was 32.8%, with only a 0.2-point difference.[12] This indicates that most women enrolled in university immediately after high school graduation, and it is reasonable to assume that the same applied to our FY1983 cutoff cohort of the previous year (those born in FY1964).[13] As the treatment group of college-educated women can be sharply identified in our sample, the use of an RD framework is valid for this analysis.

The primary data used in this study comes from 1990, which reflects the situation four years after the implementation of the EEOL. In 1990, Japan's population was 123.61 million, while the sample size of the 10% sampling data from the 1990 Population Census was 17,070,017, of which 8,747,335 were women. By excluding agricultural, forestry, and fishery workers as

[11] Ministry of Education, Basic School Survey.

[12] Ministry of Education, Basic School Survey. It did not survey those enrolling in universities in FY1983 (those born in FY1964).

[13] In contrast, for men, the immediate enrollment rate into universities, two-year/technical colleges, or similar institutions was 26.6% while the overall enrollment rate, including those from previous years, was 38.3%. This demonstrates that a certain number of men deferred university enrollment by taking "blank" years.

well as residents of facilities such as hospitals, Self-Defense Force barracks, and correctional institutions,[14] and non-Japanese nationals, the sample size was reduced to 15,656,630. When further restricting the sample to women born between FY1961 and FY1966, our analysis period of interest, the sample size decreased to 3,078,865. Restricting it further to university graduates and excluding those with missing values for labor-related variables, the final sample size for university-educated women was 61,170. This reduction in sample size highlights the difficulty of conducting similar analyses with other data and serves as another advantage of using the National Census.

The analysis samples for female high school and two-year/technical college graduates were constructed in the same manner as above, with final sample sizes of 311,243 and 177,695, respectively.[15] Since the graduation age differs depending on the level of education, the treatment and control groups also vary; details are summarized in Table A1 in the Appendix.

This study also utilizes the 10% sampling data from the 2000, 2010 and 2020 National Census to examine the medium- to long-term effects of the EEOL. By constructing the sample in the same manner as with the 1990 data, the number of university-educated women born between FY1961 and FY1966 is 58,918 in the 2000 data, 49,788 in 2010, and 52,986 in 2020.

3.2 Econometric Model

Our model utilizes a Regression Discontinuity (RD) design in which treatment status (beginning the job search after EEOL enactment) is a deterministic and discontinuous function of time. Quarter-year of birth (D_i) is the forcing variable that determines whether individual i is exposed to full treatment or not, and it is normalized to 0 at the cutoff, which is the first quarter of FY1964 (April-June 1964).

The empirical specification is:

$$Y_i = \alpha + \beta Post_{EEOL} + \gamma[Post_{EEOL} \times f(D_i)] + \delta f(D_i) + \sum_{k=2}^{47} \mu_k(\pi_k) + \sum_{l=2}^{19} \phi_l(\omega_l) + \epsilon_i, \quad (1)$$

where Y_i is the outcome variable related to work for individual i. $Post_{EEOL}$ is a dummy variable taking a value of one for all individuals who began their job search after the EEOL

[14] In addition, dormitories, boarding houses, sanatoriums, and social welfare institutions are included.

[15] For men, the corresponding sample sizes were 288,344 for high school graduates, 58,787 for two-year/technical college graduates, and 164,136 for university graduates.

(FY1986), and zero for those who did it before the EEOL (FY1985). We control for prefecture fixed effects $\sum_{k=2}^{47} \mu_k(\pi_k)$ and city size fixed effects $\sum_{l=2}^{19} \phi_l(\omega_l)$, which respectively capture structural differences across prefectures and across municipalities with different population sizes.[16] In our baseline specification, $f(D_i)$ is a linear function.

4 Descriptive Evidence and Manipulation of the Running Variable

4.1 Descriptive Statistics

Table 1 summarizes the differences in the averages of employment and marriage-related variables by the pre-EEOL and post-EEOL cohorts, using data from 1990. Here, the focus is on university graduates. The pre-EEOL cohort consists of individuals born between FY1961 and FY1963 who job-hunted in the three years prior to the year the EEOL was implemented, while the post-EEOL cohort consists of those born between FY1964 and FY1966 who job-hunted in the three years following EEOL implementation.

For women, the employment rate increased significantly, from 70.5% for the pre-EEOL cohort to 88.8% for the post-EEOL cohort, showing a difference of 18.3 percentage points. Correspondingly, the proportion of women not in the labor force decreased from 27.3% for the pre-EEOL cohort to 8.8% for the post-EEOL cohort, reflecting a similar difference of 18.5 percentage points.

For men, on the other hand, the employment rate remained consistently high, with 98.2% for the pre-EEOL cohort and 97.6% for the post-EEOL cohort. While the difference of 0.6 percentage points is statistically significant, it is very small and not economically meaningful, no doubt an artifact of the strong statistical power of the test. Similar small differences are observed for the unemployment rate and the proportion of those not in the labor force.

4.2 Check of Manipulation of the Running Variable

A crucial identification assumption of our RD design is that assignment to the treatment group around the threshold is random and that the running variable (birth year-quarter) is continuous near the cutoff. In this study, the likelihood of prior manipulation of the running variable is

[16] In the National Census, the population size of the municipality of residence is classified into 19 categories, ranging from less than 3,000 to 600,000 or more.

considered to be very low because our sample consists of university graduates born between FY1961 and FY1966, approximately 20 years before the promulgation of the EEOL in 1985. It is thus highly unlikely that parents had manipulated the timing of pregnancies.

Moreover, the deliberations over the EEOL were contentious, and it was unclear until the last minute whether it would pass the Diet. Therefore, it is unrealistic to assume that high school students or their parents would have changed their decision in college enrollment timing in anticipation of a law that would be enforced more than 4 or 5 years later. In addition, the grade repetition rate among female students in FY1986 was as low as 2% while that for male students was 7%, suggesting that it is unlikely that they delayed graduation in response to the enactment of the EEOL.[17]

Nonetheless, we examined the distribution of the running variable for university-educated men and women born between FY1961 and FY1966, shown in Figure A2 in the Appendix. No discontinuities were observed near the cutoff point, which is the first quarter of FY1964. Furthermore, using the method developed by (Cattaneo et al., 2020, 2024) to calculate local polynomial density estimators and test for discontinuities, the results are shown in the Figure A3 in the Appendix; the possibility of such a discontinuity was rejected.[18]

5 The Effect on Employment

5.1 Overall Employment in the Mid-20s

First, we examine the effect of the EEOL on employment using the 1990 National Census, when the treatment group was in their mid-20s. Figure 3 presents the probability of being employed by birth cohorts as defined by birth quarter in 1990, and Table 2 reports the estimated discontinuities at the thresholds. As shown in Panel (A) in Figure 3, we find no impact of EEOL on the employment probability of women who had graduated from high school (0.001, with 0.007 s.e.) and Panel (C) shows no effect among 2-year/technical college graduates (0.008, with 0.008 s.e.). In contrast, however, Panel (E) shows that the probability of being employed discontinuously increases at the threshold, with the estimated size of the jump reported in Panel (C) of

[17] Mental Health Committee of the Association of Health Administration Centers, Japanese National University Corporation, "Survey on Students Taking Leaves of Absence, Withdrawing, or Repeating Years at Universities, 1979–2016."

[18] The Stata package "rddensity" is used.

Table 2 being 3.8 percentage points, with a standard error of 0.007. Further, this increase in employment probability is concentrated among employees, with the increase in self-employment fairly limited (Panel (B) of Table 3). Note that a 3.8 percentage point increase in the employment rate is substantial, given that the employment rate of the cohort just before the threshold was about 28%. This statistically significant and economically significant increase in the employment rate is the result of the decrease in the number of women out of the labor force by almost the same amount as reported in Column (3) of Panel (C) in Table 2. Further decomposition of the out-of-labor-force category, reported in Panel (A) of Table 3, reveals that the majority of the decrease is accounted for by a reduction in engagement in housework. Thus, four years after graduation, those women who graduated university immediately after the implementation of the EEOL in FY1986 were about 14% more likely to work than those who graduated just before, in FY1985. This increase in the employment rate suggests that the EEOL indeed caused firms to hire more university graduates.

The results for men reported in Columns (5) to (7) in Panels (A) to (C) of Table 2 show that the estimated treatment effects are either not statistically significant or close to zero and thus not economically meaningful even when statistically significant. The results suggest that the EEOL did not have a negative effect on men. Additionally, the lack of significant effects for men provides further assurance that the estimated effect for university-graduated women is not an artifact of a discontinuous shock to a specific cohort that is common to both men and women.

5.2 The analysis by Industry and Occupation in the Mid-20s

To help understand further the 3.8 percentage point increase in the employment rate of the treated cohort of university-educated women as shown in Table 2, we next performed a more fine-grained examination of the effect of the EEOL on the ratio of university graduates by industry. Although the National Census has 14 industry categories, Table A5 reports the results of only the ten most salient industries with sample sizes more than 100.[19] The results for 1990 reported in Panel (a) show that statistically significant increases in the employment rate are observed for the retail, service and public sectors of 1.0, 1.7 and 0.4 percentage points, respectively. This result shows that additional employment of university-educated women was created in

[19]The results of agriculture, forestry, fishery, and mining industries are not reported.

the industries where the baseline female ratio was already high, meaning the industries where many women were already employed.

We next cut the increase of employment among university graduates in 1990 through the lens of occupation. The National Census records 10 occupational categories; however, we dropped agriculture, forestry, and fishery workers from our analysis sample. Therefore, Table A6 presents the results of nine occupational categories. The results show that among 3.8 percentage increase, the 1.5 percentage point was absorbed in professional occupation and 1.6 percentage points in clerical occupation. These results reassure that additional employment of university graduate women were created in the female predominant jobs.

5.3 Employment Effects over the Life cycle

Table 4 presents the estimated effects of the EEOL on employment every 10 years from 1990 to 2000 that covers the life cycle of the treated cohort from the mid-20s to the mid-50s. Panel (A) reaffirms that the EEOL increases the employment rate of female university graduates in their mid-20s. We on the other hand, unemployment of university graduate men increased by 0.2 percentage points where the unemployment rate of the control group is 1.4 percent. This may suggest the men may have been crowded out due to the increase in women's employment rate. The positive impact of EEOL on women's employment however have disappeared when the treated cohort reached their mid-30s and afterward as demonstrated in Panels (B) - (D). We now investigate the reason why the initial employment impact among university graduate women does not persist until the mid 30s.

6 The Effect on Family Formation

Our employment analysis shows that the EEOL promoted the employment of university-educated women, but the effects on employment disappeared after 2000, when the treatment group became their mid-30s. We hypothesize that those women faced the trade-off between continued employment and family formation and gave up their career for family formation. To examine if this is indeed the case, we next examine how the EEOL affected family formation.

Table 5 reports the estimation results of the EEOL's effects on family formation, marriage and childbearing, among university-educated women from their mid-20s to mid-50s.

Column (1) in Panel A shows that in the mid-20s, the marriage probability of the EEOL cohort drops by as much as 8.7 percentage points compared to the average marriage percentage of the nontreated cohort of 51.3. Column (2) assures that replacing the dependent variable to the indicator for ever married does not change the result. Column (3) reports that the probability to have a child decreases by 3.9 percentage points compared to the average of 50.7 percent among nontreated cohort, conditional on being ever married. This lower fertility appears starkly in the 4.0 percentage lower chance of having the 1st child between 0 and 5 years old compared to the 50 percent as the control mean. Overall, the results indicate that university educated women treated by EEOL postponed family formation in their mid 20s.

Panel (B) of Table 5 demonstrate that the university educated women treated by EEOL caught up with the non-treated cohort in terms of family formation by their mid 30s. Columns (1) and (2) show that treated cohort is equally likely to be married as the non-treated cohort. Similarly, Columns (3) and (4) show the treated and non-treated cohort are equally like to have children. Column (5) shows the treated cohort is 2.5 percentage points more likely to have the first child age between 0 and 5 whereas Column (6) shows that they are 3.3 percentage points less likely to have the first child age between 6 and 14. This shift in the distribution of the age of the first child suggests that the treated cohort postponed the timing of having the first child.

