How the 1963 Equal Pay Act and 1964 Civil Rights Act Shaped the Gender Gap in Pay

By Martha J. Bailey, Thomas Helgerman, and Bryan A. Stuart

March 21, 2022

Abstract

In the 1960s, two landmark statutes—the Equal Pay and Civil Rights Acts—targeted the long-standing practice of employment discrimination against U.S. women. In their aftermath, the gender gap in median earnings among full-time, full-year workers remained stable for 15 years, leading many scholars to conclude the legislation was ineffectual. This paper revisits this conclusion using variation in legislative incidence across states and occupation-industry-state job classifications. We find that women's wages grew by 4-12 percent more on average in places or jobs where the legislation was more binding, with the effects concentrated among the lowest-wage employees. We find no evidence of short-term changes in employment but some suggestive evidence that firms reduced their hiring of women in the long-term.

JEL Codes: J16, J71, N32

Contact Information

Bailey: Department of Economics, University of California-Los Angeles, 315 Pertola Plaza, Los Angeles, California 90095; Email: marthabailey@ucla.edu; Website: https://sites.google.com/g.ucla.edu/marthajbailey. Helgerman: Department of Economics, University of Michigan, 611 Tappan Street, Ann Arbor, Michigan 48109; tehelg@umich.edu. Stuart: Research Department, Federal Reserve Bank of Philadelphia, Ten Independence Mall, Philadelphia, PA 19106, Email: bryan.stuart@phil frb.org

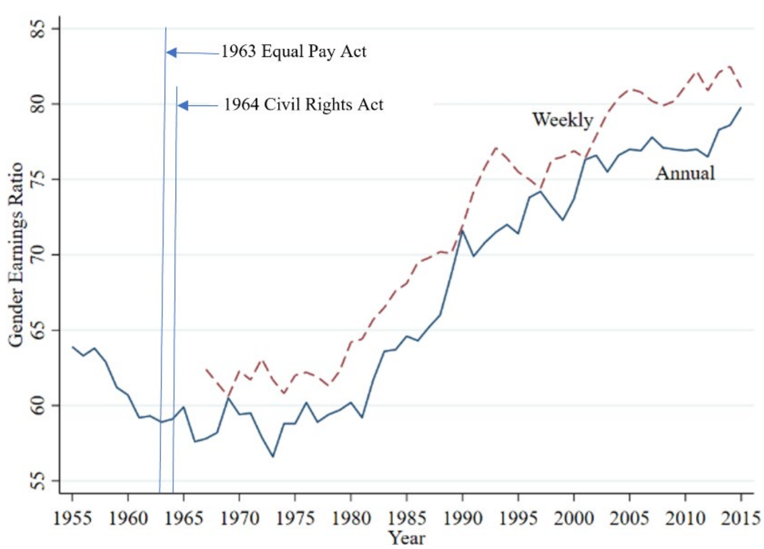
Acknowledgements

This work was generously supported by the University of Michigan (UM) Department of Economics (MITREG022729) and the UCLA Department of Economics. We gratefully acknowledge the use of the services and facilities of the Population Studies Center at the UM (P2CHD041028) and the California Center for Population Research at UCLA (P2CHD041022), both of which receive funding from the Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD). During work on this project, Bryan A. Stuart was supported by the NICHD (T32 HD0007339) as a University of Michigan Population Studies Center trainee. We thank Francine Blau, Claudia Goldin, Hilary Hoynes, Lawrence Katz, and numerous seminar and conference participants for helpful comments and discussions. The views expressed here are solely those of the authors and do not necessarily represent the views of the Federal Reserve Bank of Philadelphia or the Federal Reserve System.

In the 1960s, two landmark pieces of legislation targeted the long-standing practice of employment discrimination against U.S. women. The Equal Pay Act of 1963 became the first piece of federal legislation to mandate equal pay for equal work through an amendment to the Fair Labor Standards Act (FLSA). The following year, Title VII of the 1964 Civil Rights Act went further to ban sex-based discrimination in hiring, firing, and promotion, in addition to wage discrimination.

At the time of their passage, proponents praised the legislation as a long-overdue tool to combat pervasive sexism in employment. Today, few histories conclude the legislation succeeded, at least in its early years. Victor Fuchs summed up the professional consensus in *Women's Quest for Economic Equality*, saying, "It is easy enough to find particular instances where these laws opened up jobs that were previously closed to women or resulted in a realignment of women's pay scales, but it is difficult to see any major effects on broad trends in women's wages or employment" (1990, p. 27). Other researchers of the gender gap note that the legislation failed, in part because women and men were so segregated across jobs (Blau 1978, Goldin 1990). Annual estimates released by the Census Bureau support this conclusion. Figure 1 shows that—among full-time, full-year workers—the median annual wage earnings for women hovered around 60 percent of men's for 15 years after the legislation passed.

Figure 1. Census Bureau Estimates of the U.S. Gender Gap in Wage Earnings at the Median among Full-Time, Full-Year Workers, 1955-2015



Notes: We plot data on the ratio of median annual and weekly wage and salary earnings of full-time, full-year workers for women relative to men from the following sources: the Census Bureau's Consumer Income (P60) series for 1955 through 1960 (U.S. Census Bureau 1956, 1958a, b, 1960, 1961, 1962); and the female-to-male annual earnings ratio for full-time, full-year workers from DeNavas-Walt and Proctor (2015) for 1961 through 2014. Data on the female-to-male ratio of usual weekly earnings for full time wage and salary workers come from Mellor (1984) for 1967 through 1978, from U.S. Department of Labor (2015) for 1979 through 2014, and Proctor, Semega, and Kollar (2016) and U.S. Department of Labor (2020) for 2015.

This paper revisits the conclusion that these landmark anti-discrimination statutes were ineffectual by developing two empirical strategies that exploit sub-national variation in the incidence of the legislation. Motivated by Neumark and Stock (2006), our first strategy posits that federal anti-discrimination legislation—if effective—should have larger effects in the 28 states that did not have pre-existing equal pay laws. Drawing on the 1950-1960 Decennial Census and 1962-1975 Annual Social and Economic Supplement (ASEC) of the Current Population Survey (CPS), the results show that women's wages rose by 4 percent more than men's in states without pre-existing equal pay laws after federal anti-discrimination legislation took effect. These estimates are robust to controlling for state-by-birth-cohort fixed effects, which flexibly account for cohort-level shifts in women's aspirations and skills (Goldin 2006a, b). However, the internal validity of this empirical strategy is limited to the extent that unobserved forces differentially affected labor markets in states without equal pay laws.

To address this concern, we develop a second empirical strategy that uses variation in the 1960 gender pay gap across job cells, defined as single-digit industries, occupations, and state groups. Under the assumption that the 1960 gender pay gap in job cells is correlated with the extent of sex discrimination, women's wages should increase by more after 1964 in job cells with larger pre-existing gender pay gaps—if federal anti-discrimination legislation was effective. A strength of this approach is that it allows the inclusion of state-by-year, industry-by-year, and occupation-by-year fixed effects to absorb potentially confounding factors—such as differential state business cycles or policies (Chay 1998, Almond, Chay, and Greenstone 2003, Cascio et al. 2010, Bailey and Duquette 2014, Goodman-Bacon 2018)—that may compromise the internal validity of the first empirical strategy.

The results provide more compelling evidence that the implementation of the Equal Pay Act and Title VII increased women's wages. In job cells around the mean gender gap, women's wages grew by 12 percent more after 1964—an amount large enough to account for around a third of the overall gender gap in pay and 70 percent of the gender gap in pay within narrowly defined job classes as measured by the Labor Department's Occupational Wage Survey (OWS). Heterogeneity tests underscore the complementarity of the two empirical approaches. In states with pre-existing equal pay laws, women's wages grew by 7 percent after 1964 in jobs at the mean gender gap. In states without pre-existing equal pay laws, women's wages grew by more than twice that rate, at 19 percent. Heterogeneity tests also illuminate the mechanisms driving these results. Recentered-influence-function (RIF) regressions show that the largest effects of the legislation on wages accrued to women in the lowest percentiles of the wage distribution (Firpo, Fortin, and Lemieux 2009). This finding is consistent with compliance being greater in jobs where the "equality of work" was more easily judged and where the Wages and Hours Division, the agency tasked with enforcing the Equal Pay Act, also focused its investigations of compliance with the minimum wage. Similar effects of the legislation for White and Black women suggest that the estimates are not driven by reductions in racial discrimination due to the Civil Rights Act. Finally, our finding that the legislation had little effect on men's wages helps us rule out alternative labor-market or policy explanations.

A final analysis investigates how federal anti-discrimination legislation affected women's employment. Consistent with a positive elasticity of women's labor supply to firms (Manning 1996), the data provide little evidence that women's employment or annual hours worked fell in response to wage increases in the short run—findings that align closely with Manning's (2003) study of the Equal Pay Act in the United Kingdom. In the long run, however, we find suggestive evidence that women's employment grew more slowly in job cells more affected by the legislation, which is consistent with Neumark and Stock's (2006) study of state-level legislation in the U.S. before 1960. Overall, our results suggest that, while firms did not lay women off in the short term, anti-discrimination legislation may have changed firms' hiring practices in the long run.

Although these findings seem at odds with the stability of the gender gap in Figure 1, they are easily reconciled. First, Figure 1 presents only the ratio of women's to men's earnings *at the median,* which is consistent with our findings of almost no effects of the Equal Pay Act and Title VII at the median but large gains below the median. Second, Figure 1 restricts the sample to full-time, full-year workers, which was chosen to compare men and women with similar levels of attachment to the labor force but represents less than half of working women in 1960. Once we broaden this sample to be comparable to modern day analyses of the gender gap and include full-time women working at least 27 weeks (Blau and Kahn 1997, 2006, 2017), we find that even the unadjusted timeseries show gains in women's relative wages below the median after 1964. Lastly, our decomposition shows that changes in the wage structure offset women's relative wage gains due to the legislation, which helps reconcile the magnitudes we find with smaller changes in the unadjusted timeseries. In conclusion, our findings claim an important role for the Equal Pay Act and Title VII in reducing labor-market discrimination against U.S. women.

I. A Short History of the Equal Pay Act and Title VII of the Civil Rights Act

In the early 1960s, sex discrimination in labor markets was not only widely accepted, but also lawful and institutionalized. State laws mandated different minimum wage, break, and rest requirements for men and women and placed different restrictions on the jobs men and women could hold (Moran 1970, Marchingiglio and Poyker 2021). Union contracts delineated different pay by sex for the same job (Eaton 1965). Newspapers posted help wanted advertisements separately by sex (Pedriana and Abraham 2006), along with explicitly different pay scales for women and men.[1] Firms often fired women when they got married (Goldin 1991) and routinely when they became pregnant (Gruber 1994).

A. State and Federal Equal Pay Acts

The passage of the 1963 Equal Pay Act represented the culmination of decades of advocacy. Federal legislation was first introduced to Congress in 1945 after wage studies showed pervasive inequality in pay between women and men in wartime industries. The Women's Bureau in the Department of Labor documented multiple examples of sex-based pay discrimination, including discrepancies in entry wages and pay for more experienced workers in identical jobs (Fisher 1948).[2] Although federal legislation failed to pass for two decades, 22 states passed equal pay laws before 1963 (U.S. Congress 1963). Figure 2 shows that these laws were primarily in the Northeast, Midwest, and West, where their aim was often to keep women from undercutting men's wages. Arkansas was the sole state in the South to pass this type of law.