Consistent with the hypothesis that the EEOL cohort shifts back the timing of their family formation, but they catch up with the previous cohort by their mid-30s, the results reported in Panels (C) and (D) consistently show the absence of the EEOL treatment effect on family formation in their mid-40s and mid-50s.

In sum, the EEOL was effective in promoting the employment of university-educated women in their mid-20s, but this initial short-term impact had completely dissipated by their mid-30s, most probably because those women faced the inevitable trade-off between career and family formation and, faced with discrimination in the workplace and social pressure from traditional gender norms, they chose family responsibilities. To test this hypothesis, we examine whether the EEOL influenced traditional attitudes among university-educated women using another Japanese government statistic, the *National Fertility Survey* (NFS) by the Ministry of Health, Labour, and Welfare.[20]

[20]It has been conducted almost every five years since 1952 to investigate the situation and issues regarding marriage, childbirth, and child-rearing to explore issues for policy making; that is, repeated cross-sectional data. Although it is a sampling survey, it is highly representative. The survey is commissioned by the National Institute of

The NFS consists of both a survey of single individuals and a survey of married women under 50 years of age, which are conducted separately. Our sample comprises both married and unmarried university-educated women from the 1992, 2002, and 2010 data, respectively.[21] The NFS asks multiple questions regarding attitudes toward marriage, childbearing, and gender role division. In this study, we focus on six items and construct a variable for each statement, assigning a value of one to respondents who expressed conservative views and zero otherwise: 1) Living one's entire life single is not a desirable way of life; 2) Once married, one should have children; 3) After marriage, the husband should work outside while the wife should take care of the home; 4) At least while the children are young, it is desirable for the mother to stay at home and not work; 5) Once married, it is natural to sacrifice half of one's individuality and way of life for the sake of the family; 6) Even after getting married, one should have personal goals in life that are separate from their spouse or family.[22]

Table A7 in the Appendix presents the estimation result.[23] The impacts of EEOL on the attitudes toward marriage, childbearing, and gender role division are absent in 1992, except for that the EEOL treated cohort is more likely to agree with the statement that, at least while the children are young, it is desirable for the mother to stay at home and not work. This result, combined with the absence in the impacts on other measurements, indicates that the EEOL did not liberate the university graduate women from traditional social norm. Accordingly, the family responsibilities continued to be unevenly shouldered by women, and thus the women in the treated cohort was most probably forced to choose either pursuing career or family formation. The analysis of the reponses in 2002 and 2010 also reveal that the EEOL did not change their social norm.

Population and Social Security Research.

[21] Since the survey targets individuals under the age of 50, our analysis cohort is excluded from the 2021 survey; therefore, we use data up to 2010.

[22] Regarding 1)–5), respondents who answered "strongly agree" or "agree" were coded as 1, while those who answered "strongly disagree" or "disagree" were coded as 0. Regarding 6), the coding is reversed.

[23] Both the married and single surveys have approximately 10,000 valid responses, respectively. However, since the university enrollment rate among women in the analysis sample is around 12%, the sample size is reduced to approximately 300 per year.

7 Gender Gap in Wage and Managerial Position

7.1 Data and RD Design Framework

To gain a deeper understanding of the analysis results, this study also examines whether the EEOL reduced the gender wage gap and the gender disparities in managerial representation. As the National Census does not include wage and job title information, the analysis instead utilizes employer-employee-matched microdata from the Basic Survey on Wage Structure (BSWS) by the Japanese Ministry of Labour. The BSWS is the pre-eminent government statistical dataset on wages in Japan, providing the most reliable data on employee wages and collecting information on all major industries by surveying both employers (establishments) and employees. It has been conducted every year since 1948, but the microdata prior to 1990 only remains for 1980 and 1985, so this study uses the BSWS conducted in June 1990, four years after the promulgation of the EEOL.

Using the BSWS has the following advantages. First, for the BSWS, employers (i.e. HR departments in establishments) both respond to the employer survey directly and then also complete the employee survey by referring to employee payroll records, meaning that because employees do not self-report wages and working hours but, rather, the employer reports them, the dataset avoids a common concern about potential response errors for these crucial variables. Second, variables such as monthly wages, overtime payments, bonuses, monetary benefits, working hours, and overtime hours are surveyed nominally, not by categories or ranges. Because we can obtain the exact amounts, this avoids any top-coding problem. Lastly, the dataset represents well the wages of Japanese workers because it is a large-sample dataset with more than one million data points.

For our analysis, the sample is limited to full-time workers because the 1990 BSWS collects information on the academic background of full-time workers but not part-time workers. The hourly wage is calculated as (monthly scheduled wage + bonus per month) ÷ (monthly scheduled hours).[24] The monthly scheduled wage includes a base wage plus family, housing, and

[24] In Japan, the labor compensation system is relatively distinctive. Full-time employees (or, more precisely, "regular" employees who work on a non-temporal permanent basis as opposed to "non-regular" employees who work on a time-limited contract) typically receive substantial bonuses twice a year that are regarded as a key component of their total earnings. Unlike the performance-based bonuses prevalent in the U.S., Japanese bonuses are generally linked to profit-sharing (Freeman and Weitzman, 1987) and/or length of service (Hart and Kawasaki, 1995; Hashimoto, 1979).

commuting allowances.

The BSWS dataset does not include information on individuals' birth year and month, but it does provide their age as of the end of June in the survey year. In this study, cohorts born in FY1964 or later are the treatment group, while those born in FY1963 or earlier are the control group. In the 1990 data, age is recorded as of the end of June 1990. Individuals aged 25 or younger at that time were born in FY1964 or later, and thus are assigned to the treatment group. On the other hand, those aged 27 or older were born in FY1963 or earlier and are assigned to the control group. However, individuals who were 26 years old include those born in both FY1963 and FY1964, meaning that the treatment and control groups are mixed within this age. Therefore, to sharply distinguish treated individuals, those aged 26 are excluded from the analysis sample. To summarize, the bandwidth is set to 3 years, with the cutoff at age 25: the treatment group consists of individuals aged 22 to 25, and the control group consists of those aged 27 to 29 (See Table A1 in the Appendix).

The original sample size of the 1990 BSWS is 1,258,097, which we restricted to full-time workers, yielding a dataset of 1,167,039. We further limited the sample to university graduates aged 22 to 29, excluding those aged 26, in the end of July 1990 and excluded those with missing values for the hourly wage variable. In addition, since the minimum age for university graduation in Japan is 22 years old,[25] if years of tenure are larger than (age - 22), this would be considered incorrect and so data that met this condition were excluded. After these restrictions, our analysis sample size for analysis on the gender wage gap was reduced to 45,311.

The RD regression equation is as follows:

$$\begin{aligned} Y_i = \alpha + \beta_1(Post_{EEOL} \times female) + \beta_2 Post_{EEOL} \\ +\beta_3 f(D_i) + \beta_4 female + \beta_5(f(D_i) \times female) + \sum_{k=2}^{47} \mu_k(\pi_k) + u_{it}, \end{aligned} \tag{2}$$

where Y is the logarithmic natural of the hourly wage, i is individual, and u is the error term. Age (D_i) is the forcing variable that determines whether individual i is exposed to full treatment or not, and it is normalized to 0 at the cutoff, which is 25 years old (those born between July 1964 and June 1965). In our specification, $f(D_i)$ is a linear function. Prefecture k fixed effects $\sum_{k=2}^{47} \mu_k(\pi_k)$ capture structural differences across prefectures. The coefficient of interest

[25] Early graduation was almost nonexistent at the time.

is $\hat{\beta}_1$, and a positive value indicates a decrease in the gender wage gap. Standard errors are clustered at age.

Next, for the analysis of gender disparity in managerial positions, we created dummy variables for each category of managerial position: foreman, subsection manager, section manager, department manager, and other managerial positions. Among these positions, we do not focus on foreman because the position is specific to blue collar jobs and other managerial position because this category includes junior and senior managerial positions. We constructed a manager dummy that takes the value of one if the individual holds any of these positions, otherwise zero. In the BSWS, information on job titles is collected only from individuals working at firms with 100 or more employees. Therefore, this analysis restricts the sample from the gender wage disparity dataset to individuals working at firms with at least 100 employees and with non-missing information on job titles. Equation (2) is estimated, where Y represents each managerial position dummy variable.

7.2 Regression Results

Before reporting the RD regression results, we first present Figure 4 which plots the logarithmic hourly wages of women and men for cohorts within three years before and after the cutoff point for 1990, 2000, and 2010. At the early career stage in 1990, a reduction in the gender wage gap is observed at the cutoff point. However, by 2000 and also in 2010, corresponding to 14 and 24 years into their careers, the gender wage gap reduction effect appears to have completely disappeared.

Table 6 presents the RD regression results, $\hat{\beta}_1$ and $\hat{\beta}_2$, using Eq (2), and the coefficient of interest is $\hat{\beta}_1$ here. Column 1 presents the results for 1990, showing that the EEOL reduced the gender wage gap by 5.1% at a 5% level of statistical significance at the early career stage of three years after employment. However, as seen in Columns 2 and 3, no gender gap-reducing effects of the EEOL are observed at the later career stages in 2000 and 2010, which is consistent with what was observed visually in Figure 4.

The differing outcomes observed between the early and later career stages can be interpreted as follows. In their 20s at the early stage of their careers, more university-educated women were enabled by the EEOL to enter career-track positions alongside men, leading to a reduction in the gender wage gap. However, by their 30s and 40s, women increasingly faced

greater household responsibilities due to marriage and child-rearing. As a result, many women in career-track positions left the labor market. Of those who remained, many either transitioned to non-career-track positions or shifted to non-regular employment after taking a career break. In this way, the EEOL was able to assist university-educated women at the beginning of their careers but was not able to solve the career/household tradeoff faced by these women as their life course unfolded, caused by Japan's strict sociocultural traditions regarding gender roles. This explains why the narrowing of the gender wage gap in 1990 was short-lived, with the effect disappearing by 2000 and 2010.

Next, we exmine the effect of EEOL on the probability to be in managerial position. Figure illustrates the gender gap in the probability to become subsection manager (Kakaricho) in 1990 (Panel (A)), section manager (Kacho) in 2000 (Panel (B)), and department manager (Bucho) in 2010 (Panel (C)). Panel (A) shows that EEOL slightly narrowed the gender gap in the probability to be in subsection manager position in their 20s. Panel (B) shows that the EEOL substantially narrowed the gender gap to be in section manager position in their 30s. Finally, Panel (C) shows that the EEOL narrows the gender gap to be in department manager position in their 40s.

Table 7 presents estimation results of the gender gap in managerial positions. The results reaffirm that findings from Figure that EEOL narrows the gender gap to be in subsection manager positions by about 58% in the 20s, section manager by about 52% in the 30s, and department manager by about 14% in the 40s. These results show that the EEOL was effective to narrow the gender gap to be promoted to managerial position among university educated women who pursued careers in firms.

8 Conclusion

Using a large-scale dataset from Japan's National Census and a regression discontinuity (RD) design, this study examined whether the implementation of the Equal Employment Opportunity Law (EEOL) in April 1986 affected the employment outcomes of university-educated women and the gender wage gap. Since the law was intended to prohibit gender-based disparities in recruitment, job assignment, promotion, and retirement, its enactment required that career-track positions—previously reserved almost exclusively for men—also be made accessi-

ble to women.

We analyzed behavioral changes across different career stages, disaggregated by educational attainment (high school, two-year/technical college, and university graduates), focusing on outcomes such as employment, marriage, and the gender wage gap. Our findings indicate that in their 20s, university-educated women saw an increase in employment rates and a decline in the likelihood of marriage and full-time homemaking. These effects were not observed among women with only high school or junior college education—likely because career-track positions generally require a university degree.

Before the EEOL, men and women in Japan were subject to markedly different employment practices. Women were typically assigned auxiliary roles—female jobs—and university-educated women, in particular, lacked a clear career path. They were neither eligible for management-track positions nor prioritized in hiring for traditional female roles, and were often marginalized even when hired. As a result, the EEOL had a significant positive impact on this small, highly educated group. Moreover, the gender wage gap among university graduates in their 20s narrowed following the law's enactment.