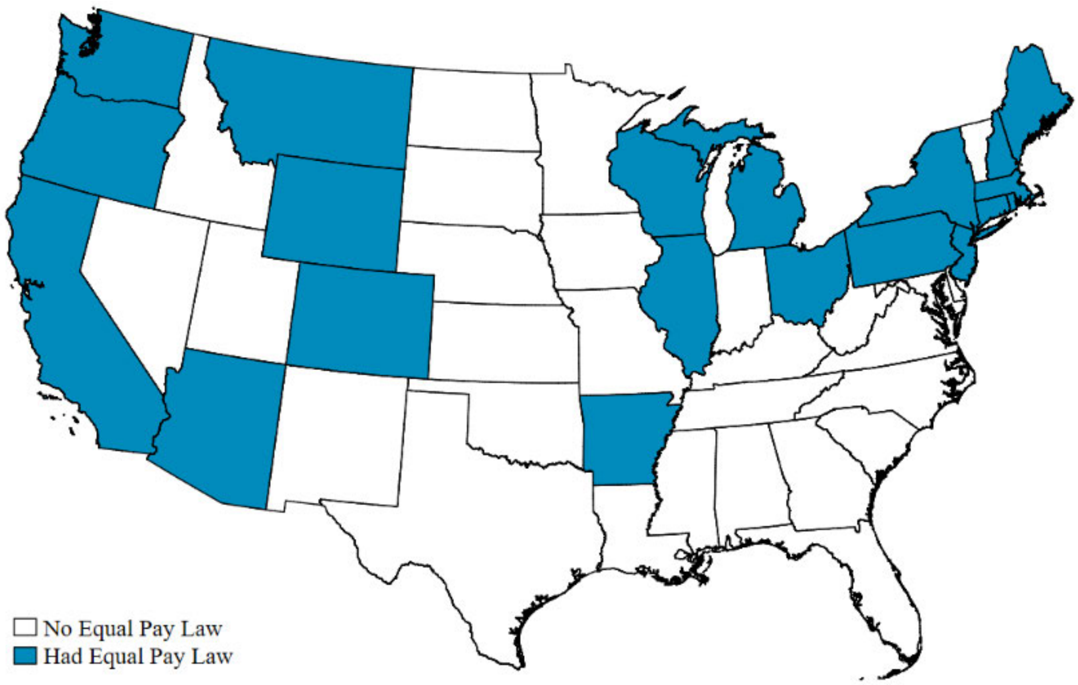
State equal pay laws varied in their language and enforcement. Michigan and Montana, the two states that passed the first equal pay laws in 1919, illustrate these differences well. While Montana's law applied to nearly any enterprise employing men and women, Michigan's law applied only to employees in manufacturing. A common thread across states is that neither state went beyond making a "general declaration of law," which made these laws difficult to enforce (Fisher 1948, p. 54). In making the case for a national Equal Pay Act to Congress,

---

[1] In an analysis of these advertisements, Hunt and Moehling (2021) finds an advertised gender wage gap of 38 log points in three cities in 1960, 28 log points of which corresponds to within-agency differences in pay.

[2] Fisher (1948) reports one particularly egregious example: "In the gun manufacturing industry…where *experienced* men and women worked on five different types of machines, the *lowest* rate for men was at least ten cents *above* the highest wage paid to women."

Figure 2. Map of State Equal Pay Laws as of 1963



Notes: Figure plots the 22 state equal pay laws in the U.S as of 1963 as determined by the Women's Bureau and those without such a law (U.S. Congress 1963). The states with equal pay laws are Alaska, Arizona, Arkansas, California, Colorado, Connecticut, Hawaii, Illinois, Maine, Massachusetts, Michigan, Montana, New Jersey, New Hampshire, New York, Ohio, Oregon, Pennsylvania, Rhode Island, Washington, Wisconsin, and Wyoming. See also Neumark and Stock (2006). Alaska and Hawaii are excluded from the map.

the Women's Bureau noted that state laws "leave large groups of workers out, and often have inadequate provisions for administration and enforcement" (U.S. Congress 1963, p. 20).

The success of the initiative to pass federal anti-discrimination legislation in the 1960s grew out of President John F. Kennedy's Commission on the Status of Women. The Equal Pay Act was first introduced to Congress in August of 1961 and managed to pass in both houses, but the business lobby undermined the bill during the reconciliation process (Harrison 1989). Esther Peterson, the Assistant Secretary of Labor and Director of the U.S. Women's Bureau under Kennedy, redoubled her efforts. After shrewd maneuvering and negotiation, Peterson revived the Equal Pay Act as an amendment to the FLSA. In addition to producing detailed reports to document pay differences (U.S. Congress 1962), Peterson used her Congressional testimony to describe the pervasiveness of sex discrimination in employment. Analyzing pay differences among similarly experienced bank tellers working comparable hours, the Department of Labor found that women had lower weekly earnings in every city studied (U.S. Congress 1963, p. 31). Furthermore, surveys found that men out-earned women with the same title in nearly all establishments (pp. 30, 37).

To quantify the gender gap in pay within narrowly defined jobs, we digitized the 1963 OWS, which contains wage observations by sex from 86 cities and 66 narrowly defined job classifications (U. S. Bureau of Labor Statistics 1963). Among salaried employees, our analysis finds a 35-log-point gap in pay across all cities and jobs in 1963. However, around one third of all occupations in the 1963 OWS employed only one sex. Two percent (0.7/35) of the gender gap in pay is explained by men and women working in different cities, and 49 percent (17/35) of the gap is due to men and women working in different occupations. The remaining 17-log-point gap reflects the within-job pay differential that the Equal Pay Act could target. Jobs with hourly pay show a larger total gender gap in pay of 56 log points, but a similar within-job difference in pay of 18 log points. (These results are reported in the Online Appendix.) The Labor Department noted that differences in pay occurred mostly in "large department stores, banks, airline reservation offices, chain stores, and other firms where men and women customarily perform similar work" (Eaton 1965).

Peterson's report also cited a National Office Management Association survey of employers in the U.S. and Canada, which asked, "Do you have a double standard pay scale for male and female office workers?" (p. 27). One third of respondents answered, "Yes." In her testimony to Congress, Peterson cited a personal anecdote as well, noting that a manager told her, "We pay them less because we can get them for less" (quoted in Harrison 1989, p. 95). Under Peterson's stewardship, the revised equal pay bill was introduced on February 14, 1963, and passed on June 10, 1963. Its language narrowly prohibited sex-based *wage* discrimination between men and women in the *same* establishment who perform jobs that require substantially *equal* skill, effort, and responsibility under similar working conditions. For workers not covered under collective bargaining agreements, the Equal Pay Act took effect on June 10, 1964. For the 13 percent of women who were unionized in the early 1960s (LeGrande 1978), the Act took effect the following year on June 10, 1965.

B. Title VII of the Civil Rights Act

Just one year after the Equal Pay Act passed, Congress enacted the 1964 Civil Rights Act. Title VII of the Civil Rights Act overlapped with the Equal Pay Act in its coverage of pay discrimination but also extended its provisions by (1) expanding coverage to workers not covered under the FLSA (e.g., Title VII did not apply to public sector employees or small private employers until 1972, Posner 1989) and (2) prohibiting sex-based discrimination in employment, including hiring, firing, and promotions.

The goal of the Civil Rights Act had little to do with gender equality, and the initial legislation did not include sex among the protected classes of race, color, religion, and national origin. “Sex” was added to the list of Title VII’s protected classes just one day before the final vote by a segregationist, Representative Howard Smith (D-Virginia), who opposed the Act. Many scholars believe Smith intended to make the bill unpassable (Harrison 1989, Goldin 1990). Gillian Thomas (2016) explains how Rep. Smith played his amendment for laughs, claiming a letter from his constituent had asked him to “protect our spinster friends.” One of the twelve women representatives in the House, Martha Griffiths (D-Michigan), silenced the laughter, saying, “if there had been any necessity to point out that women were a second-class sex, the laughter would have proved it” (p. 102). The next day the legislation passed, codifying prohibitions on sex-based employment discrimination into federal law.

C. Enforcement of Equal Pay and Employment Non-Discrimination in the 1960s

As an amendment to the FLSA, the enforcement of the Equal Pay Act fell to the Wage and Hour Division (WHD) in the Department of Labor, which had been monitoring and enforcing compliance with the FLSA for 25 years (P.L. 75-718). By the 1960s, firms knew that non-compliance could be detected and punished with the payment of back wages and criminal prosecution, and courts had already settled the fine points of interpretation. Following the implementation of the Equal Pay Act in 1964, the WHD instructed its field staff to check for compliance with the new equal pay provisions as part of *all* investigations under the FLSA (U.S. Department of Labor 1965). By the end of 1964, investigators had found $53,000 in discriminatory wage payments owed to women, and one firm voluntarily paid $220,000 in back pay when the WHD began checking for discrimination (2021 dollars) (Eaton 1965). By 1965, around 80 percent of sex-discrimination complaints led to back payments to workers.

The Labor Department immediately filed test suits. *Wirtz v. Basic Incorporated* (1966) challenged the claim of the employer that a male analyst was entitled to more money because he had greater experience and responsibility. The court supported the Labor Department, noting that the work of three employees (one man and two women) was the same and that the man's greater experience was not a requirement of the job. The ruling emphasized that the statutory requirement of "differences in working conditions" could not be established by job title alone and that the burden of proof for any exceptions to equal pay lay with the employer.

The Department of Labor continued to enforce compliance with Equal Pay, both reviewing labor union contracts and bringing multiple lawsuits. Likely due to the WHD's enforcement, Wirtz reported to Congress that "voluntary" compliance with the Equal Pay Act was high (U.S. Department of Labor 1966, p. 18). Many unions and employers made voluntary changes to eliminate contractual differences in wage rates, welfare and pension plans, sick leave, rest periods, and "marriage provisions" that dictated the loss of seniority and possible dismissal for women who got married (Eaton 1965). At the same time, the courts strengthened the law by issuing rulings to eliminate employer justifications for unequal pay. By the end of the 1960s, some contemporaries concluded that the Equal Pay Act had succeeded in *reducing* the gender pay gap (Moran 1970). Hole and Levine (1971) argue that "the Equal Pay Act [is] the only law dealing with sex discrimination that is anywhere near properly enforced" (p. 29). Celebrating a decade of achievements, the *Wall Street Journal* headlined, "Flexing a Muscle: Women, Government, Unions Increasingly Sue Under Equal Pay Act," and noted that $592 million ($72 million nominal) had been awarded to 140,000 workers between 1964 and 1973 (Hyatt 1973).

In its early years, Title VII of the Civil Rights Act had less success in reducing sex discrimination in employment. Unlike the Equal Pay Act's enforcement under a well-established law by a committed and well-resourced agency, the newly created Equal Employment Opportunity Commission (EEOC) had limited will and authority to enforce the sex-based provisions of Title VII (Munts and Rice 1970). The EEOC regarded its primary mission as reducing racial discrimination, stating "the addition of *sex* to the law had been illegitimate—merely a ploy to kill the bill" (Harrison 1989, p. 187).[3] Another complication was that Title VII challenged decades of state protective legislation that explicitly set different standards *by sex*. While the 1965 EEOC did not see "any clear

[3] When a reporter asked Franklin D. Roosevelt, Jr., the EEOC's first commissioner, "What about sex?," Roosevelt joked: "I'm all for it." Similarly, the EEOC's second executive director, Herman Edelsberg, dismissed the sex provision as a "fluke" that was "conceived out of wedlock" (Thomas 2016). Title VII became known as the "Bunny Law," named after a satirized case in which Playboy turned down a man for a job as a Playboy bunny.

Congressional intent to overturn all of these [state] laws" (Harrison 1989, p. 187), it created a task force to provide states with guidelines, which took years to complete its work (Munts and Rice 1970). In terms of enforcement authority, the EEOC was initially unable to bring lawsuits and could only refer them to the Department of Justice.

Consequently, the EEOC had pursued very few sex discrimination cases by 1970 (Goldin 1990). Simchak (1971) notes, "Of the total number of court cases filed by the Department of Justice to date (approximately fifty) under all the discrimination criteria in Title VII, only one [emphasis added] has pertained to sex discrimination."[4]

After 1971, litigation and enforcement of Title VII increased rapidly, following the U.S. Supreme Court's first decision about Title VII's sex provisions (*Phillips v. Martin Marietta Corp 1971*). Following *Marietta*, court decisions continued to give Title VII more teeth in combatting sex discrimination in employment which have persisted to this day.[5] But prior to 1971, the historical record on the success of the Equal Pay Act and Title VII is mixed, with some commentators suggesting that the Equal Pay Act narrowed the gender wage gap while others note that the EEOC's lack of enforcement of Title VII's sex-based provisions undercut its own effectiveness as well as the Equal Pay Act. The following sections describe our data and strategies for teasing out the causal effects of the combined legislation on U.S. labor markets.