However, these gains did not persist into later career stages. We argue that many of these women were ultimately forced to choose between pursuing a career and forming a family because the option to do both simultaneously was effectively unavailable. Women with career aspirations had very limited opportunities to continue working while also marrying and raising children. This was due, first, to the lack of adequate social infrastructure—particularly the insufficient provision of affordable and accessible childcare services—which made it difficult to remain in the labor force after childbirth. Second, traditional norms regarding the division of household labor remained deeply entrenched, and responsibilities such as childcare and housework were rarely shared between men and women. In this environment, sustaining a demanding career while forming a family was not a viable option for most women. Confronted with such constraints, many ultimately prioritized family formation, which helps explain why the initial gains in employment and earnings observed among university-educated women following the implementation of the EEOL did not persist into later stages of their careers. This interpretation is supported by evidence from the National Fertility Survey, which shows little change over time in women's attitudes toward traditional gender roles.

The same analysis conducted for men revealed that the EEOL had no discernible impact

on employment outcomes at any educational level. This suggests that expanded employment opportunities for women did not come at the expense of men's employment.

In sum, the EEOL had a positive short-term effect on the employment of university-educated women and in reducing the gender wage gap, thereby laying the groundwork for greater utilization of highly educated female talent. However, these effects dissipated over time, as early-career-stage women encountered life events such as marriage and childbirth. These findings suggest that the enactment of anti-discrimination legislation alone is not sufficient to eliminate gender inequality in the labor market. Achieving lasting equality requires not only legal guarantees of equal treatment, but also broader societal transformation—through the expansion of childcare infrastructure and a reconfiguration of domestic gender norms—to enable individuals to balance career advancement and family responsibilities.

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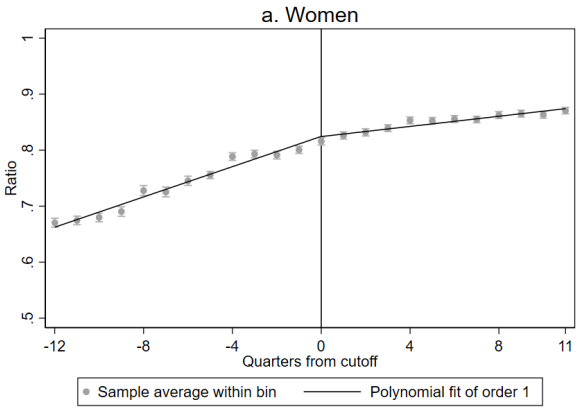
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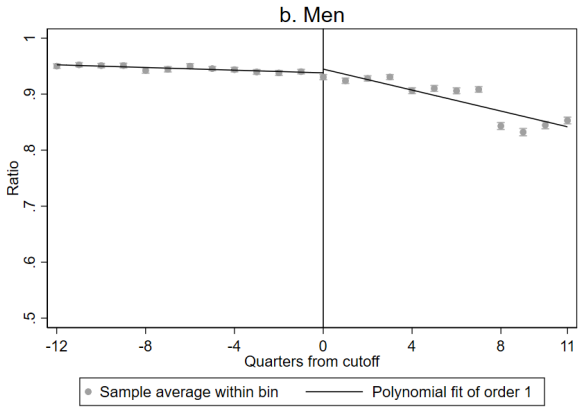
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Figure

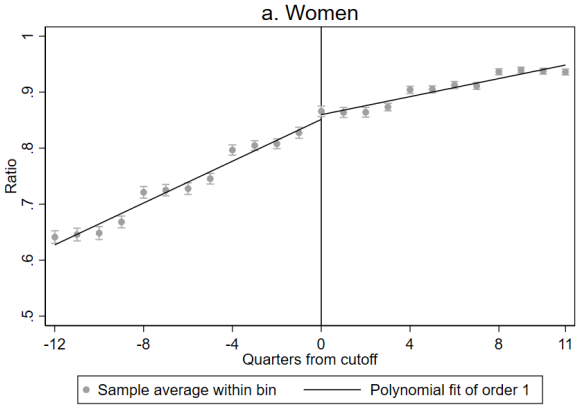
Figure 1: Employment by Gender and Academic Background (1990)



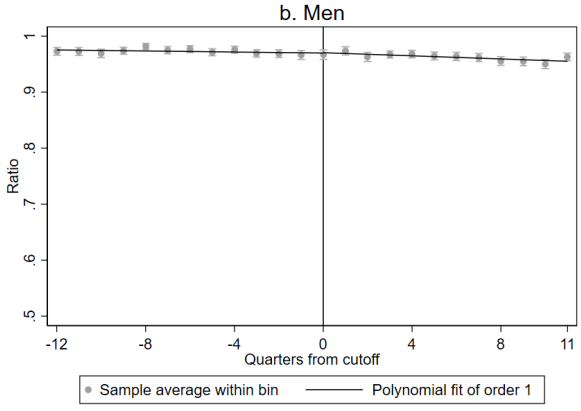
(A) Women, High School



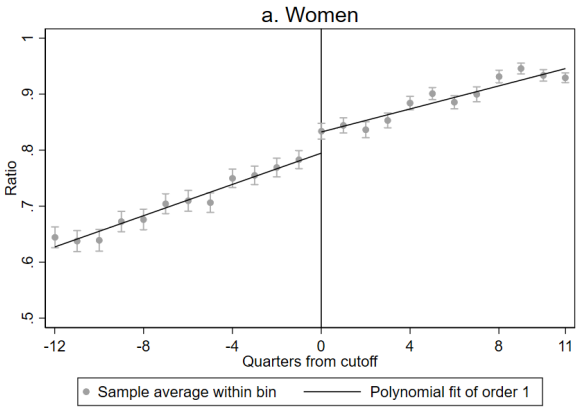
(B) Men, High school



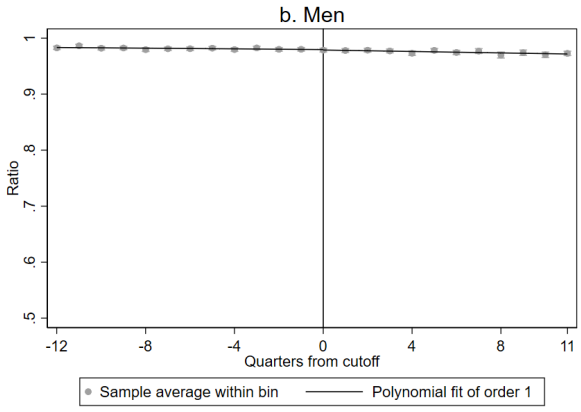
(C) Women, 2-year/Technical College



(D) Men, 2-year/Technical College



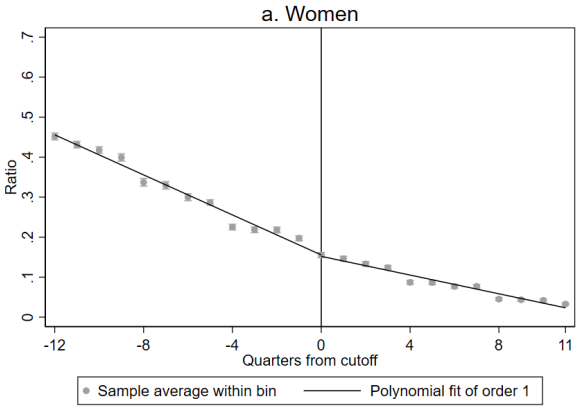
(E) Women, University



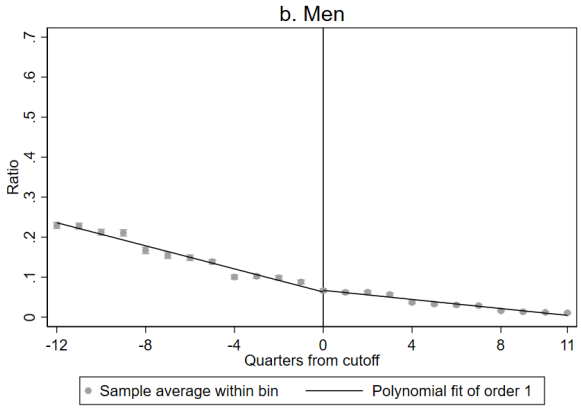
(F) Men, University

Notes. The X-axis shows the running variable (normalized quarter-year of birth). For high school graduates, the cutoff (0) is the cohort born in the first quarter of FY1968 (April–June 1968), pre-EEOL cohorts were born between FY1965 and FY1967, and post-EEOL cohorts were those between FY1968 and FY1970. For two-year/technical college graduates, the cutoff is the cohort born in the first quarter of FY1966 (April–June 1966), pre-EEOL cohorts were born between FY1963 and FY1965, and post-EEOL cohorts were between FY1966 and FY1968. For university/graduate school graduates, the cutoff is the cohort born in the first quarter of FY1964 (April–June 1964), and pre-EEOL cohorts were born between FY1961 and FY1963, and post-EEOL cohorts were between FY1964 and FY1966. The dots in the figure are the within-bin sample means, and the vertical bars on them show the 95% CI.
Source. The National Census 1990.

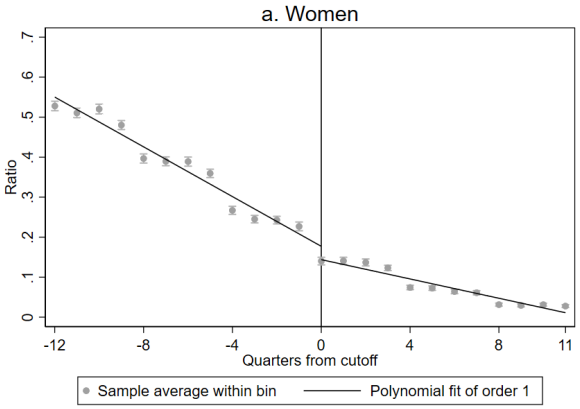
Figure 2: Being Married by Gender and Academic Background (1990)



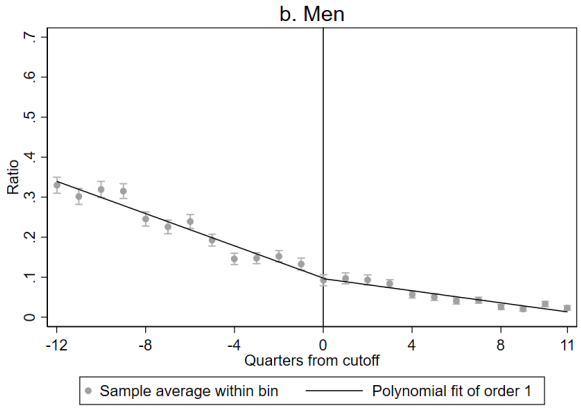
(A) Women, High School



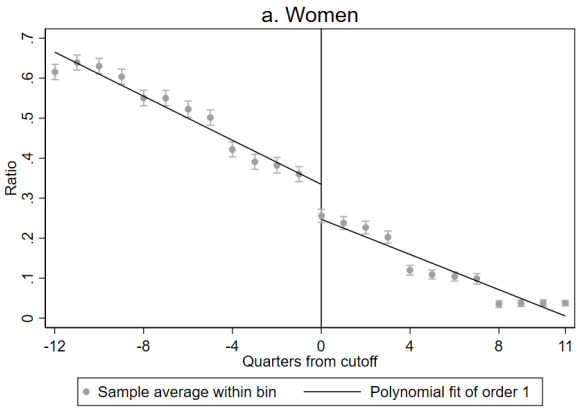
(B) Men, High School



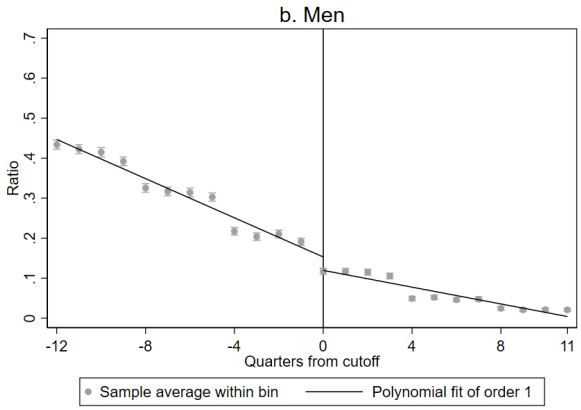
(C) Women, 2-year/Technical College



(D) Men, 2-year/Technical College



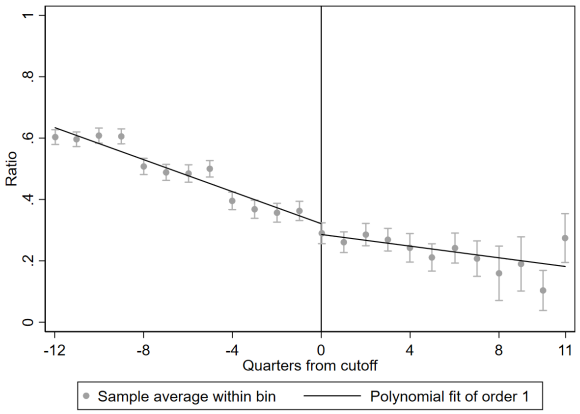
(E) Women, University



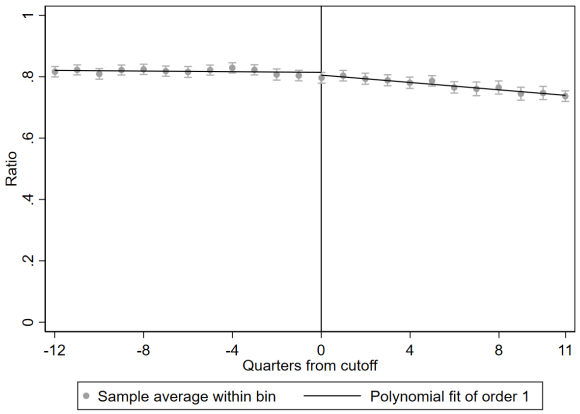
(F) Men, University

Notes. The same as in Figure 3.
Source. The National Census 1990.

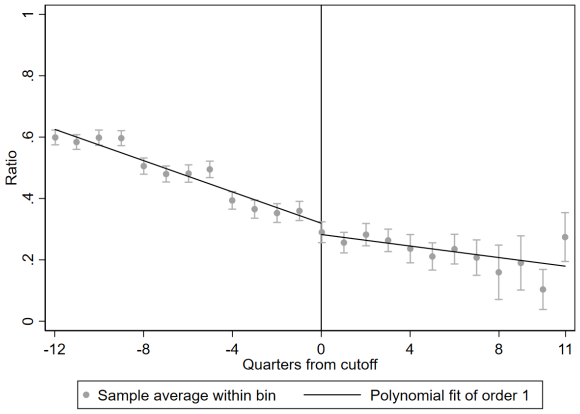
Figure 3: Childbearing (Women, University)



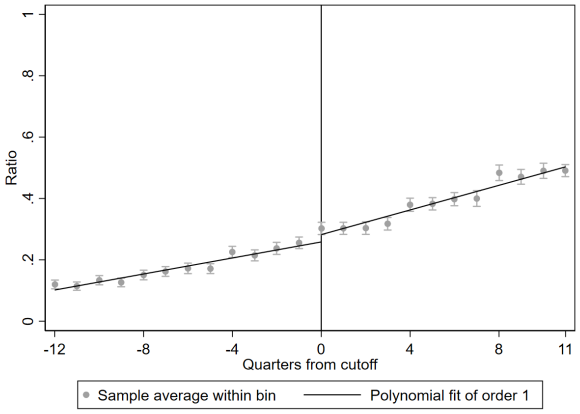
(A) Child Dummy, 1990



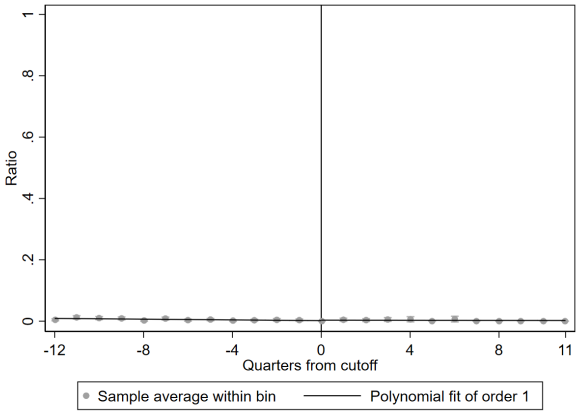
(B) Child Dummy, 2000



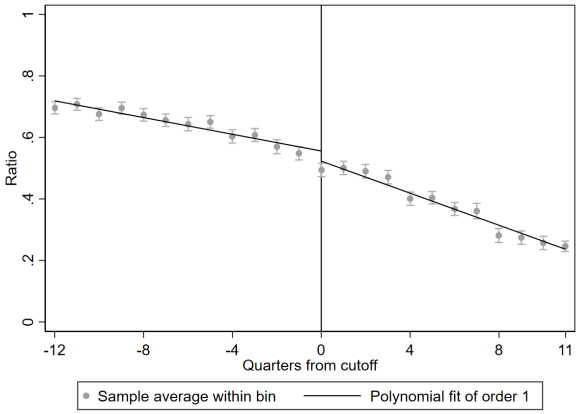
(C) The 1st Child Aged 0–5, 1990



(D) The 1st Child Aged 0–5, 2000



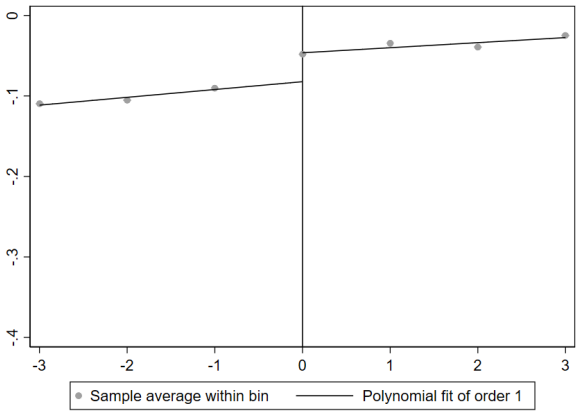
(E) The 1st Child Aged 6–14, 1990



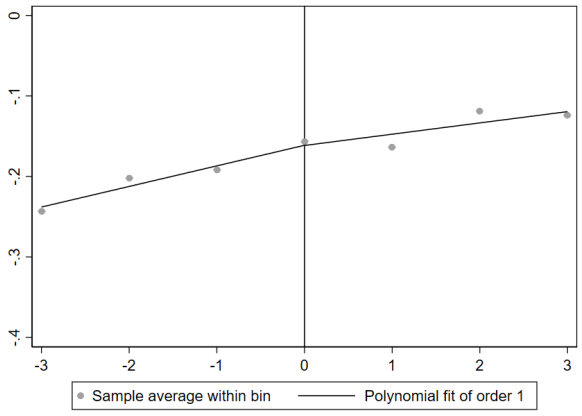
(F) The 1st Child Aged 6–14, 2000

Notes. The X-axis shows the running variable (normalized quarter-year of birth). For university graduates, the cutoff is the cohort born in the first quarter of FY1964 (April–June 1964), and pre-EEOL cohorts were born between FY1961 and FY1963, and post-EEOL cohorts were between FY1964 and FY1966. The dots in the figure are the within-bin sample means, and the vertical bars on them show the 95% CI.
Source. The National Census 1990, and 2000.

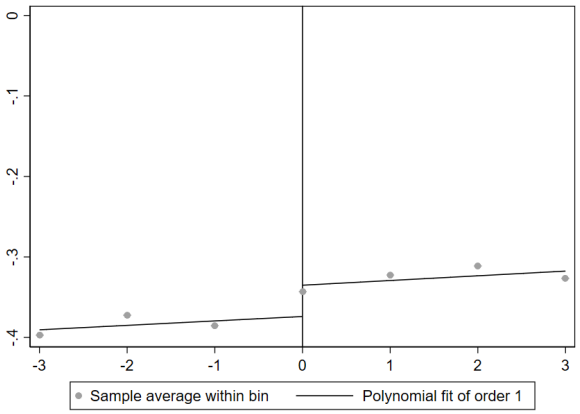
Figure 4: Gender Wage Gap (University, 1990–2020)



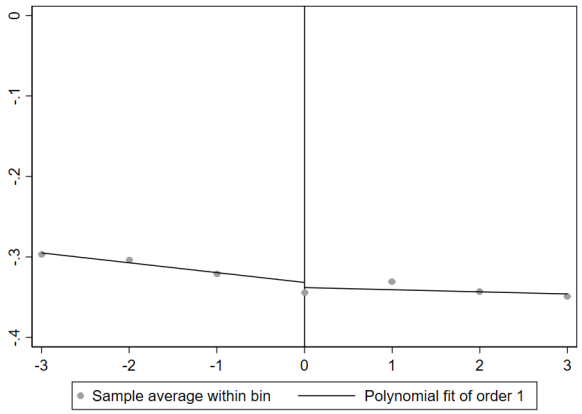
(A) 1990



(B) 2000



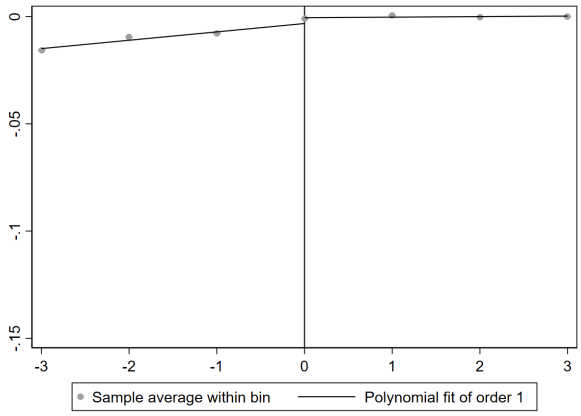
(C) 2010



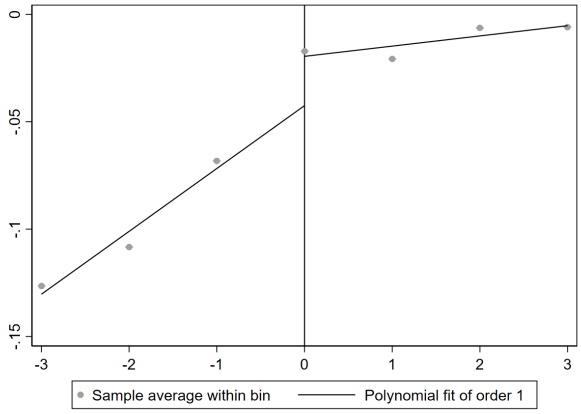
(D) 2020

Notes. The X-axis indicates the number of years from the cutoff age. 0 indicates the cutoff, which is the cohort aged 25 at the end of June 1990. The Y-axis indicates a cohort's average of log gender wage gap.
Source. The Basic Survey on Wage Structure, 1990, 2000, 2010, and 2020.

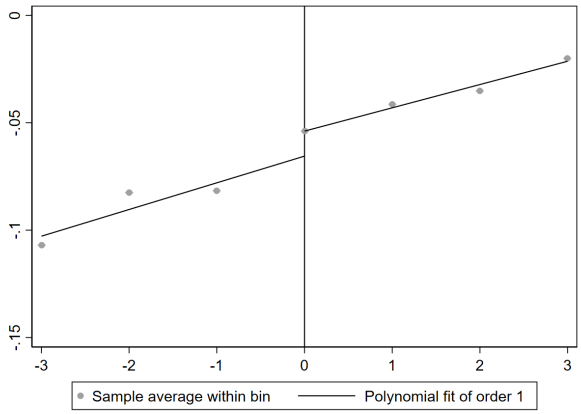
Figure 5: Gender Gap in Managerial Position (University, 1990, 2000, 2010)



(A) Subsection Manager, 1990



(B) Section Manager, 2000



(C) Department Manager, 2010

Notes. The same as in Figure 4.
Source. The Basic Survey on Wage Structure, 1990, 2000, and 2010.