II. Data and Research Design 1: Variation in the Incidence of Anti-Discrimination Legislation due to State Equal Pay Laws

Our analysis quantifies the effect of the Equal Pay Act and Title VII on the gender gap in wages using a nationally representative dataset of workers. We combine the 1950 and 1960 Decennial Censuses and the 1962 to 1975 ASEC to document changes in labor-market outcomes for non-agricultural wage earners ages 25-64 (Flood et al. 2020, Ruggles et al. 2020).[6] To increase consistency between the ASEC and Census, we restrict the sample

[4] The single case cited is *US v. Libbey-Owens-Ford Co., Inc.*, Civil No. C-70-212 (US District Court, 7 December 1970).
[5] The ruling held that companies could not discriminate against women who have a pre-school-aged child. Following *Marietta*, considerable ambiguity about sex discrimination remained. For instance, in 1976 the U.S. Supreme Court in *General Electric Co. v. Gilbert* held that Title VII did not guarantee pregnant women equal coverage under employee benefit plans covering non-occupational sickness and accidents, which Congress remedied with the Pregnancy Discrimination Act of 1978 (Posner 1989).
[6] We classify individuals as working in agriculture if they have an occupation of farmer or farm laborer or work in the agriculture, forestry, and fishing industry. We classify individuals as self-employed if they report being self-employed in the survey reference week or the ratio of self-employment plus farm income to labor income exceeds 10 percent in absolute value (Lemieux 2006). Our sample includes individuals ages 25 and above to better identify wage earners who had completed their schooling.

to individuals not in the Armed Forces or institutionalized. We additionally require that observations have non-missing data for industry, occupation, and state group, which is critical to both empirical strategies.[7]

A. Research Design 1: Pre-existing State Equal Pay Laws

Our analysis relies on two research designs—both of which hypothesize that anti-discrimination legislation should have larger effects where there was more *ex ante* sex discrimination. Motivated by Neumark and Stock (2006), the first research design posits that federal anti-discrimination legislation—if effective—should have larger effects after 1964 in the 28 states that did not have pre-existing equal pay laws. We test this hypothesis using the following event-study specification:

$$Y_{it} = \sum_{\tau=1949,\tau\neq1964}^{1974} \alpha_\tau D_\tau NoEPL_{s(i)} + \boldsymbol{X}'_{it}\boldsymbol{\beta} + \gamma_{n(i)o(i)s(i)} + \delta_{s(i)b(i)} + \delta_{n(i)t} + \delta_{o(i)t} + \varepsilon_{it}. \quad (1)$$

The outcome, Y_{it}, is log hourly wage earnings of individual i in calendar year t=1949, 1959, 1961-1974. The main independent variable of interest, $NoEPL_{s(i)}$, is the share of a state group's wage earners that are in a state *without* an equal pay law as of January 1, 1963. We identify whether states had an equal pay law using statutory coding from U.S. Congress (1962) and Neumark and Stock (2006, Table 5), which agree. We use the share of workers rather than an indicator variable, because three (of 21) state groups contain states with and without equal pay laws.[8] We interact $NoEPL_{s(i)}$ with a set of year indicator variables, D_τ, omitting 1964–the year in which the Equal Pay Act took effect. Our parameter of interest, α_τ , captures the effects of the Equal Pay Act and Title VII on women's wages. If (1) sex discrimination in pay was larger in 1963 in states without state-level equal pay

---

[7] We convert income and wages into 2019 dollars using the CPI-U and index wages and employment to the relevant year: annual earnings and weeks worked refer to the year before the survey, while hours worked refers to the year of the survey. We construct hourly wages by dividing annual wage earnings by the product of the mean of weeks worked and hours worked within each category in the reference week. Hourly wages are measured with error due to (1) misreports by respondents about wage earnings, weeks, or hours; (2) the aggregation of weeks and hours into categories; and (3) the failure of hours worked in the week before the survey to represent the hours worked in the average week during the previous year. Bailey, DiNardo, and Stuart (2021) show that the implied hourly wage matches quantiles of actual hourly wages from the CPS Outgoing Rotation Group data above the minimum wage. Our results are robust to using annual earnings or weekly earnings (results available from the authors upon request). Finally, we use "state groups" in our analysis, because the publicly available ASEC only identifies 21 state groups consistently in our period of interest.

[8] Only three state groups (of 18) contain states with and without equal pay laws. In these three cases, we use the share of wage earners covered by a state equal pay law from the 1960 Census. In Arkansas-Louisiana-Oklahoma, 24 percent of wage earners were in a state with an equal pay law (Arkansas). In Arizona-Colorado-Idaho-Montana-Nevada-New Mexico-Utah-Wyoming, 60 percent of wage earners were in a state with an equal pay law (Arizona, Colorado, Montana, Wyoming). In Maine-Massachusetts-New Hampshire-Rhode Island-Vermont, 95 percent of wage earners were in a state with an equal pay law (all but Vermont).

legislation and (2) the national Equal Pay Act reduced sex discrimination in pay, we expect that α_τ>0 for $\tau >$ 1964. If the parallel trends assumption holds (i.e., states without equal pay laws were trending similarly before the Equal Pay Act and Title VII took effect), we expect $\alpha_\tau = 0$ for τ <1964.

We also include additional covariates. The vector $\boldsymbol{X}_{it}$ accounts for changes in work-force composition, including an indicator variable for race (white or nonwhite) and a quartic in age. Fixed effects for industry *n* by occupation *o* by state-group s, $\gamma_{n(i)o(i)s(i)}$, account for the average differences in wages across different jobs and labor markets. To account for differential state-level changes in labor-market skills (including educational quantity and quality, potential labor-market experience, and other unobserved changes across cohorts) or policies affecting certain cohorts, we additionally include state-group-by-birth-year (*b*) fixed effects, $\delta_{s(i)b(i)}$.[9] Industry-year and occupation-year fixed effects, $\delta_{n(i)t}$ and $\delta_{o(i)t}$, capture unobserved, national changes that affect all workers similarly.[10]

A second specification accounts for gender neutral labor-demand or supply shocks by using men as an additional control group. To the extent that the Equal Pay Act and Title VII increased payroll costs and reduced men's wages, this specification may overstate the resulting gains in women's wages. On the other hand, this specification could understate the effect on women's wages if the legislation caused firms to increase men's responsibilities (and pay) to maintain pre-existing wage hierarchies. Consequently, this exercise potentially provides a broader characterization of labor market adjustments, rather than a pure falsification test. We implement this as a triple-differences specification (DDD), which interacts all variables in equation (1) with an indicator for sex and allows the relationship of all covariates and fixed effects to differ for men and women.

Because industry and occupation are typically reported only for individuals who are employed, it is not possible to estimate equation (1) using an outcome variable for employment. (Almost all individuals with non-

[9] We can control for individuals' educational attainment in all years besides the 1963 ASEC, but we omit this control from our main specifications because its inclusion requires dropping 1963—a critical year in the analysis. Including education as a covariate changes the estimates very little (results available upon request from authors).

[10] The inclusion of state-by-birth-year fixed effects could control for potentially endogenous shifts in women's labor-supply or labor-market skills if responses to the Equal Pay Act and Title VII differed across cohorts. In addition, the inclusion of industry-year and occupation-year fixed effects controls for potentially endogenous shifts in women's compensation if outcomes by occupation and industry responded to the legislation. In practice, these covariates matter little, which is evident in the results section.

missing industry and occupation are employed by definition.) Therefore, we define employment outcomes as the survey-weighted number of employees or annual hours worked in an industry-occupation-state-group (*nos*). Otherwise, employment specifications are identical to equation (1) with minor modifications.[11] First, we replace the individual covariates in $\boldsymbol{X}_{it}$ with *nos* cell averages for a quartic in age and the share of workers that are nonwhite. Second, employment regressions are weighted by the product of each industry-occupation-state cell's share of observations in the 1960 Census and the total number of observations in each survey year, which maintains the representation of different cells over time and accounts for year-to-year changes in ASEC sample sizes. This weighting scheme places higher weight on cells with more observations, which reduces the influence of small (noisy) cells and increases precision (Solon, Haider, and Wooldridge 2015).[12]

Although the event-study specification provides a highly flexible and transparent description of the data, the estimates for individual years are often noisy. We, therefore, summarize these estimates using a three-part spline with knots in 1964 and 1968 to improve precision. The spline allows us to test for pre-trends and quantify trend breaks after the legislation took effect. For wages, the spline specification is,

$$\begin{aligned} Y_{it} = \widetilde{\alpha_0} NoEPL_{s(i)} t + \widetilde{\alpha_1} 1(t > 1964) NoEPL_{s(i)} t + \widetilde{\alpha_2} 1(t > 1968) NoEPL_{s(i)} t \\ + \boldsymbol{X}'_{it} \widetilde{\boldsymbol{\beta}} + \tilde{\gamma}_{n(i)o(i)s(i)} + \tilde{\delta}_{s(i)b(i)} + \tilde{\delta}_{n(i)t} + \tilde{\delta}_{o(i)t} + \tilde{\varepsilon}_{it}. \end{aligned} \tag{2}$$

The first three terms interact linear time trends, *t*, with an indicator variable for whether a state had a pre-existing equal pay law and also with indicator variables for the post-1964 period and the post-1968 period.[13] The remaining terms correspond to those defined in equation (1). The spline provides a parsimonious method to test and, if necessary, adjust for a pre-trend, as captured in $\widetilde{\alpha_0}$. The coefficient, $\widetilde{\alpha_1}$, and corresponding standard error allow a formal test for a trend break in outcomes in states with equal pay laws after 1964, when the federal legislation first took effect. The coefficient, $\widetilde{\alpha_2}$, allows the effects of the legislation to differ in the longer term (1968-onwards)

---

[11] To create a balanced panel, we limit the employment regressions to industry-occupation-state-group job cells that have at least one wage earner in our years of interest.
[12] The weight does not depend on the number of industry-occupation-state observations in each survey year, as this would generate weights that reflect shifts in employment which might be driven by the legislation.
[13] Note that the terms, $\widetilde{\alpha_3} t + \widetilde{\alpha_4} 1(t > 1964) t + \widetilde{\alpha_5} 1(t > 1968) t$, are not identified due to the inclusion of year fixed effects.

versus the short term (1965-1967). The spline allows us to succinctly summarize trends in the data without placing too much emphasis on one (potentially noisy) point estimate or year.[14] Specifications for employment outcomes are analogous but estimated at the aggregated *nos* level as previously described.

In all regressions, we cluster standard errors to account for an arbitrary covariance structure at the state-group level (Arellano 1987, Bertrand, Duflo, and Mullainathan 2004). Because we only have 21 state groups, our tables also report p-values on the null hypothesis that $\widetilde{\alpha_1} = 0$ from a wild cluster bootstrap procedure with 499 replications (Cameron, Gelbach, and Miller 2008).

B. Results for Women's Wages

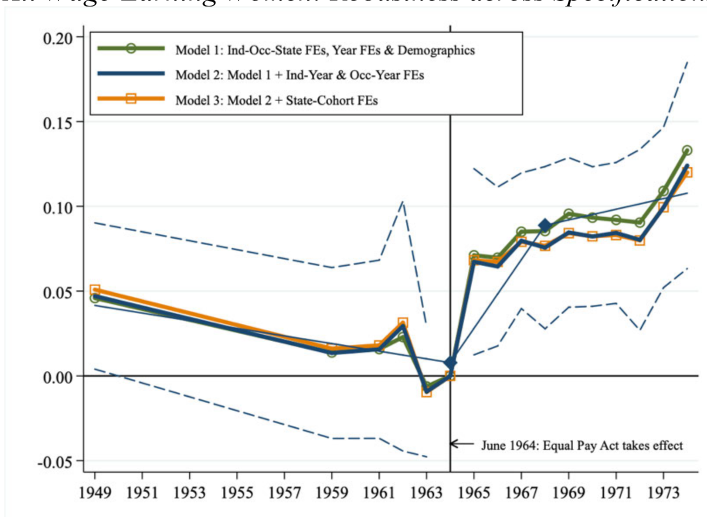
Figure 3 plots the event-study estimates for three different specifications. Model 1 includes only demographic controls and fixed effects for year and industry-by-occupation-by-state-group; model 2 adds state-group-by-birth-year fixed effects to control for differential changes in women's labor-supply and skills across labor markets and cohorts; and model 3 adds industry-by-year and occupation-by-year fixed effects to account for nationwide changes in wages by occupation and industry. Across specifications, the results show that women's hourly wages were declining in states without equal pay laws relative to other states before 1964. However, this trend reversed abruptly after federal anti-discrimination legislation passed. In 1965, women's wages in states without equal pay laws rose by 6.8 log points (s.e. 2.9) relative to other states, followed by more gradual gains through the late 1960s (Figure 3A). In addition, we limit the sample to women more attached to the labor market who worked at least 27 weeks in the previous year and at least 35 hours in the reference week. This sample restriction is similar to analyses in modern gender gap papers (Blau and Kahn 1997, 2006, 2017), except that we choose 27 rather than 26 or more weeks due to how weeks worked are reported in the 1960s ASEC. Figure 3B shows that the results are comparable for this subsample of more attached workers.

The timing of these effects helps alleviate concerns that (1) 1967 revisions to the ASEC sampling frame

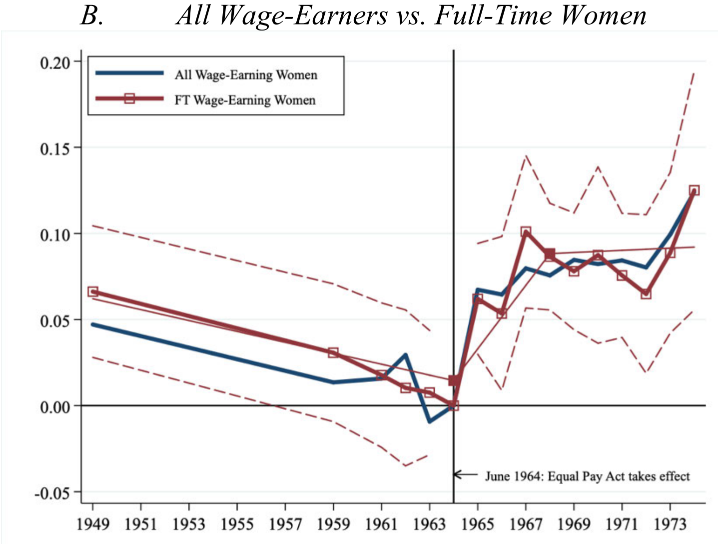
[14] For more discussion of pre-trend adjustments, see Freyaldenhoven, Hansen, and Shapiro (2019) and Rambachan and Roth (2020).

Figure 3. The Effect of the Equal Pay Act and Title VII on Wages using Pre-Existing State Equal Pay Laws

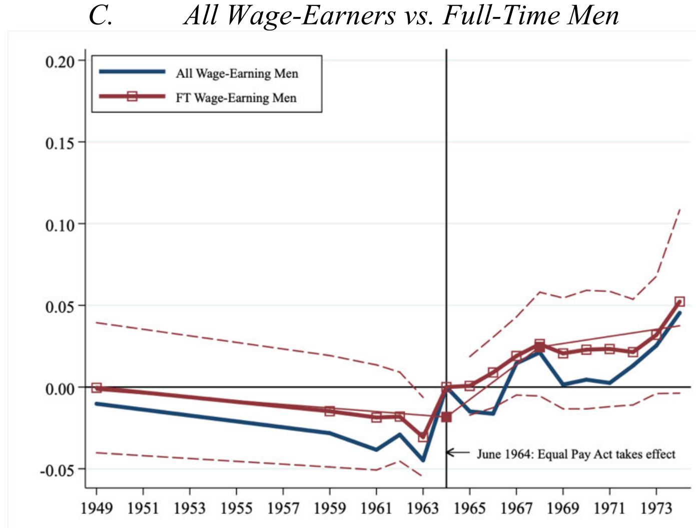
A. All Wage-Earning Women: Robustness across Specifications



B. All Wage-Earners vs. Full-Time Women



C. All Wage-Earners vs. Full-Time Men



Notes: These figures plot the event-study coefficients from equation (1) as well as 95-percent, point-wise confidence intervals using standard errors that have been corrected for heteroskedasticity and an arbitrary correlation within state group. The spline (equation 2), Figure 3B, and Figure 3C use model 3. See text for more details.

Table 1. The Effects of the Equal Pay Act and Title VII on Wages and Employment using Pre-Existing State Equal Pay Laws

	(1)	(2)	(3)	(4)
	Women	Men	Women - Men	Women – Men
A. Log hourly wage				
Spline estimate in 1968	0.090	0.050	0.041	0.050
	(0.025)	(0.020)	(0.011)	(0.018)
p-value, wild cluster bootstrap	[0.004]	[0.014]	[0.004]	[0.042]
Trend-break in 1964	0.023	0.012	0.010	0.013
	(0.006)	(0.005)	(0.003)	(0.005)
Pre-trend slope, 1949-1964	-0.002	-0.001	-0.001	-0.002
	(0.001)	(0.001)	(0.001)	(0.001)
Mean in 1960 (2019 dollars)	$16.82	$24.33	--	--
B. Log number of employees				
Spline estimate in 1968	0.019	-0.018	0.037	0.018
	(0.068)	(0.057)	(0.027)	(0.037)
p-value, wild cluster bootstrap	[0.794]	[0.792]	[0.170]	[0.629]
Trend-break in 1964	0.005	-0.005	0.009	0.005
	(0.017)	(0.014)	(0.007)	(0.009)
Pre-trend slope, 1949-1964	0.009	0.009	-0.000	0.001
	(0.005)	(0.006)	(0.003)	(0.004)
Mean number of employees in 1960	90,282	103,153	--	--
C. Log number of annual hours worked				
Spline estimate in 1968	0.024	0.003	0.021	-0.001
	(0.069)	(0.059)	(0.024)	(0.038)
p-value, wild cluster bootstrap	[0.747]	[0.964]	[0.347]	[0.970]
Trend-break in 1964	0.006	0.001	0.005	-0.000
	(0.017)	(0.015)	(0.006)	(0.009)
Pre-trend slope, 1949-1964	0.010	0.007	0.003	0.004
	(0.006)	(0.006)	(0.003)	(0.004)
Mean number of annual hours in 1960	132 M	202 M	--	--
Observations	800,345	1,561,633	2,361,978	1,410,419
Industry-Occupation-State-Year Cells	5,264	10,640	15,904	8,480
Only Ind-Occ-State Cells with Women and Men				x
Covariates				
Demographics, Ind-Occ-State FEs, Year FEs	x	x	x	x
Ind-Year FEs, Occ-Year FEs	x	x	x	x

Notes: Table presents the spline estimates and standard errors as described in the text. Columns 1-3 use a panel of industry-occupation-state cells that are balanced across years separately for women and men. Column 4 restricts the sample to the same industry-occupation-state cells for women and men. Demographic controls include the share of workers that are nonwhite and a quartic function in age. In columns 3-4, demographics and fixed effects vary by sex. Standard errors are corrected for heteroskedasticity and an arbitrary correlation within state group. Wild cluster bootstrap p-values are based on 499 replications. See text for more details on samples and specifications.

and definition of employment[15] or that (2) noise in the ASEC in the early 1960s are driving the results. Regarding the former, event-study estimates show little evidence that the estimates are driven by changes in 1967. Regarding the latter, our three-part linear spline specification averages across years, which is plotted in Figure 3A for comparison. Importantly, the spline and event-study estimates for 1968 are almost identical at around 9.0 log points (s.e. 2.5) (Table 1A, column 1). Two additional benefits of the spline specification are that it encompasses a formal pre-trend test (-0.2, s.e. 0.1) and trend-break test in 1964, which shows a statistically significant, positive trend break in women's wages after 1964 in states without equal pay laws (2.3, s.e. 0.6).

Effect Heterogeneity

Table 2A further investigates effect heterogeneity to characterize the effects of the legislation, using the DDD specification to be conservative. Among those more attached to the labor market (working at least 27 weeks in the previous year and at least 35 hours in the reference week), women's relative wages rise by 3.9 log points by 1968 (column 2) versus 4.1 log points among all wage earners (column 1). When restricting the sample further to full-year workers (as used in Figure 1), the effect is larger at 5.8 log points (column 3). Table 2A also shows sizeable relative wage gains for women when stratifying by race, education, age, and marital status, although subgroup estimates are less precise than the population estimates and are not statistically different across subsamples.[16] In summary, the results suggest that the Equal Pay Act and Title VII lifted the wages of working women—a group accounting for 32 percent of the U.S. labor force in 1960. To put these effect sizes in perspective, our wage estimates are roughly 24 (4/17) to 53 percent (9/17) of the within-occupation weekly wage gap documented in the OWS in 1963 (section I.A).

Alternative Explanations

Several alternative explanations could rationalize these findings. These explanations include (1) differential labor-market changes—rather than federal anti-discrimination legislation—disproportionately

[15] Interested readers may find a history of the CPS here, https://www2.census.gov/programs-surveys/cps/methodology/Techincal%20paper%2066%20chapter%202%20history.pdf (accessed December 30, 2021).

[16] The ASEC does not contain information on children in the household prior to 1968, so we cannot examine heterogeneity in the labor-market effects of the legislation by the presence of children or children's ages.

Table 2. Heterogeneity in the Effects of the Equal Pay Act and Title VII on Wages and Employment of Women using Pre-Existing State Equal Pay Laws

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	All wage earners	Full-time wage earners	Full-time, full-year wage earners	White	Black	Less than 12 years education	At least 12 years education	Age 25-54	Age 55-64	Married	Unmarried
A. Log hourly wage, mean 1960 level:	*$16.82*	*$14.31*	*$14.19*	*$17.52*	*$11.92*	*$13.96*	*$19.35*	*$16.75*	*$17.22*	*$17.10*	*$16.33*
Spline estimate in 1968	0.041	0.039	0.058	0.042	0.031	0.057	0.048	0.038	0.038	0.054	-0.043
	(0.011)	(0.010)	(0.011)	(0.012)	(0.044)	(0.012)	(0.019)	(0.011)	(0.035)	(0.015)	(0.026)
p-value, wild cluster bootstrap	[0.002]	[0.002]	[0.002]	[0.002]	[0.527]	[0.000]	[0.028]	[0.008]	[0.337]	[0.004]	[0.140]
Trend-break in 1964	0.010	0.010	0.015	0.010	0.008	0.014	0.012	0.009	0.009	0.014	-0.011
	(0.003)	(0.003)	(0.003)	(0.003)	(0.011)	(0.003)	(0.005)	(0.003)	(0.009)	(0.004)	(0.007)
Pre-trend slope, 1949-1964	-0.001	-0.002	-0.002	-0.001	0.003	0.000	-0.002	-0.001	-0.001	-0.001	0.002
	(0.001)	(0.001)	(0.001)	(0.001)	(0.003)	(0.001)	(0.001)	(0.001)	(0.003)	(0.001)	(0.002)
B. Log employees, mean 1960 level:	*90,282*	*55,710*	*35,432*	*77,544*	*63,140*	*85,057*	*47,738*	*75,568*	*21,299*	*60,355*	*38,588*
Spline estimate in 1968	0.037	-0.001	0.029	0.033	0.171	0.093	-0.009	0.026	-0.087	0.036	0.069
	(0.027)	(0.028)	(0.034)	(0.026)	(0.099)	(0.048)	(0.029)	(0.025)	(0.058)	(0.029)	(0.106)
p-value, wild cluster bootstrap	[0.170]	[0.980]	[0.355]	[0.222]	[0.104]	[0.074]	[0.780]	[0.297]	[0.128]	[0.212]	[0.517]
Trend-break in 1964	0.009	-0.000	0.003	0.008	0.043	0.023	-0.002	0.007	-0.022	0.009	0.017
	(0.007)	(0.007)	(0.003)	(0.007)	(0.025)	(0.012)	(0.007)	(0.006)	(0.014)	(0.007)	(0.026)
Pre-trend slope, 1949-1964	-0.000	0.004	-0.002	0.003	-0.012	0.000	-0.002	-0.000	0.002	-0.002	-0.011
	(0.003)	(0.003)	(0.008)	(0.003)	(0.007)	(0.004)	(0.003)	(0.003)	(0.008)	(0.004)	(0.006)
C. Log annual hours worked, Mean level:	*132 M*	*111 M*	*76 M*	*115 M*	*83 M*	*119 M*	*73 M*	*110 M*	*31 M*	*83 M*	*62 M*
Spline estimate in 1968	0.021	0.004	0.027	0.017	0.163	0.065	-0.019	0.019	-0.191	0.010	-0.006
	(0.024)	(0.004)	(0.034)	(0.027)	(0.105)	(0.061)	(0.030)	(0.030)	(0.081)	(0.032)	(0.116)
p-value, wild cluster bootstrap	[0.347]	[0.880]	[0.407]	[0.527]	[0.144]	[0.313]	[0.529]	[0.535]	[0.022]	[0.754]	[0.962]
Trend-break in 1964	0.005	0.001	0.004	0.004	0.041	0.016	-0.005	0.005	-0.048	0.003	-0.002
	(0.006)	(0.007)	(0.004)	(0.007)	(0.026)	(0.015)	(0.008)	(0.007)	(0.020)	(0.008)	(0.029)
Pre-trend slope, 1949-1964	0.003	0.005	-0.001	0.007	-0.007	0.003	0.002	0.003	0.011	0.002	-0.006
	(0.003)	(0.003)	(0.008)	(0.003)	(0.007)	(0.005)	(0.003)	(0.003)	(0.010)	(0.004)	(0.008)
Observations	2,361,978	1,974,783	1,572,973	2,116,166	227,533	1,149,046	1,201,655	1,994,552	367,221	1,884,123	477,688
Industry-Occupation-State-Year Cells	15,904	14,880	14,272	15,120	1,999	7,620	12,945	14,528	4,559	14,287	4,608

Notes: Table 2 presents the spline estimates and standard errors for women relative to men using the DDD specification as described in the text. Column 1 replicates column 3 of Table 1. Columns 2-3 limit the sample to full-time and full-time, full-year wage earners (at least 35 hours per week and 27 or 50 or more weeks per year, respectively). Columns 4-5 restrict the sample to White and Black workers (race controls excluded in these specifications). Columns 6-7 restrict the sample to individuals with less than or at least 12 years of education. Columns 8-9 restrict the sample to workers of different ages (age controls excluded). Columns 10-11 restrict the sample to married and unmarried individuals. Individual observations are reported for Panel A, and the number of job cells are reported for Panel B. Summary statistics are reported for women. See also Table 1 notes and text.

affected women's wages in states without equal pay laws; (2) the racial provisions of the Civil Rights Act—rather than sex discrimination provisions—drove women's gains in states without equal pay laws; and (3) shifts in the coverage and level of the minimum wage disproportionately benefitted women in states without equal pay laws. We discuss each alternative explanation in turn.