Table

Table 1: Descriptive Statistics by Academic Background (1990, Average Per Cohort)

	Pre-EEOL cohorts	Post-EEOL cohorts	Difference in means		% change	Pre-EEOL cohorts	Post-EEOL cohorts	Difference in means		% change
	Women					Men				
A. High School										
Employed	0.740	0.851	0.111	***	15.0	0.950	0.900	-0.050	***	-5.3
	(0.439)	(0.356)				(0.219)	(0.300)			
Unemployed	0.038	0.049	0.011	***	29.5	0.043	0.065	0.022	***	50.8
	(0.191)	(0.216)				(0.203)	(0.246)			
Not in LF	0.222	0.100	-0.122	***	-55.0	0.008	0.035	0.028	***	369.5
	(0.416)	(0.300)				(0.087)	(0.185)			
N	155,627	155,616				141,061	147,283			
B. 2-year/Technical College										
Employed	0.731	0.907	0.176	***	24.1	0.974	0.963	-0.011	***	-1.1
	(0.443)	(0.290)				(0.161)	(0.190)			
Unemployed	0.029	0.027	-0.001	*	-4.5	0.023	0.032	0.009	***	38.7
	(0.167)	(0.163)				(0.150)	(0.176)			
Not in LF	0.240	0.066	-0.174	***	-72.6	0.003	0.005	0.002	***	56.9
	(0.427)	(0.247)				(0.059)	(0.074)			
N	86,466	91,229				28,049	30,738			
C. University/Graduate School										
Employed	0.705	0.888	0.183	***	26.0	0.982	0.976	-0.006	***	-0.6
	(0.456)	(0.315)				(0.132)	(0.152)			
Unemployed	0.022	0.023	0.001		6.4	0.014	0.019	0.005	***	34.0
	(0.147)	(0.151)				(0.118)	(0.136)			
Not in LF	0.273	0.088	-0.185	***	-67.7	0.004	0.005	0.001	***	34.8
	(0.446)	(0.284)				(0.059)	(0.069)			
N	30,145	31,025				88,432	75,704			

Notes. Standard deviations are in parentheses. * p<0.10, ** p<0.05, *** p<0.01. For high school graduates, pre-EEOL cohorts were born between FY1965 and FY1967, and post-EEOL cohorts were those between FY1968 and FY1970. For two-year/technical college graduates, pre-EEOL cohorts were born between FY1963 and FY1965, and post-EEOL cohorts were between FY1966 and FY1968. For university/graduate school graduates, pre-EEOL cohorts were born between FY1961 and FY1963, and post-EEOL cohorts were between FY1964 and FY1966. "LF" indicates Labor Force.
Sources: The National Census 1990.

Table 2: RD Regression Results on Employment by Gender and Academic Background (1990)

(A) High School
(Treatment Group: 19–22 Years Old)

	Women			Men		
	(1)	(2)	(3)	(4)	(5)	(6)
	Employed	Unemployed	Not in LF	Employed	Unemployed	Not in LF
Post_EEOL	0.001	0.002*	-0.004	0.006	0.003	-0.008*
	(0.007)	(0.001)	(0.007)	(0.006)	(0.002)	(0.005)
Mean in Pre-EEOL	0.739	0.038	0.223	0.950	0.043	0.008
N	311243	311243	311243	288344	288344	288344
R-Squared	0.038	0.006	0.046	0.026	0.012	0.026

(B) Two-year/Technical College
(Treatment Group: 21–24 Years Old)

	Women			Men		
	(1)	(2)	(3)	(4)	(5)	(6)
	Employed	Unemployed	Not in LF	Employed	Unemployed	Not in LF
Post_EEOL	0.008	-0.001	-0.007	0.001	0.000	-0.001
	(0.008)	(0.002)	(0.009)	(0.003)	(0.002)	(0.001)
Mean in Pre-EEOL	0.731	0.029	0.24	0.974	0.023	0.003
N	177695	177695	177695	58787	58787	58787
R-Squared	0.073	0.002	0.083	0.004	0.003	0.002

(C) University
(Treatment Group: 23–26 Years Old)

	Women			Men		
	(1)	(2)	(3)	(4)	(5)	(6)
	Employed	Unemployed	Not in LF	Employed	Unemployed	Not in LF
Post_EEOL	0.038***	-0.000	-0.037***	-0.001	0.002**	-0.001
	(0.007)	(0.002)	(0.008)	(0.001)	(0.001)	(0.001)
Mean in Pre-EEOL	0.705	0.022	0.273	0.982	0.014	0.004
N	61170	61170	61170	164136	164136	164136
R-Squared	0.075	0.002	0.082	0.003	0.002	0.001

Notes. Standard errors clustered by birth year-quarter are in parentheses. * $p<0.10$, ** $p<0.05$, *** $p<0.01$. For high school graduates, pre-EEOL cohorts were born between FY1965 and FY1967, and post-EEOL cohorts were those between FY1968 and FY1970. For two-year/technical college graduates, pre-EEOL cohorts were born between FY1963 and FY1965, and post-EEOL cohorts were between FY1966 and FY1968. For university graduates, pre-EEOL cohorts were born between FY1961 and FY1963, and post-EEOL cohorts were between FY1964 and FY1966.
Sources: The National Census 1990.

Table 3: Results of RD Regression on Detailed Labor Force Status and Employment Status
(Women, University, 1990)
(Treatment Group: 23–26 Years Old)

(A) Detailed Labor Force Status

	(1) Mainly Working	(2) Working & Housework	(3) Working & School	(4) On Leave	(5) Unemployed	(6) Housework	(7) School	(8) Other
Post_EEOL	0.047***	-0.003	-0.001*	-0.005**	-0.000	-0.038***	-0.000	0.001
	(0.010)	(0.004)	(0.001)	(0.002)	(0.002)	(0.007)	(0.001)	(0.001)
Mean in Pre-EEOL	0.604	0.075	0.001	0.024	0.022	0.27	0.001	0.002
N	61170	61170	61170	61170	61170	61170	61170	61170
R-Squared	0.101	0.014	0.002	0.009	0.002	0.085	0.001	0.001

(B) Detailed Employment Status

	(1) Employee	(2) Self-employed	(3) Family Worker	(4) Home-based Worker	(5) Unknown	(6) Unemployed	(7) Not in LF
Post_EEOL	0.032***	0.004***	0.001	-0.000	-0.000	-0.000	-0.037***
	(0.008)	(0.001)	(0.001)	(0.000)	(0.000)	(0.002)	(0.008)
Mean in Pre-EEOL	0.664	0.022	0.018	0.001	0.000	0.022	0.273
N	61170	61170	61170	61170	61170	61170	61170
R-Squared	0.081	0.003	0.006	0.002	0.001	0.002	0.082

Notes. Standard errors clustered by birth year-quarter are in parentheses. * $p<0.10$, ** $p<0.05$, *** $p<0.01$.
Pre-EEOL cohorts were born between FY1961 and FY1963, and post-EEOL cohorts were between FY1964 and FY1966. In Panel B, "LF" indicates Labor Force.
Sources: The National Census 1990.

Table 4: Results of RD Regression on Employment by Gender (1990–2020; University)

(A) 1990 (Treatment Group: 23–26 Years Old)

	Women			Men		
	(1)	(2)	(3)	(4)	(5)	(6)
	Employed	Unemployed	Not in LF	Employed	Unemployed	Not in LF
Post_EEOL	0.038***	-0.000	-0.037***	-0.001	0.002**	-0.001
	(0.007)	(0.002)	(0.008)	(0.001)	(0.001)	(0.001)
Mean in Pre-EEOL	0.705	0.022	0.273	0.982	0.014	0.004
N	61170	61170	61170	164136	164136	164136
R-Squared	0.075	0.002	0.082	0.003	0.002	0.001

(B) 2000 (Treatment Group: 33–36 Years Old)

	Women			Men		
	(1)	(2)	(3)	(4)	(5)	(6)
	Employed	Unemployed	Not in LF	Employed	Unemployed	Not in LF
Post_EEOL	0.002	-0.001	-0.000	0.003	-0.002	-0.001
	(0.009)	(0.002)	(0.008)	(0.002)	(0.002)	(0.001)
Mean in Pre-EEOL	0.619	0.015	0.366	0.974	0.018	0.009
N	58712	58712	58712	162973	162973	162973
R-Squared	0.029	0.002	0.028	0.002	0.001	0.001

(C) 2010 (Treatment Group: 43–46 Years Old)

	Women			Men		
	(1)	(2)	(3)	(4)	(5)	(6)
	Employed	Unemployed	Not in LF	Employed	Unemployed	Not in LF
Post_EEOL	0.000	0.004	-0.004	-0.006***	0.003**	0.002***
	(0.006)	(0.003)	(0.006)	(0.001)	(0.001)	(0.001)
Mean in Pre-EEOL	0.753	0.017	0.229	0.957	0.032	0.011
N	49429	49429	49429	130630	130630	130630
R-Squared	0.020	0.002	0.019	0.002	0.001	0.001

(D) 2020 (Treatment Group: 53–56 Years Old)

	Women			Men		
	(1)	(2)	(3)	(4)	(5)	(6)
	Employed	Unemployed	Not in LF	Employed	Unemployed	Not in LF
Post_EEOL	-0.007	0.005**	0.001	-0.000	-0.001	0.001
	(0.005)	(0.002)	(0.005)	(0.002)	(0.001)	(0.001)
Mean in Pre-EEOL	0.755	0.013	0.232	0.936	0.026	0.038
N	52383	52383	52383	133509	133509	133509
R-Squared	0.016	0.003	0.015	0.002	0.001	0.002

Notes. Standard errors clustered by birth year-quarter are in parentheses. * p<0.10, ** p<0.05, *** p<0.01.
Pre-EEOL cohorts were born between FY1961 and FY1963, and post-EEOL cohorts were between FY1964 and FY1966. Panel A is the same as Panel C in Table 2. "LF" indicates Labor Force.
Sources: The National Census 1990, 2000, 2010, and 2020.

Table 5: RD Regression Results on Family Formation (Women, University, 1990–2020)

(A) 1990 (Treatment Group: 23–26 Years Old)

	(1) Married	(2) Ever married	(3) Child dum.	(4) # of children	(5) The 1st child aged 0–5	(6) The 1st child aged 6–14
Post_EEOL	-0.087***	-0.087***	-0.039*	-0.021	-0.040**	0.001
	(0.017)	(0.017)	(0.020)	(0.028)	(0.019)	(0.002)
Mean in Pre-EEOL	0.513	0.519	0.507	0.633	0.501	0.006
N	60902	60902	19599	19599	19599	19599
R-Squared	0.212	0.216	0.091	0.102	0.089	0.007

(B) 2000 (Treatment Group: 33–36 Years Old)

	(1) Married	(2) Ever married	(3) Child dum.	(4) # of children	(5) The 1st child aged 0–5	(6) The 1st child aged 6–14
Post_EEOL	-0.011	-0.007	-0.008	-0.029	0.025**	-0.033*
	(0.008)	(0.008)	(0.007)	(0.022)	(0.012)	(0.016)
Mean in Pre-EEOL	0.801	0.835	0.818	1.628	0.173	0.645
N	58645	58645	47016	47016	47016	47016
R-Squared	0.019	0.022	0.021	0.053	0.081	0.110

(C) 2010 (Treatment Group: 43–46 Years Old)

	(1) Married	(2) Ever married	(3) Child dum.	(4) # of children	(5) The 1st child aged 0–5	(6) The 1st child aged 6–14
Post_EEOL	0.001	0.001	0.013	0.031	0.000	0.013
	(0.006)	(0.006)	(0.012)	(0.024)	(0.002)	(0.011)
Mean in Pre-EEOL	0.784	0.855	0.167	0.246	0.006	0.161
N	49444	49444	41554	41554	41554	41554
R-Squared	0.011	0.011	0.086	0.093	0.016	0.069

(D) 2020 (Treatment Group: 53–56 Years Old)

	(1) Married	(2) Ever married	(3) Child dum.	(4) # of children	(5) The 1st child aged 0–5	(6) The 1st child aged 6–14
Post_EEOL	-0.004	-0.008*	-0.002	-0.003	-0.000	-0.002
	(0.007)	(0.005)	(0.002)	(0.002)	(0.001)	(0.002)
Mean in Pre-EEOL	0.76	0.866	0.008	0.011	0.003	0.006
N	52343	52343	44629	44629	44629	44629
R-Squared	0.009	0.010	0.011	0.008	0.002	0.013

Notes. Standard errors clustered by birth year-quarter are in parentheses. * p<0.10, ** p<0.05, *** p<0.01.
Pre-EEOL cohorts were born between FY1961 and FY1963, and post-EEOL cohorts were born between FY1964 and FY1966. The analyses in (3) through (6) are conditioned on being ever been married. "# of children" indicates the number of children under age 15, "child dum" is a dummy variable which takes 1 if she has children under age 15, otherwise 0. Prefecture fixed effects and municipality population size category fixed effects are controlled for in all estimations.
Sources: The National Census 1990, 2000, 2010, and 2020.