First, unobserved changes in labor markets after 1964—rather than the legislation—could have raised workers' wage earnings in states without equal pay laws, which were concentrated in the South. We examine this possibility using men's wages as an outcome. The event-study estimates for men are more variable in the early 1960s, but Figure 3C shows that the timing of men's wage gains aligns poorly with the legislation. Men's wage gains in states without equal pay laws begin before the legislation took effect, fail to show gains in 1965-1966 after the legislation had been implemented, and emerge again around 1967 when FLSA amendments increased the level and coverage of the minimum wage. As discussed below, the gains in men's wages in 1964 may reflect changes to the minimum wage under the 1961 FLSA Amendments. Highlighting the benefits of event-study analyses, these mis-timed effects show up in the spline estimates as a positive trend-break for men after 1964 (Table 1A, column 2), but with a magnitude about half as large as for women (we consider interpretations of this finding in more detail below). Conservatively assuming that the estimates for men in column 2 capture exogenous changes in the wage structure (rather than *endogenous* effects of the legislation on men), column 3 of Table 1A uses the DDD specification and finds that federal anti-discrimination legislation raised women's relative wages by 4.1 log points by 1968.

Another sensitivity check focuses on the sample of job cells where both men and women were working. High rates of occupational segregation in the early 1960s resulted in only half of job cells having workers of both sexes (8,480 / 15,904 job cells reported in Table 1, columns 3 and 4). Because the Equal Pay Act and Title VII should reduce pay gaps in jobs where both sexes are working ("equal pay for equal work"), we expect the larger, direct effects of the legislation to occur in the job cells employing both sexes (although we also expect effects on women's pay in other jobs). Column 4 of Table 1A provides evidence consistent with this prediction. While this comparison ignores potentially endogenous shifts in men and women across job cells, it reveals that the upward pressure on women's relative wages was greater in job cells where both men and women worked, increasing the estimated effect of the legislation to 5.0 log points by 1968 (column 4).

A second explanation for the estimated increase in women's wages after 1964 is that the Civil Rights Act's provisions to reduce racial discrimination—rather than the Equal Pay Act's or Title VII's sex provisions—raised the wages of Black women, who made up 12 percent of women workers in 1960. Because non-Southern states were more likely to have pre-existing state equal pay laws, greater federal enforcement or voluntary compliance with the Civil Rights Act's race provisions is a particular concern, if these policy changes disproportionately raised the wages of Black women workers in the South (Heckman and Payner 1989, Donohue and Heckman 1991).

However, several pieces of evidence are inconsistent with racial discrimination fully accounting for our results. An obvious counterpoint to this argument is that the timing of women's wage gains, which occur between 1964 and 1965 and largely pre-date the Civil Rights Act, which took effect in July of 1965 (Figure 3A). In addition, it seems unlikely that the Civil Rights Act's race provisions would have such large effects between July and December 1965 but smaller effects in the subsequent years, when it was in place for the 12 months covered in the ASEC earnings question. A third piece of evidence is presented in Table 2A, which uses the triple-differences specification to test for heterogeneity in women's relative wage gains by race. Contrary to this hypothesis, columns 4 and 5 show that the estimates are larger for White women (4.2, s.e. 1.2) than they are for Black women (3.1, s.e. 4.4), respectively.

A third explanation for our findings is that the 1961 or 1966 Amendments to the FLSA disproportionately benefitted women workers in the South, who were some of the lowest earners in the 1960s economy. Again, the timing of implementation does not correspond well to women's relative wage gains between 1964 and 1965. The 1961 FLSA raised the minimum wage for previously covered workers from $1 to $1.15 an hour effective in September 1961 and $1.25 per hour in September 1963, which predates the large increase in women's wages between 1964 and 1965 (though this could be driving the wage gains for men in Figure 3C). In addition, the 1961 FLSA extended coverage to around 663,000 workers who were paid less than the minimum wage and worked primarily in large retail enterprises and construction (Martin 1967). For previously uncovered workers, a minimum wage of $1 per hour was implemented in September 1961, raised to $1.15 per hour in September 1964 and $1.25 per hour in September of 1965. If these changes to the FLSA were driving the wage gains of women in states without Equal Pay laws, we would expect to see increases in women's wages in 1962, 1965, and 1966—the last two of similar magnitudes. However, Figure 3B does not exhibit this timing pattern for women, suggesting that the effects of the 1961 FLSA may not be different in states with and without equal pay laws.

The role of the 1966 Amendments to the FLSA, which first took effect in February of 1967, are easier to rule out. The effects of the 1966 FLSA first emerged in 1967 (Bailey, DiNardo, and Stuart 2021, Derenoncourt and Montialoux 2021), which post-dates the effects documented in Figure 3. Women's wage gains in Figure 3 emerge between 1964 and 1965, which predates those due to the 1966 FLSA.

In summary, both the timing of when the effects emerged in states without equal pay laws and the groups showing wage gains are inconsistent with leading alternative explanations. The most difficult hypothesis to rule out is that a large, unobserved exogenous shock to the wage structure for women in states without equal pay laws is driving their wage gains after 1964. This hypothesis is difficult to reject with this state-level empirical strategy, but our second empirical strategy addresses this concern directly (see section III).

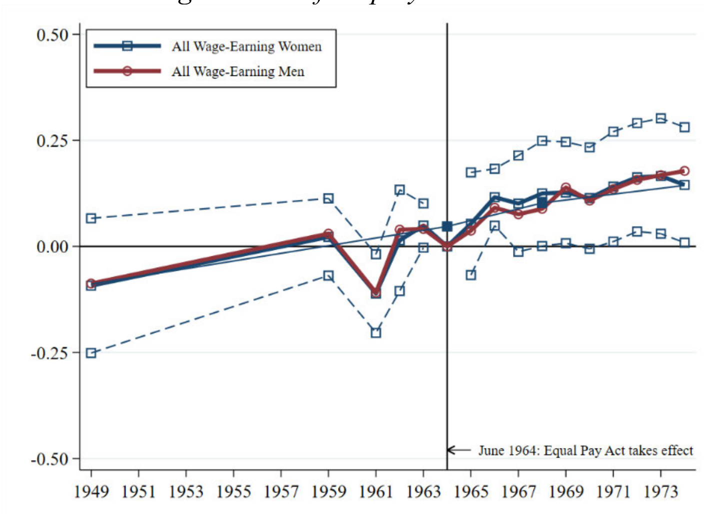
C. Results for Women's Employment

If labor markets were perfectly competitive and women were being paid their marginal product, labor market differentials in pay would arise due to differences in skill. Consequently, mandating equal pay would encourage firms to lay women off, reduce their hours, and hire more men going forward. However, if labor markets were monopsonistic or women's labor-supply curve was upward sloping, firms could counterintuitively *increase* the employment of women in response to higher mandated wages for them (Manning 1996). This section characterizes employment responses to the large gains in wages in section II.B.

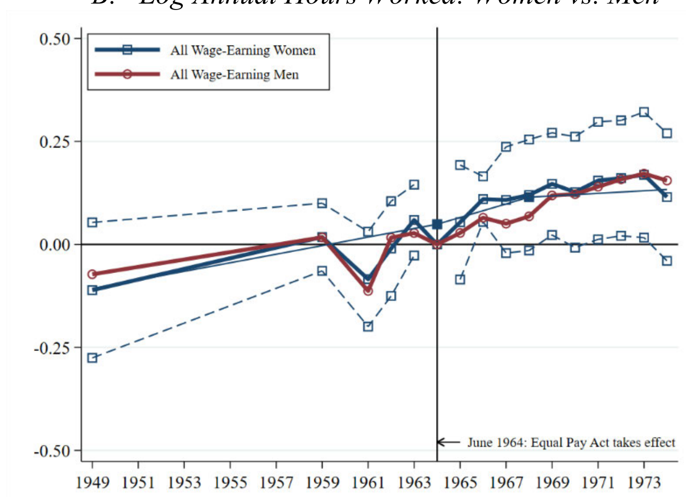
Figure 4 presents event-study estimates using the log of the number of employees or log of annual hours worked as the dependent variable. We find evidence of strong, positive pre-trends in employment and hours in states without equal pay laws, suggesting stronger economic growth in those states leading up to 1964. However, we find no evidence of a trend-break after 1964 in women's employment (Table 1, panels B and C), even as women's wages increased sharply. The spline estimate suggests that anti-discrimination legislation increased women's employment by 1.9 log points (s.e. 6.8, Table 1B, column 1) and annual hours worked by 2.4 log points (s.e. 6.9, Table 1C, column 1), but neither estimate is statistically different from zero. Using a triple-differences specification (column 3) or limiting the sample to industry-occupation categories where both men and women worked (column 4) does not alter this finding.

Figure 4. The Effect of the Equal Pay Act and Title VII on Employment using Pre-Existing State Equal Pay Laws

A. Log Number of Employees: Women vs. Men



B. Log Annual Hours Worked: Women vs. Men



Notes: These figures plot the event-study coefficients from model 3 of equation (1) estimated at the industry-occupation-state-group level. Dashed lines are 95-percent, point-wise confidence intervals for women, where standard errors have been corrected for heteroskedasticity and an arbitrary correlation within state group. Dependent variables are indicated in subtitles. See text for more details.

Stratifying the sample in Table 2B by full-time status, race, age, education, and marital status, the estimates vary a great deal across subgroups. Whereas the employment of full-time women showed no differential change in states without equal pay laws after 1964, employment growth among Black women and women with less than 12 years of education appears to be large and positive. Black women experience gains of 17 log points (s.e. 9.9, wild cluster p-value = 0.104, column 5), and less educated women experience gains of 9.3 log points (s.e. 4.8, wild cluster p-value = 0.074, column 6). Results for log annual hours worked in Table 2C show similar patterns. We conclude that there is little evidence from this first research design of a decline in women's employment. In fact, the evidence suggests that women's employment rose in some groups, which is consistent with Manning's (1996, 2002) findings of labor market monopsony for women in the U.K.

III. Research Design 2: Variation in the Incidence of Anti-Discrimination Legislation with the 1960 Gender Pay Gap

Our second research design hypothesizes that the Equal Pay Act and Title VII—if effective—should have larger effects after 1964 in jobs with more pre-existing sex discrimination. Under the assumption that the 1960 gender gap in pay within a job is correlated with more sex discrimination, we expect greater relative wage gains after 1964 for women in jobs with larger gender gaps. An additional benefit of this approach is that it allows us to account for potentially confounding state-level shifts in labor demand or supply, policies, and economic conditions, which could confound the state equal pay law design.

A. The 1960 Gender Gap as a Proxy for Labor Market Discrimination

We use the 1960 Census to construct the gender gap in 1,512 job cells defined by nine industries (n), eight occupations (o), and 21 state groups (s) (Ruggles et al. 2020). We rely on the 1960 Census (rather than the 1964 ASEC), because the 1960 Census data offers a much larger sample size, which yields more reliable gender wage gap estimates for a larger number of industry-occupation-state group (nos) cells, and mitigates concerns about mean reversion.[17] Of the 1,512 job cells in the Census, we exclude 570 from our analysis (8 have no observations in our period of interest and 562 have fewer than 10 women and 10 men working full time in 1960). Our final

[17] The 1960 Census has 910,172 women in the wage earner sample, whereas the 1964 ASEC has only 8,302 working women, allowing us to construct only 75 job cells. If a high gender gap in a job cell in the 1964 CPS reflects sampling variation, these job cells would see higher growth in women's relative wages in the year afterwards due to mean reversion. Using the 1960 Census to measure gender wage gaps breaks this mechanical relationship.

sample consists of 942 industry-occupation-state groups, or "job cells."[18] For each job cell, we construct the unconditional gender gap in mean log hourly wages using the 1960 Census, $\widehat{Gap}_{nos} = \overline{logW_{nos}^{m}} - \overline{logW_{nos}^{w}}$, where m denotes men and w women.[19] A key assumption of this approach is that a larger gender gap in wages is correlated with greater sex discrimination. It is difficult to verify this assumption directly, but descriptive evidence and estimates from event-study specifications support it.

B. Descriptive Evidence that Federal Legislation Had More Force in Jobs with Larger Gender Gaps

Descriptive evidence from the 1960 and 1970 Censuses shows how the gender gap, $\widehat{Gap}_{nos}$, is correlated with women's wages and their representation in different job cells. Figure 5A plots the relationship between the share of women employed in different job cells in 1960 and the 1960 gender wage gap. The size of the marker indicates the number of women employed in 1960, the color indicates the industry, and the marker shape indicates the occupation. The representation of women differs considerably across industries and occupations, but there is little relationship between the female employment share and the gender gap. Women are represented at different levels of the gender gap, although it is rare for men to out-earn women by 80 percent or more in a job cell (gender gap in log wages of 0.6). Figure 5B plots the relationship between the mean of women's log wages in 1960 and the gender gap. The strong negative relationship suggests that the gender gap tends to be larger in lower paying jobs, many of which were in services and retail sales.

Changes across the 1960s are consistent with our research design: Figure 6A plots women's wage changes over the 1960s net of changes in men's wages by job cell against the 1960 gender gap in wages. The strong, positive relationship (slope = 0.24, $R^2 = 0.28$) means that women's wages grew more during the 1960s in job cells where men out-earned them by more at the start of the decade, which is consistent with the Equal Pay Act and

---

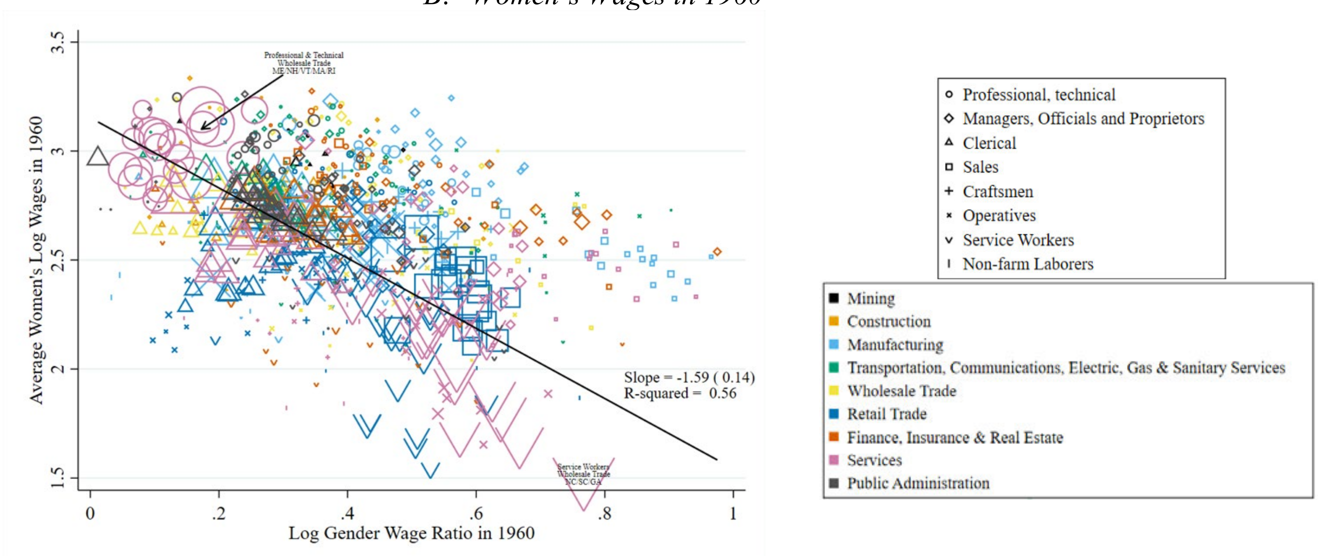
[18] Omitted cells are detailed in the Online Appendix. The nine industries are mining, construction, manufacturing, transport/communications/electric/gas/sanitary services, wholesale trade, retail trade, finance/insurance/real estate, services, and public administration. The eight occupations are professional/technical, managers/officials/proprietors, clerical, sales, craftsmen, operatives, service, and non-farm laborers.

[19] We use the sample of full-time workers to calculate the gender wage gap. The gender wage gap is nearly identical when we control for individuals' demographic and education characteristics using a quartic in age, an indicator for race, and a set of indicators for each year of schooling. The correlation between the unadjusted gender gap and the covariate-adjusted gender gap is 0.97, so we use the unadjusted gender gap for simplicity.

Figure 5. The Correlation of Women's Representation and Wages with the 1960 Gender Wage Gap, by Industry, Occupation, and State-Group Cell

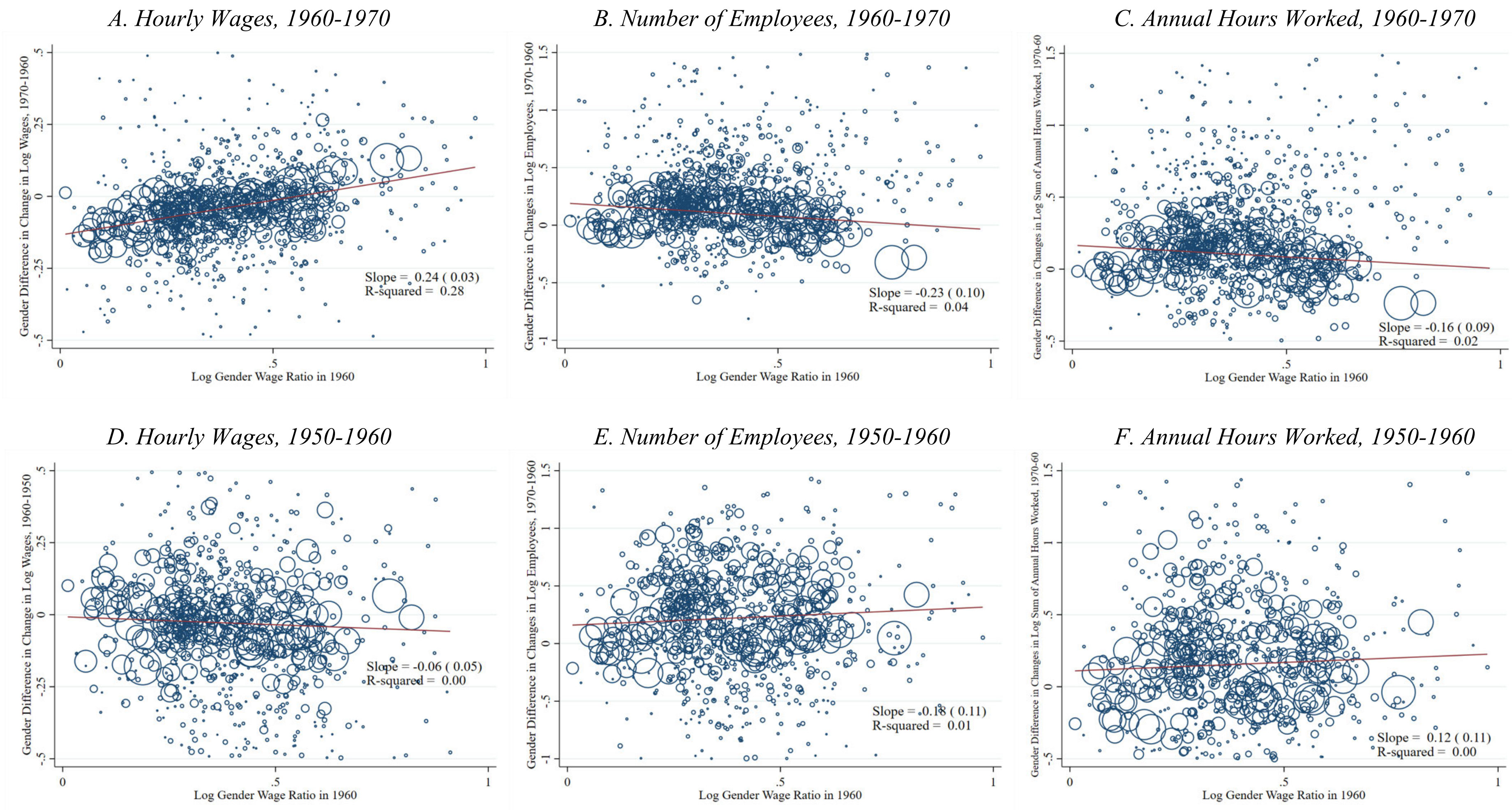
A. Women's Representation among Employees

B. Women's Wages in 1960



Notes: Each point represents an industry-occupation-state-group cell. The size of this point represents the number of women working in the cell in 1960. The color of each marker captures the industry, and the marker shape captures the occupation as shown in the legend. The x-axis is the log of the gender wage ratio, which is calculated by taking the difference between the mean log of estimated hourly wages for men and women working full time in 1960. For the wage-earner sample, Figure A plots the share of employees in each cell in 1960 who are women, and Figure B plots average log wages for women in the 1960 census. The slope coefficient, heteroskedasticity-robust standard error, and R^2 are calculated using a bivariate regression of the outcome on the y-axis against the log gender wage ratio in the 1960 census(x-axis) with weights for the number of women in each cell in the 1960 census.

Figure 6. Correlation of Changes in Relative Wages and Employment from 1950 to 1970 and the 1960 Gender Gap in Wages, by Industry, Occupation, and State-Group Cell



Notes: Each point represents the difference in outcomes between women and men for the industry-occupation-state-group cell. The size of this point represents the number of women working in the cell in 1960 in all panels. Panels A-C plot the outcomes from 1960 to 1970, and panels D-F plot the outcomes for 1950 to 1960. The slope coefficient, heteroskedasticity-robust standard error, and R^2 are calculated using a bivariate regression of the outcome on the y-axis against the log gender wage ratio in 1960 (x-axis) with weights for the number of women in each cell in 1960.

Title VII ameliorating pay discrimination and increasing women's wages. One concern with these comparisons is that they may reflect mean reversion. To address this, we instrument for the 1960 gender wage gap with the 1950 gender wage gap. The IV estimate of the slope coefficient in Figure 6A is 0.22 (standard error: 0.03), which is very similar to the OLS estimate of 0.24 (0.03). Corresponding to these wage gains, women's employment and annual hours (net of changes in men's) rose over the 1960s, but they rose more slowly in job cells where wages grew more quickly. These patterns are reversals from the 1950s. Figures 6D-6F show that, in the decade prior to federal legislation, women's relative wages were growing only slightly more slowly in jobs with larger 1960 gender gaps, and their employment was growing more quickly in jobs cells with larger gender gaps.

C. Event-Study and Spline Specifications

We use the following event-study specification to test whether women's wage gains in jobs with larger gender gaps in the 1960 census correspond in timing to the Equal Pay Act and Title VII:

$$Y_{it} = \sum_{\tau=1949, \tau\neq 1964}^{1974} \theta_\tau D_\tau \widehat{Gap}_{n(i)o(i)s(i)} + \boldsymbol{X}_{it}'\boldsymbol{\beta} + \gamma_{n(i)o(i)s(i)} + \delta_{s(i)t} + \delta_{n(i)t} + \delta_{o(i)t} + \varepsilon_{it}. \quad (3)$$

The dependent variable, Y_{it}, is log hourly wages of individual *i* in calendar year *t*=1949, 1959, 1961-1974, and $\widehat{Gap}_{nos}$ is as defined previously. We interact $\widehat{Gap}$ with a set of year indicator variables, D_τ, and omit 1964, the year the Equal Pay Act became effective in June. Because $\widehat{Gap}$ varies within state group, the addition of state-group-by-year fixed effects $\delta_{s(i)t}$ allows the analysis to account for unobserved changes in local labor markets and state-level policies. The remaining notation remains as previously described. Specifications for employment outcomes are analogous but estimated at the *nos* level and weighted as described previously. Standard errors are clustered at the industry-occupation-state-group level and constructed using a pair-wise bootstrap with 500 replications, which ensures that our estimates reflect sampling variability from estimates of $\widehat{Gap}_{nos}$ (Cameron and Miller 2015).

Our parameters of interest, θ_τ, capture changes in the correlation of women's wages with the gender pay gap in 1960 across time. If federal legislation reduced labor market discrimination against women, we expect women's wages to increase more after 1964 in job cells with a larger gender gap (i.e., θ_τ>0 for

τ>1964). Testing for changes in this correlation before 1964 also helps rule out potential confounders and assess the validity of the parallel-trends assumption. For instance, if women's productivity and work intensity were increasing differentially in jobs with larger gender gaps pre-dating the legislation, we would expect θ_τ to increase in years prior to 1964, casting doubt that the parallel trends assumption holds.

Just as was the case for the first research design, we summarize the event-study estimates using a three-part spline, or

$$Y_{it} = \widetilde{\theta_0}\widehat{Gap}_{n(i)o(i)s(i)}t + \widetilde{\theta_1}1(t > 1964)\widehat{Gap}_{n(i)o(i)s(i)}t + \widetilde{\theta_2}1(t > 1968)\widehat{Gap}_{n(i)o(i)s(i)}t \tag{4}$$

$$+\boldsymbol{X}'_{it}\widetilde{\boldsymbol{\beta}} + \tilde{\gamma}_{n(i)o(i)s(i)} + \tilde{\delta}_{s(i)t} + \tilde{\delta}_{n(i)t} + \tilde{\delta}_{o(i)t} + \tilde{\varepsilon}_{it},$$

where notation remains as previously defined.