Table 6: RD Regression Results on Gender Wage Gap (University, 1990–2020)

(A) 1990 (Treatment Group: 22–25 Years Old)

	(1) Mean	(2) P10	(3) P25	(4) P50	(5) P75	(6) P90
$Post_EEOL \times female$	0.042***	0.053**	0.057***	0.032***	0.044**	0.033*
	(0.008)	(0.016)	(0.008)	(0.008)	(0.016)	(0.015)
Gender Gap in Pre-EEOL	-0.106	-0.157	-0.127	-0.080	-0.081	-0.077
N	45311	45311	45311	45311	45311	45311
R-Squared	0.285	0.134	0.187	0.219	0.193	0.119

(B) 2000 (Treatment Group: 32–35 Years Old)

	(1) Mean	(2) P10	(3) P25	(4) P50	(5) P75	(6) P90
$Post_EEOL \times female$	0.009	0.004	0.037**	-0.000	0.007	0.013
	(0.016)	(0.031)	(0.014)	(0.011)	(0.021)	(0.021)
Gender Gap in Pre-EEOL	-0.212	-0.365	-0.253	-0.184	-0.157	-0.135
N	56413	56413	56413	56413	56413	56413
R-Squared	0.180	0.099	0.127	0.129	0.101	0.057

(C) 2010 (Treatment Group: 42–45 Years Old)

	(1) Mean	(2) P10	(3) P25	(4) P50	(5) P75	(6) P90
$Post_EEOL \times female$	0.039**	-0.026	0.051	0.053*	0.028**	0.050*
	(0.011)	(0.020)	(0.040)	(0.023)	(0.009)	(0.026)
Gender Gap in Pre-EEOL	-0.385	-0.488	-0.481	-0.374	-0.335	-0.315
N	43190	43190	43190	43190	43190	43190
R-Squared	0.144	0.066	0.104	0.092	0.072	0.045

(D) 2020 (Treatment Group: 52–55 Years Old)

	(1) Mean	(2) P10	(3) P25	(4) P50	(5) P75	(6) P90
$Post_EEOL \times female$	-0.014	0.041*	-0.007	-0.025	-0.040*	0.014
	(0.011)	(0.020)	(0.026)	(0.016)	(0.018)	(0.065)
Gender Gap in Pre-EEOL	-0.307	-0.378	-0.415	-0.321	-0.246	-0.222
N	40507	40507	40507	40507	40507	40507
R-Squared	0.134	0.051	0.095	0.092	0.078	0.039

Notes. Standard error clustered by age is in parentheses. Eq. (2) is used for all regressions. "P" indicates percentile. * p<0.10, ** p<0.05, *** p<0.01. Post-EEOL cohort is those born in FY1964–1967.
Sources: The Ministry of Health, Labour, and Welfare, The Basic Survey of Wage Structure 1990, 2000, 2010, and 2020.

Table 7: RD Regression Results on Gender Disparities in Managerial Positions (University, 1990–2020)

(A) 1990 (Treatment Group: 22–25 Years Old)

	(1) Manager	(2) Foreman	(3) Subsec. Mgr.	(4) Sec. Mgr.	(5) Dep. Mgr.	(6) Other Mgr.
$Post_EEOL \times female$	0.016	0.000	0.007***	0.001	0.000	0.008
	(0.008)	(0.002)	(0.002)	(0.001)	(0.000)	(0.007)
Gender Gap in Pre-EEOL	-0.038	-0.008	-0.012	-0.001	-0.000	-0.017
N	37664	37664	37664	37664	37664	37664
R-Squared	0.034	0.009	0.018	0.003	0.001	0.014

(B) 2000 (Treatment Group: 32–35 Years Old)

	(1) Manager	(2) Foreman	(3) Subsec. Mgr.	(4) Sec. Mgr.	(5) Dep. Mgr.	(6) Other Mgr.
$Post_EEOL \times female$	0.044	-0.000	-0.026	0.053**	-0.002	0.019*
	(0.024)	(0.003)	(0.023)	(0.020)	(0.003)	(0.009)
Gender Gap in Pre-EEOL	-0.291	-0.009	-0.090	-0.101	-0.004	-0.088
N	46272	46272	46272	46272	46272	46272
R-Squared	0.078	0.005	0.017	0.058	0.005	0.017

(C) 2010 (Treatment Group: 42–45 Years Old)

	(1) Manager	(2) Foreman	(3) Subsec. Mgr.	(4) Sec. Mgr.	(5) Dep. Mgr.	(6) Other Mgr.
$Post_EEOL \times female$	0.017	0.003**	-0.002	-0.001	0.013***	0.003
	(0.020)	(0.001)	(0.007)	(0.017)	(0.004)	(0.008)
Gender Gap in Pre-EEOL	-0.451	-0.003	-0.026	-0.191	-0.090	-0.141
N	34077	34077	34077	34077	34077	34077
R-Squared	0.067	0.003	0.010	0.024	0.027	0.025

(D) 2020 (Treatment Group: 52–55 Years Old)

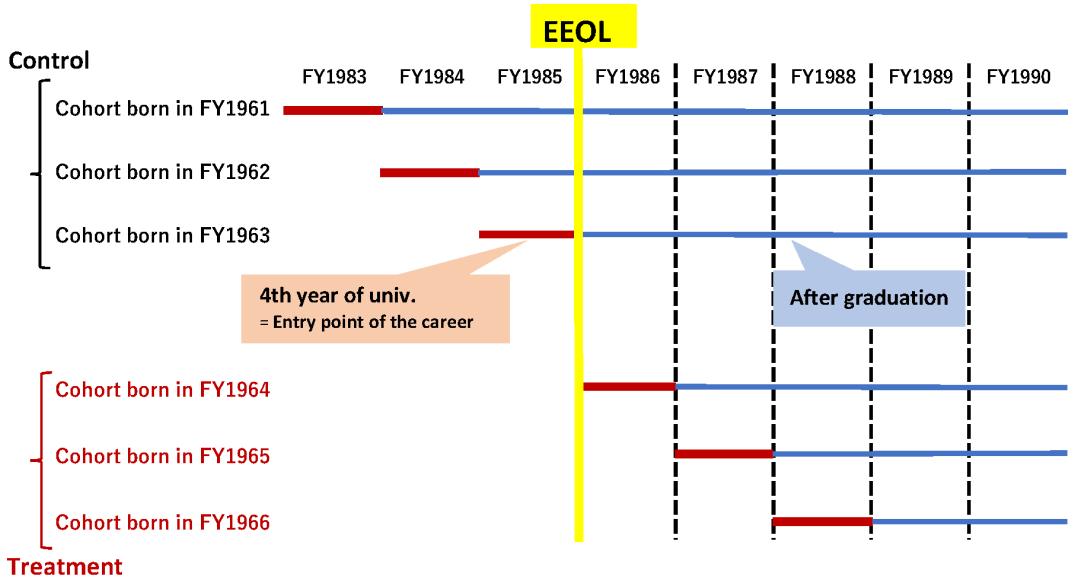
	(1) Manager	(2) Foreman	(3) Subsec. Mgr.	(4) Sec. Mgr.	(5) Dep. Mgr.	(6) Other Mgr.
$Post_EEOL \times female$	0.033	-0.000	0.014	-0.025**	0.008	0.037**
	(0.035)	(0.004)	(0.013)	(0.008)	(0.023)	(0.014)
Gender Gap in Pre-EEOL	-0.317	-0.002	-0.009	-0.088	-0.131	-0.086
N	31449	31449	31449	31449	31449	31449
R-Squared	0.056	0.003	0.008	0.018	0.017	0.011

Notes. Standard errors clustered by age are in parentheses. Eq. (2) is used for all regressions. The sample is limited to firms with 100 or more employees. * p<0.10, ** p<0.05, *** p<0.01. Pre-EEOL cohorts were born between FY1961 and FY1963, and post-EEOL cohorts were between FY1964 and FY1966. "Manager" indicates a dummy variable which takes one if she/he is in a managerial position, otherwise 0. "Subsec. Mgr." is a subsection manager dummy variable (*kakari-cho*), "Sec. Mgr." is a section manager dummy variable (*ka-cho*),"Dep. Mgr." is a section manager dummy variable (*bu-cho*), and "Other Mgr." is a dummy variable of other positions at the management level. Prefecture fixed effects are controlled for in all estimations. Pre-EEOL Mean indicates the gender gap in the average managerial position rate for the pre-EEOL cohort.
Sources: The Ministry of Health, Labour, and Welfare, The Basic Survey of Wage Structure 1990, 2000, 2010, and 2020.

App Figure

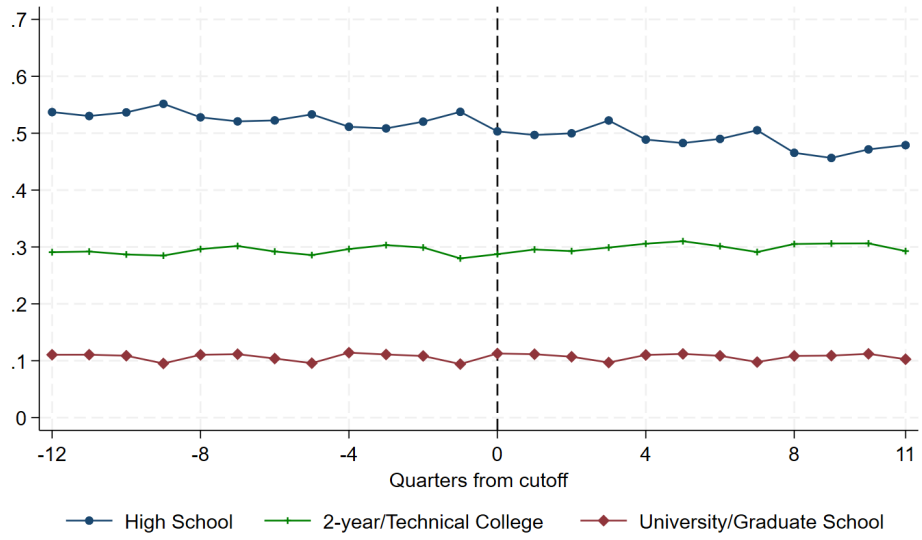
Appendix

Figure A1: RD Design of This Study

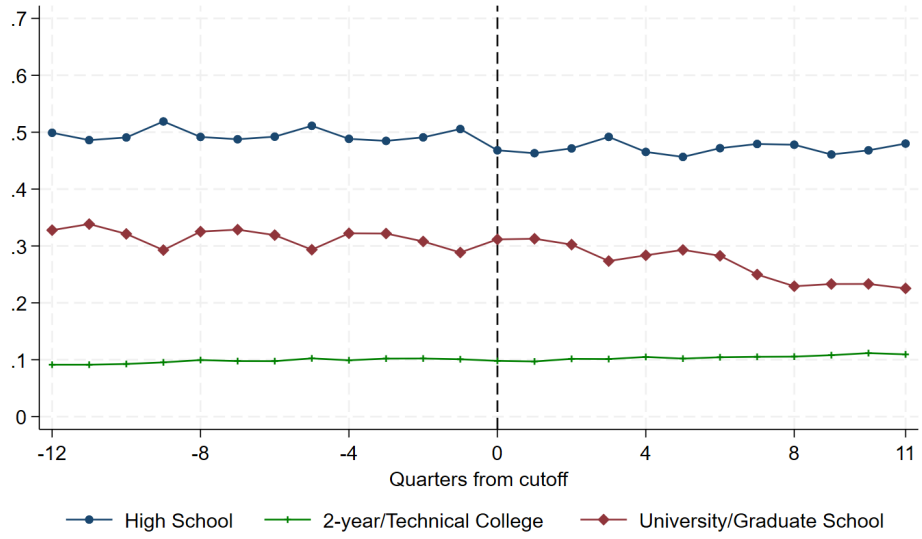


Source. Created by the authors.