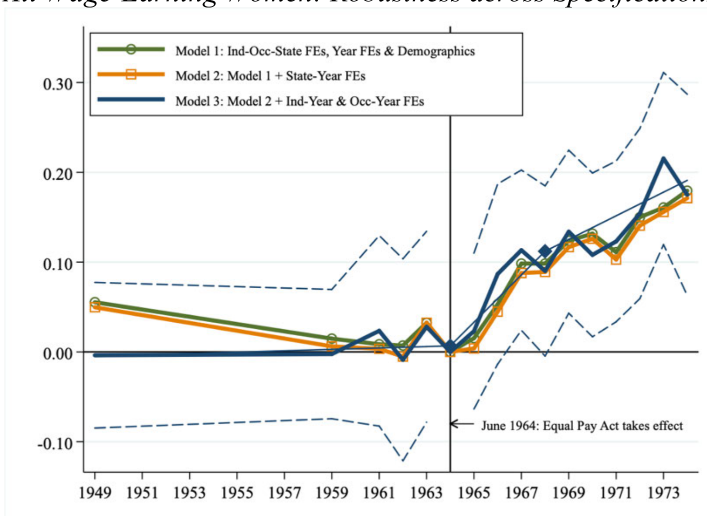
D. Results for Women's Wages

Figure 7A presents the event-study results for the sample of all workers, and Table 3A summarizes the event-study estimates using the spline. The point-estimates and confidence intervals are scaled by the mean gender gap in the 1960 census, so the estimates can be interpreted as the effects of the legislation in an average job.[20] Consistent with the Equal Pay Act and Title VII reducing labor-market discrimination against women, the data show that women's hourly wages increased by 10.2 log points more after 1964 in job cells with the average 1960 gender gap in pay (Table 3A, column 1). In addition, these increases happened almost immediately following the legislation, with the data showing a positive and statistically significant trend-break after 1964 (Table 3A) and the estimates leveling off after 1967 (Figure 7A). In addition, Figure 7A shows the results are highly robust across specifications, showing very similar estimates for model 1 (which includes demographic controls and fixed effects for year and industry-occupation-state-group), model 2 (which adds state-group-by-year fixed effects to model 1), and model 3 (which adds industry-year and occupation-year fixed effects to model 2). Figure 7B also shows that the estimates are very similar in the sample of all wage earners and more attached, full-time wage earners.

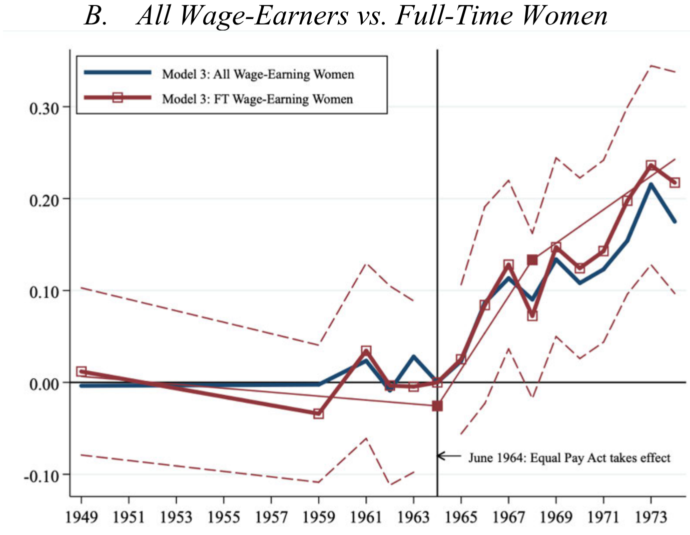
[20] In the data, the mean gender gap is 0.374. However, the value of the mean gender gap used for scaling varies across bootstrap replications to account for its sampling variability.

Figure 7. The Effect of the Equal Pay Act and Title VII on Women's Wages using 1960 Gender Wage Gaps

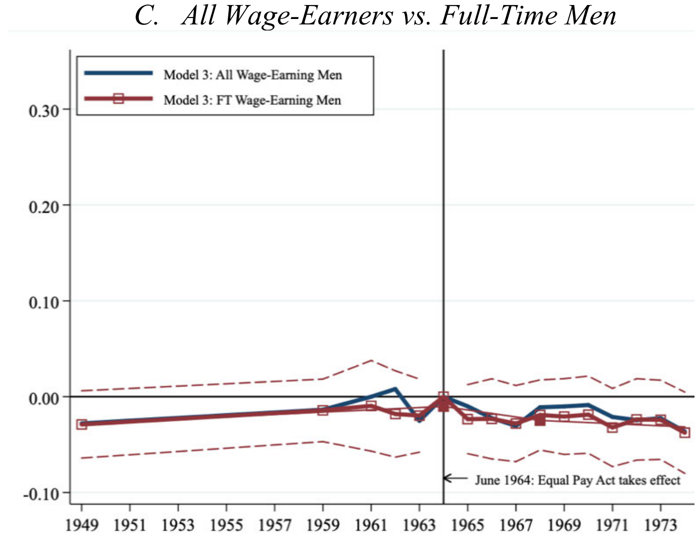
A. All Wage-Earning Women: Robustness across Specifications



B. All Wage-Earners vs. Full-Time Women



C. All Wage-Earners vs. Full-Time Men



Notes: These figures plot the event-study coefficients from equation (3) as well as 95-percent, point-wise confidence intervals using standard errors that have been corrected for heteroskedasticity, an arbitrary correlation by industry-occupation-state-group, and sampling variability in the gender gap variable via a nonparametric pairs bootstrap with 500 replications. The thin lines correspond to spline estimates of equation (4). In panel A, we plot the spline estimate for model 3. Point estimates and confidence intervals are multiplied by the average gender wage gap in the 1960 census for the relevant sample of women (equal to 0.374 for all wage earners and 0.358 for full-time wage earners in the data, though the value of the gender wage gap variable differs across bootstrap replications). See text for more details.

Table 3. The Effects of the Equal Pay Act and Title VII on Wages and Employment using 1960 Gender Wage Gaps

	(1)	(2)	(3)	(4)
	Women	Men	Women - Men	Women - Men
A. Log hourly wage				
Spline estimate in 1968 at mean *Gap*	0.102	-0.013	0.115	0.125
	(0.028)	(0.012)	(0.031)	(0.045)
Trend-break in 1964	0.068	-0.009	0.077	0.083
	(0.018)	(0.008)	(0.020)	(0.030)
Pre-trend slope, 1949-1964	0.002	0.003	-0.001	0.000
	(0.005)	(0.002)	(0.005)	(0.007)
B. Log number of employees				
Spline estimate in 1968 at mean *Gap*	-0.119	-0.062	-0.058	0.023
	(0.055)	(0.029)	(0.057)	(0.074)
Trend-break in 1964	-0.080	-0.041	-0.038	0.015
	(0.037)	(0.019)	(0.038)	(0.050)
Pre-trend slope, 1949-1964	-0.005	0.015	-0.020	-0.018
	(0.014)	(0.006)	(0.014)	(0.014)
C. Log number of annual hours worked				
Spline estimate in 1968 at mean *Gap*	-0.090	-0.047	-0.043	0.054
	(0.062)	(0.031)	(0.065)	(0.082)
Trend-break in 1964	-0.060	-0.031	-0.029	0.036
	(0.042)	(0.021)	(0.044)	(0.055)
Pre-trend slope, 1949-1964	-0.019	0.008	-0.027	-0.023
	(0.015)	(0.006)	(0.015)	(0.016)
Observations	797,272	1,362,199	2,159,471	1,410,419
Industry-Occupation-State-Year Cells	5,264	10,640	15,904	8,480
Only Ind-Occ-State Cells with Women and Men				x
Covariates				
Demographics, Ind-Occ-State FEs, Year FEs	x	x	x	x
State -Year FEs, Ind-Year FEs, Occ-Year FEs	x	x	x	x

Notes: Table presents the spline estimates and standard errors as described in the text. The spline estimates in 1968 are scaled by the mean gender gap in the 1960 census (which equals 0.374 in the data, though the mean value of the gender wage gap variable differs across bootstrap replications). Columns 1-3 use a panel of industry-occupation-state cells that are balanced across years separately for women and men. Column 4 restricts the sample to the same industry-occupation-state cells for women and men. Demographic controls include the share of workers that are nonwhite and a quartic function in age. In columns 3-4, demographics and fixed effects vary by sex. Standard errors are corrected for heteroskedasticity, an arbitrary correlation by industry-occupation-state-group, and sampling variability in the gender gap variable via a nonparametric pairs bootstrap with 500 replications. See text for more details.

Effect Heterogeneity

Table 4A further examines effect heterogeneity across subgroups. The results show that the within-job cell wage gains for women following the Equal Pay Act and Title VII were largely pervasive across groups. Particularly notable are the larger wage increases among women with less education and younger workers. Additionally, we examine the effect of the Equal Pay Act and Title VII at different percentiles of the wage distribution. Following Firpo, Fortin, and Lemieux (2009), we use recentered influence functions (RIFs) to estimate the effects of federal anti-discrimination legislation on the unconditional percentiles of women's log hourly wage using ordinary least squares (OLS) and the model 3 specification. The results in Figure 8, which are scaled by the mean gender gap in the 1960 census, reveal large increases in wages at the 10th and 25th percentiles after the legislation took effect, amounting to roughly 40 log points for the 10th percentile and 10 log points for the 25th percentile by 1966. To address the concern that these estimates are influenced by revisions in the CPS sampling frame that occurred in 1967 (which could affect wage estimates for 1966), we re-estimate the RIF regressions using only decennial census data for 1949, 1959, and 1969. Figure 8 displays the census-only estimates for 1969 as single points, which are identical for the 10th percentile and slightly smaller for the 25th percentile.

The overall impression from Figure 8 is that percentiles above the median show little evidence of a trend break after 1964 or any change through the 1970s, whereas percentiles below the median show large gains. These findings suggest that the federal anti-discrimination legislation reduced both the gender wage gap and within-gender wage inequality, boosting wages for the lowest paid women.

Alternative Explanations

As noted in the previous section, the main threats to a causal interpretation of these findings are that (1) differential labor-market changes—rather than federal anti-discrimination legislation

Table 4. Heterogeneity in the Effects of the Equal Pay Act and Title VII on Wages and Employment of Women using 1960 Gender Wage Gaps

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	All wage earners	Full-time wage earners	Full-time, full-year wage earners	White	Black	Less than 12 years education	At least 12 years education	Age 25-54	Age 55-64	Married	Unmarried
A. Log hourly wage											
Spline estimate in 1968 at mean *Gap*	0.115	0.186	0.113	0.101	0.102	0.131	0.092	0.130	0.018	0.109	0.088
	(0.031)	(0.030)	(0.028)	(0.032)	(0.100)	(0.048)	(0.035)	(0.031)	(0.078)	(0.040)	(0.055)
Trend-break in 1964	0.077	0.130	0.078	0.071	0.050	0.073	0.075	0.088	0.012	0.072	0.059
	(0.020)	(0.019)	(0.020)	(0.022)	(0.051)	(0.026)	(0.028)	(0.020)	(0.050)	(0.025)	(0.037)
Pre-trend slope, 1949-1964	-0.001	-0.009	-0.006	-0.000	0.000	-0.000	-0.003	-0.004	0.021	0.000	0.003
	(0.005)	(0.006)	(0.005)	(0.006)	(0.014)	(0.008)	(0.007)	(0.005)	(0.016)	(0.007)	(0.009)
B. Log employees											
Spline estimate in 1968 at mean *Gap*	-0.058	-0.021	-0.070	-0.008	-0.773	-0.216	0.046	-0.033	0.054	-0.020	0.004
	(0.057)	(0.068)	(0.070)	(0.062)	(0.789)	(0.139)	(0.085)	(0.065)	(0.229)	(0.082)	(0.231)
Trend-break in 1964	-0.038	-0.015	-0.048	-0.006	-0.383	-0.120	0.038	-0.022	0.034	-0.013	0.002
	(0.038)	(0.047)	(0.049)	(0.043)	(0.423)	(0.077)	(0.069)	(0.044)	(0.145)	(0.055)	(0.155)
Pre-trend slope, 1949-1964	-0.020	-0.018	-0.036	0.011	0.055	-0.022	0.028	-0.020	-0.073	-0.032	-0.021
	(0.014)	(0.018)	(0.016)	(0.014)	(0.144)	(0.021)	(0.019)	(0.017)	(0.042)	(0.017)	(0.045)
C. Log annual hours worked											
Spline estimate in 1968 at mean *Gap*	-0.043	-0.048	-0.094	-0.041	-0.620	-0.164	0.019	-0.023	0.260	-0.011	0.162
	(0.065)	(0.070)	(0.071)	(0.070)	(0.797)	(0.140)	(0.096)	(0.073)	(0.245)	(0.091)	(0.247)
Trend-break in 1964	-0.029	-0.033	-0.065	-0.029	-0.307	-0.092	0.015	-0.016	0.165	-0.008	0.108
	(0.044)	(0.049)	(0.049)	(0.049)	(0.415)	(0.078)	(0.077)	(0.050)	(0.155)	(0.061)	(0.166)
Pre-trend slope, 1949-1964	-0.027	-0.021	-0.034	0.007	0.024	-0.037	0.023	-0.024	-0.114	-0.035	-0.036
	(0.015)	(0.018)	(0.016)	(0.016)	(0.100)	(0.022)	(0.020)	(0.018)	(0.048)	(0.019)	(0.045)
Group mean *Gap*	0.374	0.358	0.361	0.356	0.505	0.449	0.309	0.370	0.394	0.374	0.374
Observations	2,159,471	1,806,702	1,455,344	1,941,909	201,344	1,009,922	1,139,258	1,882,982	336,455	1,706,635	452,831
Industry-Occupation-State-Year Cells	15,904	14,880	14,272	15,104	1,935	7,590	12,945	14,528	4,527	14,287	4,576

Notes: Table presents the spline estimates and standard errors for women relative to men as described in the text. Column 1 replicates column 3 of Table 3. See Table 2 notes for descriptions of samples in remaining columns. The spline estimates in 1968 are scaled using the mean gender gap for the group, whose value in the data is reported in the third-to-last row but differs across bootstrap replications. Individual observations are reported for Panel A, and the number of job cells are reported for Panel B. Summary statistics are reported for women. Standard errors are corrected for heteroskedasticity, an arbitrary correlation by industry-occupation-state-group, and sampling variability in the gender gap variable via a nonparametric pairs bootstrap with 500 replications. See also Table 3 notes and text.