Figure A2: Distribution of the Forcing Variable (1990)



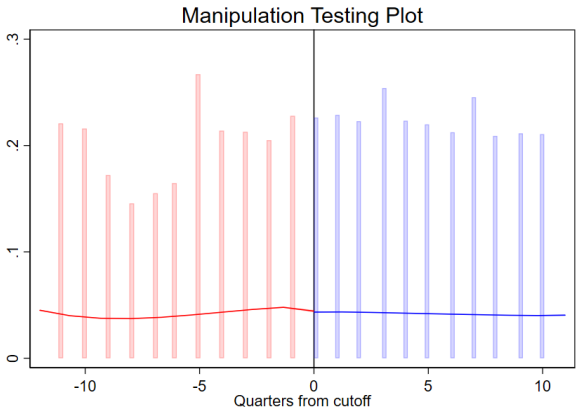
(a) Women



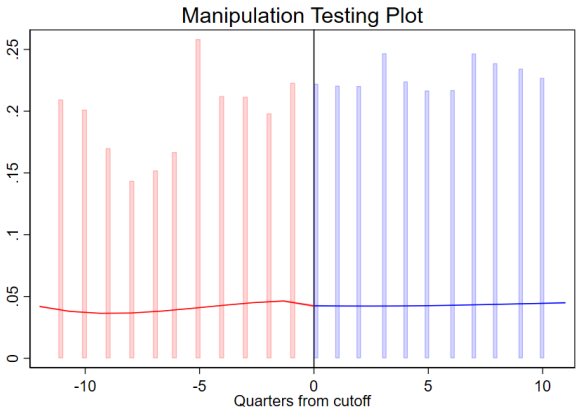
(b) Men

Notes. The Y axis indicates the proportion of individuals with each academic background within the cohort's population. Source. The National Census 1990.

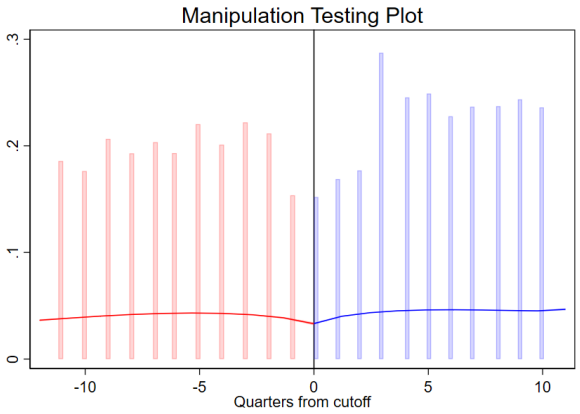
Figure A3: Density Check by Gender and Academic Background (1990)



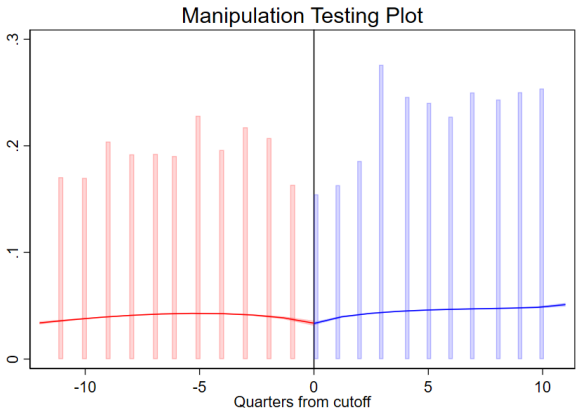
(A) Women, High School



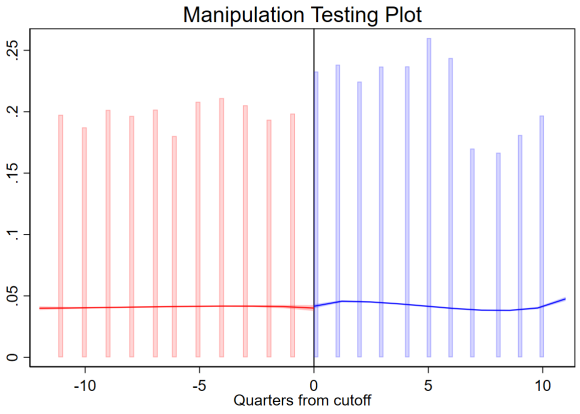
(B) Men, High school



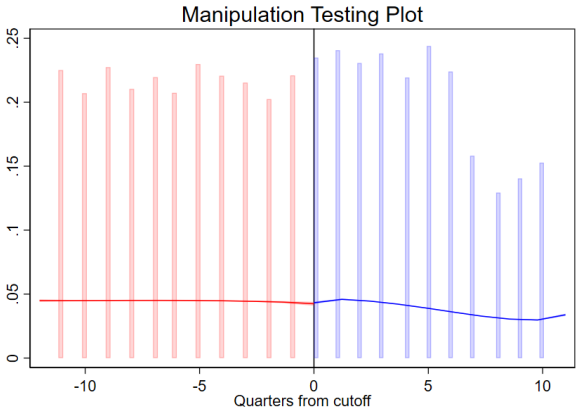
(C) Women, 2-year/Technical College



(D) Men, 2-year/Technical College



(E) Women, University



(F) Men, University

Notes. Lines are the local density estimated separately on either side of the cutoff point, using the Stata package "rddensity." The shaded area represents the 95% CI.
Source. The National Census 1990.

App Table

Table A1: Birth Year-Quarter/Age of Pre-EEOL and Post-EEOL Cohorts and Cutoff Point by Academic Background

	Cutoff Point (forcing var. = 0)	Pre-EEOL cohorts	Post-EEOL cohorts
A. Analysis on Work-related Variables & Family Formation			
High School	Q1 FY1968	Q1 FY1965 – Q4 FY1967	Q1 FY1968 – Q4 FY1970
2-year/Technical College	Q1 FY1966	Q1 FY1963 – Q4 FY1965	Q1 FY1966 – Q4 FY1968
University	Q1 FY1964	Q1 FY1961 – Q4 FY1963	Q1 FY1964 – Q4 FY1966
B. Analysis on Gender Gap in Wage & Managerial Position (University, 1990)			
Age (As of the end of June 1990)	25 years old	27–29 years old	22–25 years old
Birth year-month	July 1964–June 1965	July 1960–June 1963	July 1964–June 1968
Birth Q of FY	Q2 FY1964–Q1 1965	Q2 FY1960–Q1 1963	Q2 FY1964–Q1 1968

Notes: The age in Panel B is as of the end of June 1990, and individuals at age 26 include those born in both FY1963 and FY1964, so they were excluded from the analysis.

Table A2: Descriptive Statistics of Variables Related to Family Formation (Women, University, 1990–2020, Average Per Cohort)

	Pre-EEOL cohorts	Post-EEOL cohorts	Difference in means		% change
A. 1990					
Married	0.513	0.129	-0.384	***	-74.9
	(0.500)	(0.335)			
Ever married	0.519	0.130	-0.389	***	-75.0
	(0.500)	(0.336)			
N	30,046	30,856			
Child dummy	0.507	0.255	-0.252	***	-49.7
	(0.500)	(0.436)			
# of children	0.633	0.280	-0.353	***	-55.8
	(0.709)	(0.504)			
The 1st child aged 0–5	0.501	0.252	-0.249	***	-49.7
	(0.500)	(0.434)			
The 1st child aged 6–14	0.006	0.003	-0.003	**	-50.2
	(0.077)	(0.055)			
N	15,596	4,003			
B. 2000					
Married	0.801	0.743	-0.058	***	-7.2
	(0.399)	(0.437)			
Ever married	0.835	0.769	-0.066	***	-7.9
	(0.371)	(0.421)			
N	28,931	29,714			
Child dummy	0.818	0.773	-0.045	***	-5.5
	(0.386)	(0.419)			
# of children	1.628	1.409	-0.219	***	-13.5
	(1.009)	(0.976)			
The 1st child aged 0–5	0.173	0.390	0.217	***	125.4
	(0.378)	(0.488)			
The 1st child aged 6–14	0.645	0.383	-0.262	***	-40.6
	(0.479)	(0.486)			
N	24,160	22,856			
C. 2010					
Married	0.784	0.766	-0.018	***	-2.3
	(0.411)	(0.423)			
Ever married	0.855	0.826	-0.029	***	-3.4
	(0.352)	(0.379)			
N	24,246	25,198			
Child dummy	0.167	0.384	0.217	***	129.9
	(0.373)	(0.486)			
# of children	0.246	0.661	0.415	***	168.7
	(0.607)	(0.937)			
The 1st child aged 0–5	0.006	0.032	0.026	***	441.1
	(0.076)	(0.175)			
The 1st child aged 6–14	0.161	0.353	0.192	***	119.3
	(0.368)	(0.478)			
N	20,731	20,823			
D. 2020					
Married	0.760	0.746	-0.014	***	-1.8
	(0.427)	(0.435)			
Ever married	0.866	0.839	-0.027	***	-3.1
	(0.340)	(0.367)			
N	25,789	26,554			
Child dummy	0.008	0.028	0.020	***	246.0
	(0.090)	(0.166)			
# of children	0.011	0.032	0.021	***	186.7
	(0.138)	(0.201)			
The 1st child aged 0–5	0.003	0.002	-0.001		-23.1
	(0.050)	(0.044)			
The 1st child aged 6–14	0.006	0.026	0.021	***	366.3
	(0.075)	(0.160)			
N	22,338	22,291			

Notes. Standard deviations are in parentheses. * $p<0.10$, ** $p<0.05$, *** $p<0.01$. For university graduates, pre-EEOL cohorts were born between FY1961 and FY1963, and post-EEOL cohorts were between FY1964 and FY1966.
Sources: The National Census 1990, 2000, 2010, 2020.

Table A3: Descriptive Statistics of Gender Wage Gap (University, 1990–2020, Average Per Cohort)

	Pre-EEOL cohorts	Post-EEOL cohorts	Difference in gaps		% change
A. 1990					
Mean	-0.106	-0.050	0.056	***	-52.5
	(0.006)	(0.003)			
P10	-0.157	-0.076	0.081	***	-51.7
	(0.010)	(0.006)			
P25	-0.127	-0.048	0.080	***	-62.6
	(0.008)	(0.004)			
P50	-0.080	-0.038	0.042	***	-52.1
	(0.007)	(0.003)			
P75	-0.081	-0.047	0.033	***	-41.2
	(0.008)	(0.004)			
P90	-0.077	-0.048	0.029	**	-37.4
	(0.011)	(0.006)			
N	21,175	24,136			
B. 2000					
Mean	-0.212	-0.143	0.069	***	-32.5
	(0.008)	(0.005)			
P10	-0.365	-0.214	0.151	***	-41.4
	(0.013)	(0.008)			
P25	-0.253	-0.146	0.107	***	-42.3
	(0.010)	(0.006)			
P50	-0.184	-0.134	0.050	***	-27.2
	(0.010)	(0.006)			
P75	-0.157	-0.121	0.036	***	-22.9
	(0.011)	(0.007)			
P90	-0.135	-0.108	0.027		-20.0
	(0.015)	(0.010)			
N	24,160	22,856			
C. 2010					
Mean	-0.385	-0.326	0.059	***	-15.3
	(0.010)	(0.008)			
P10	-0.488	-0.449	0.039		-8.0
	(0.020)	(0.015)			
P25	-0.481	-0.390	0.091	***	-18.9
	(0.014)	(0.011)			
P50	-0.374	-0.302	0.072	***	-19.3
	(0.013)	(0.010)			
P75	-0.335	-0.279	0.056	***	-16.7
	(0.014)	(0.010)			
P90	-0.315	-0.254	0.061	***	-19.4
	(0.016)	(0.013)			
N	17,162	26,028			
D. 2020					
Mean	-0.307	-0.342	-0.035	***	11.4
	(0.011)	(0.008)			
P10	-0.378	-0.411	-0.033		8.7
	(0.022)	(0.015)			
P25	-0.415	-0.433	-0.018		4.3
	(0.016)	(0.011)			
P50	-0.321	-0.355	-0.034	**	10.6
	(0.013)	(0.010)			
P75	-0.246	-0.311	-0.065	***	26.4
	(0.014)	(0.010)			
P90	-0.222	-0.252	-0.030		13.5
	(0.019)	(0.012)			
N	15,554	24,953			

Notes. Standard errors are in parentheses. * p<0.10, ** p<0.05, *** p<0.01.
Sources: The BSWS 1990, 2000, 2010, 2020.

Table A4: Descriptive Statistics of Gender Gap in Managerial Position (University, 1990–2020, Average Per Cohort)

	Pre-EEOL cohorts	Post-EEOL cohorts	Difference in gaps		% change
A. 1990					
Manager dummy	-0.038	-0.007	0.031	***	-80.3
	(0.006)	(0.002)			
Foreman	-0.008	-0.002	0.006	**	-72.5
	(0.002)	(0.001)			
Subsection Mgr.	-0.012	-0.0004	0.012	***	-96.8
	(0.004)	(0.000)			
Section Mgr.	-0.001	0.000	0.001		-91.7
	(0.001)	(0.000)			
Department Mgr.	0.000	0.000	0.000		-100.0
	(0.000)	(.)			
Other Mgr.	-0.017	-0.005	0.012	***	-71.3
	(0.004)	(0.001)			
N	16,890	20,774			
B. 2000					
Manager dummy	-0.291	-0.150	0.141	***	-48.5
	(0.015)	(0.009)			
Foreman	-0.009	-0.007	0.002		-19.3
	(0.003)	(0.002)			
Subsection Mgr.	-0.090	-0.090	0.000		0.0
	(0.012)	(0.007)			
Section Mgr.	-0.101	-0.013	0.088	***	-87.0
	(0.010)	(0.003)			
Department Mgr.	-0.004	-0.001	0.002		-68.5
	(0.003)	(0.001)			
Other Mgr.	-0.088	-0.038	0.049	***	-56.3
	(0.010)	(0.006)			
N					
C. 2010					
Manager dummy	-0.451	-0.383	0.068	***	-15.1
	(0.015)	(0.011)			
Foreman	-0.003	-0.005	-0.001		32.1
	(0.002)	(0.002)			
Subsection Mgr.	-0.026	-0.040	-0.014		54.7
	(0.009)	(0.007)			
Section Mgr.	-0.191	-0.186	0.005		-2.6
	(0.013)	(0.010)			
Department Mgr.	-0.090	-0.037	0.053	***	-58.9
	(0.009)	(0.005)			
Other Mgr.	-0.141	-0.116	0.025	*	-17.7
	(0.012)	(0.008)			
N	13,207	20,870			
D. 2020					
Manager dummy	-0.317	-0.336	-0.019		6.0
	(0.015)	(0.010)			
Foreman	-0.002	-0.004	-0.001		52.6
	(0.002)	(0.001)			
Subsection Mgr.	-0.009	-0.013	-0.004		44.6
	(0.006)	(0.006)			
Section Mgr.	-0.088	-0.135	-0.047	***	53.4
	(0.011)	(0.009)			
Department Mgr.	-0.131	-0.114	0.017		-13.0
	(0.011)	(0.007)			
Other Mgr.	-0.086	-0.071	0.015		-17.1
	(0.011)	(0.008)			
N	11,672	19,777			

Notes. Standard errors are in parentheses. * p<0.10, ** p<0.05, *** p<0.01.
Sources: The BSWS 1990, 2000, 2010, 2020.

Table A5: Results of RD Regression on Industry (Women, University, 1990–2010)

(a) 1990

	(1) Construction	(2) Manufacturing	(3) Electricity	(4) Transportation	(5) Retail	(6) Finance	(7) Real Estate	(8) Services	(9) Public	(10) Unclassified
Post_EEOL	-0.002	0.001	-0.000	0.001	0.010**	0.006	0.001	0.017***	0.004**	-0.000
	(0.002)	(0.004)	(0.001)	(0.002)	(0.004)	(0.004)	(0.002)	(0.006)	(0.002)	(0.001)
Mean in Pre-EEOL	0.015	0.067	0.002	0.016	0.097	0.028	0.007	0.445	0.024	0.003
N	61170	61170	61170	61170	61170	61170	61170	61170	61170	61170
R-Squared	0.003	0.023	0.001	0.009	0.016	0.025	0.005	0.060	0.006	0.003

(b) 2000

	(1) Construction	(2) Manufacturing	(3) Electricity	(4) Transportation	(5) Retail	(6) Finance	(7) Real Estate	(8) Services	(9) Public	(10) Unclassified
Post_EEOL	-0.000	-0.008***	-0.000	0.001	0.001	0.005***	0.001	0.003	-0.000	0.000
	(0.002)	(0.003)	(0.000)	(0.002)	(0.004)	(0.001)	(0.001)	(0.006)	(0.002)	(0.001)
Mean in Pre-EEOL	0.013	0.043	0.001	0.011	0.087	0.016	0.006	0.412	0.025	0.004
N	58712	58712	58712	58712	58712	58712	58712	58712	58712	58712
R-Squared	0.002	0.006	0.001	0.003	0.002	0.007	0.003	0.042	0.005	0.003

(c) 2010

	(1) Construction	(2) Manufacturing	(3) Electricity	(4) Transportation	(5) Retail	(6) Finance	(7) Real Estate	(8) Services	(9) Public	(10) Unclassified
Post_EEOL	-0.001	-0.004	-0.000	-0.001	0.003	-0.004	0.002	0.010*	0.000	-0.004
	(0.001)	(0.003)	(0.001)	(0.002)	(0.005)	(0.002)	(0.001)	(0.006)	(0.003)	(0.002)
Mean in Pre-EEOL	0.011	0.041	0.001	0.031	0.1	0.025	0.011	0.488	0.031	0.013
N	49429	49429	49429	49429	49429	49429	49429	49429	49429	49429
R-Squared	0.002	0.006	0.001	0.011	0.003	0.006	0.003	0.035	0.006	0.004

Notes. Notes. "Electricity" includes electricity, gas, heat supply, and waterworks; "Transportation" includes transportation and communication; "Retail" includes wholesale, retail, and restaurants; "Finance" includes finance and insurance; and "Public" is the public sector. Standard errors clustered by birth year-quarter are in parentheses.
* p<0.10, ** p<0.05, *** p<0.01.
Sources: The National Census 1990, 2000, 2010.

Table A6: Results of RD Regression on Occupation (Women, University, 1990–2010)

(a) 1990

	(1) Professionals	(2) Managerial	(3) Clerical	(4) Sales	(5) Service	(6) Security	(7) Transport	(8) Manufacturing	(9) Unclassified
Post_EEOL	0.015**	-0.001	0.016*	0.007	-0.001	0.000	-0.000	0.002	-0.001
	(0.006)	(0.001)	(0.008)	(0.006)	(0.002)	(0.001)	(0.000)	(0.002)	(0.001)
Mean in Pre-EEOL	0.385	0.002	0.237	0.043	0.013	0.001	0.001	0.019	0.003
N	61170	61170	61170	61170	61170	61170	61170	61170	61170
R-Squared	0.070	0.001	0.044	0.017	0.004	0.001	0.001	0.002	0.003

(b) 2000

	(1) Professionals	(2) Managerial	(3) Clerical	(4) Sales	(5) Service	(6) Security	(7) Transport	(8) Manufacturing	(9) Unclassified
Post_EEOL	-0.001	-0.001	0.006	-0.002	0.001	-0.000	0.001	-0.003	0.000
	(0.008)	(0.001)	(0.007)	(0.003)	(0.002)	(0.000)	(0.001)	(0.002)	(0.001)
Mean in Pre-EEOL	0.339	0.005	0.182	0.036	0.024	0.001	0.001	0.029	0.004
N	58712	58712	58712	58712	58712	58712	58712	58712	58712
R-Squared	0.053	0.002	0.010	0.003	0.004	0.001	0.001	0.003	0.003

(c) 2010

	(1) Professionals	(2) Managerial	(3) Clerical	(4) Sales	(5) Service	(6) Security	(7) Transport	(8) Manufacturing	(9) Unclassified
Post_EEOL	0.003	-0.002	0.004	0.000	-0.002	0.000	0.000	0.001	-0.004**
	(0.006)	(0.002)	(0.010)	(0.003)	(0.003)	(0.001)	(0.000)	(0.002)	(0.002)
Mean in Pre-EEOL	0.362	0.009	0.226	0.046	0.059	0.001	0.000	0.038	0.012
N	49429	49429	49429	49429	49429	49429	49429	49429	49429
R-Squared	0.042	0.003	0.008	0.002	0.003	0.001	0.002	0.004	0.004

Notes. "Professionals" includes professionals and technical occupations, "Transport" includes transport and communication workers, and "Manufacturing" includes skilled workers, mining, manufacturing, construction, and labor workers. Standard errors clustered by birth year-quarter are in parentheses. * $p<0.10$, ** $p<0.05$, *** $p<0.01$.
Sources: The National Census 1990, 2000, and 2010.

Table A7: Results of RD Regression on Traditional Attitudes (Women, University, 1992, 2002, & 2010)

(a) 1992

	(1) Lifetime Singleness Undesirable	(2) Married Should Have Children	(3) Men Work, Women Care	(4) Stay-at-Home Motherhood	(5) Self-Sacrifice for Family	(6) Personal Goals Beyond Family
$Post_E EOL$	-0.054	-0.007	-0.006	0.198***	0.139	0.006
	(0.113)	(0.089)	(0.104)	(0.051)	(0.111)	(0.097)
Mean in Pre-EEOL	0.626	0.799	0.309	0.763	0.626	0.094
N	270	270	270	270	270	270
R-Squared	0.018	0.065	0.033	0.035	0.077	0.036

(b) 2002

	(1) Lifetime Singleness Undesirable	(2) Married Should Have Children	(3) Men Work, Women Care	(4) Stay-at-Home Motherhood	(5) Self-Sacrifice for Family	(6) Personal Goals Beyond Family
$Post_E EOL$	-0.020	0.050	0.080	-0.053	0.017	0.013
	(0.095)	(0.099)	(0.071)	(0.114)	(0.094)	(0.052)
Mean in Pre-EEOL	0.516	0.689	0.213	0.746	0.393	0.098
N	274	274	274	274	274	274
R-Squared	0.017	0.029	0.018	0.055	0.024	0.038

(c) 2010

	(1) Lifetime Singleness Undesirable	(2) Married Should Have Children	(3) Men Work, Women Care	(4) Stay-at-Home Motherhood	(5) Self-Sacrifice for Family	(6) Personal Goals Beyond Family
$Post_EEOL$	0.100	0.117	0.210**	0.157*	0.132	0.049
	(0.115)	(0.077)	(0.085)	(0.083)	(0.124)	(0.037)
Mean in Pre-EEOL	0.606	0.697	0.285	0.679	0.455	0.073
N	328	328	328	328	328	328
R-Squared	0.044	0.042	0.051	0.044	0.035	0.019

Notes. Standard errors clustered by birth year-quarter are in parentheses. * p<0.10, ** p<0.05, *** p<0.01. (1) "Lifetime Singleness Undesirable": Living one's entire life single is not a desirable way of life. (2) "Married Should Have Children": Once married, one should have children. (3) "Men Work, Women Care": After marriage, the husband should work outside while the wife should take care of the home. (4) "Stay-at-Home Motherhood": At least while the children are young, it is desirable for the mother to stay at home and not work. (5) "Self-Sacrifice for Family: Once married, it is natural to sacrifice half of one's individuality and way of life for the sake of the family. (6) "Personal Goals Beyond Family": Even after getting married, one should have personal goals in life that are separate from their spouse or family. Regarding (1) – (5), respondents who answered "strongly agree" or "agree" were coded as 1, while those who answered "strongly disagree" or "disagree" were coded as 0; for (6), the coding is reversed.
Sources: Ministry of Health, Labour, and Welfare, National Fertility Survey 1992, 2002, 2010.