—disproportionately affected women's wages in job cells with a larger 1960 gender gap, (2) the racial provisions of the Civil Rights Act —rather than sex discrimination provisions—drove gains in job cells with a larger 1960 gender gap, or that (3) revisions to the FLSA disproportionately benefitted workers with a larger 1960 gender gap.

Regarding the first alternative explanation, the robustness of the results to the inclusion of state-year, occupation-year, and industry-year fixed effects ameliorates concerns that the results are driven by broad changes in labor demand, state policies, or trends in the industry or occupational wage structure. Perhaps even stronger evidence comes from the finding of no wage gains for men. Consistent with legislation increasing costs for firms, the wages of men fell very slightly in the aftermath of federal anti-discrimination legislation. Figure 7C shows this directly, and Table 3A summarizes this (insignificant) negative effect for men (column 2). Using men as an additional comparison group in the DDD specification, therefore, slightly increases the estimates for women, raising the estimate at the mean gender gap from 10.2 log points (s.e. 2.8, column 1) to 11.5 log points (s.e. 3.1, column 3) and to 12.5 log points (s.e. 4.5, column 4) when focusing on a set of job cells where men and women both worked. In all cases the pre-trend coefficient is small and indistinguishable from zero.

Regarding the last two alternative explanations, Table 4A shows that federal legislation appears to have had roughly equal effects on the relative wages of Black and White women (as in Table 2A), and Figure 7A shows that the timing of women's wage gains is inconsistent with the implementation of the 1961 and 1966 Amendments to the FLSA (described in section II.B).

E. *Results for Women's Employment*

On June 14, 1964, the *Washington Post* documented through interviews with different employers that the Equal Pay Act was a "mixed blessing" for women.

> *…the head of a new Virginia manufacturing plant put it: "We had planned to employ women in some of our light manufacturing jobs, but we decided against it because of anticipated complications arising from the equal pay law." An Ohio manufacturer said his plant would downgrade some job classifications for women and reassign higher-level, higher-paying duties to men….*
>
> *Many employers said they would hike women's wages to bring them into line with men's. Some firms said they would equalize salaries now, but in the future would segregate male and female job classifications.*

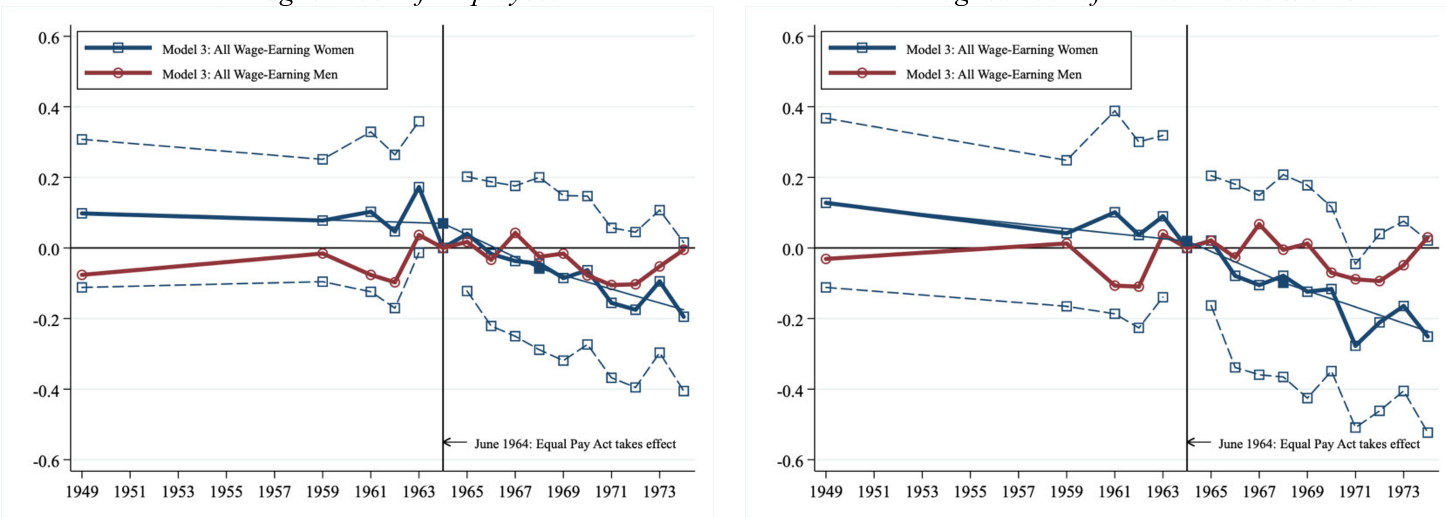
Although Title VII would make this type of behavior illegal the following year, honest reporting before it passed provides important context. Notably, no employer said they would fire women in response to the Equal Pay Act—which is consistent with our findings when examining employment responses using state equal pay laws. However, employers indicated that they planned to change job classifications and hiring, which could show up as industry-occupation level changes if women's employment over the long term.

Figure 9 provides some suggestive evidence along these lines. Women's employment changed very little in the short run. In 1966, when women's wages soared in jobs with higher 1960 gender gaps, the number of female or male employees changed little (Figure 9A). Similarly, we see little change in the number of annual hours worked by 1966 (Figure 9B). However, the confidence intervals for the annual event-study point estimates are wide enough so that sizable changes in employment in either direction cannot be ruled out. Figure 9 also reveals a slight trend-break, which is not statistically significant (Table 3B and 3C). The estimates imply a reduction in female employees of 11.9 log points at the mean gender gap (s.e. 5.5, column 1) and in male employees of 6.2 log points (s.e. 2.9, column 2) by 1968. However, the triple-differences specification shows the trend break is statistically insignificant for women relative to men (column 3). Further, limiting the sample to jobs where both women and men worked yields a statistically insignificant but *positive* effect of 2.3 log points in employment (s.e. 7.4, column 4), which suggests that the negative employment effects in columns 1 and 3 are driven by reductions in the number of women workers relative to men in sex-segregated jobs—a finding contrary to the expected pattern if firms shed women workers as their relative wages rose.

Looking across subgroups, Tables 4B and 4C show that the employment effects of the Equal Pay Act and Title VII are variable and imprecise across subgroups. Employment fell by 0.8 log points (s.e. 6.2, column 4) at the mean gender gap for White women. For Black women, the point estimate implies a decline in employment of 77 log points, but the standard error is much larger, leaving considerable uncertainty about the true effect. Employment among women with less than 12 years of education also fell considerably with a large standard error.

Figure 9. The Effect of the Equal Pay Act and Title VII on Female Employment using 1960 Gender Wage Gaps

A. Log Number of Employees *B. Log Number of Annual Hours Worked*



Notes: These figures plot the event-study coefficients from equation (3) estimated at the industry-occupation-state-group level. Dashed lines are 95-percent, point-wise confidence intervals for women based on standard errors that have been corrected for heteroskedasticity, an arbitrary correlation by industry-occupation-state-group, and sampling variability in the gender gap variable via a nonparametric pairs bootstrap with 500 replications. Dependent variables and samples are indicated in legend. Point estimates and confidence intervals are multiplied by the average gender wage gap among the relevant sample of women (equal to 0.374, though the value of the gender wage gap variable differs across bootstrap replications). See text for more details.

In summary, the second research design yields strong evidence that the Equal Pay Act and Title VII lifted the wages of working women. While there is little evidence of short-run decreases in women's employment, some evidence suggests that women's employment fell in the longer-term. The imprecision of the results means that the longer-term effects of the Equal Pay Act and Title VII on employment remain uncertain. Similar to what was reported in the *Washington Post*, employers likely responded to the legislation in different ways, which means our aggregation of these responses is inconclusive.

IV. Using Variation in State Equal Pay Laws and Job Cell Gender Gaps

As a final check on the validity of the results, we bring both research designs together to examine whether women's relative outcomes changed differently after 1964 in jobs with a higher gender pay gap *and* pre-existing equal pay laws. If state equal pay laws were somewhat effective, we expect women's relative wages to increase by less in job cells that had the same 1960 gender gap in wages but were already affected by state legislation. Said another way, prior legislation in some states means that the same gender gap in pay in 1960 should be less correlated with sex discrimination. Table 5 supports this prediction. In the 22 states with pre-existing equal pay laws, we find women's wages grew by 7.0 log points (s.e. 4.4, column 2) at the mean gender gap, with minimal effects on their employment (-0.9 log points, s.e. 8.9) or annual hours worked (-6.6 log points, s.e. 10.9). In states without equal pay laws, we find women's relative wages grew by much more after 1964—an increase of 18.8 log points (s.e. 4.8, column 3) in women's relative wages by 1968 and a statistically insignificant decline in their employment (-11.5 log points, s.e. 8.9) and annual hours worked (-4.9, s.e. 10.3).

V. Reconciling Quasi-Experimental Evidence with the Timeseries

The large positive effects of federal anti-discrimination legislation on women's relative wages appears at odds with the stability of the gender pay gap in Figure 1. But two observations help reconcile this apparent contradiction. First, the Census Bureau has reported the gender gap at the median for full-year workers for decades, motivated by a desire to summarize pay gaps for individuals with a similar level of labor-market attachment while limiting the role of outliers. But this limited perspective and sample has consequences for understanding the gender gap. Figure 10A re-examines the gender wage gap at different points in the wage distribution, which shows a striking convergence at the 10^{th} percentile starting in the late 1960s—about one decade before convergence appears at the median in Figure 1.

The standard sample restriction to full-year workers (50 or more weeks per year) is also consequential. In 1960, only 45 percent of working women worked at least 35 hours and at least 50 weeks per year versus over 72 percent of working men. Broadening the full-time, full-year sample to include women working at least 27 weeks in the previous year, Figure 10B shows the convergence in the gender wage gap below the median beginning in the early 1960s. At the 10^{th} percentile, the gender gap narrowed by 13 points between 1960 and 1970, marking a stark reversal from the widening of the gender gap in the 1950s. Similarly, for women at the 25^{th} percentile, the gender gap narrowed by 5 points, reversing a decade of expansion. As in Figure 1 and Figure 10A, little changes at the median or above for this broader sample, where convergence in the gender gap begins around 1980. In short, the gender gap in the lower part of the

Table 5. Heterogeneity in the Effects of the Equal Pay Act and Title VII by State Equal Pay Laws, using 1960 Gender Wage Gaps

	(1)	(2)	(3)
		Equal Pay Law	
	All women wage earners	Has state law	No state law
A. Log hourly wage, mean 1960 level:	*$16.82*	*$18.13*	*$14.50*
Spline estimate in 1968 at mean *Gap*	0.115	0.070	0.188
	(0.031)	(0.044)	(0.048)
Trend-break in 1964	0.077	0.048	0.120
	(0.020)	(0.030)	(0.028)
Pre-trend slope, 1949-1964	-0.001	0.006	-0.012
	(0.005)	(0.008)	(0.009)
B. Log number of employees, mean 1960 level:	*90,282*	*93,630*	*84,172*
Spline estimate in 1968 at mean *Gap*	-0.058	-0.009	-0.115
	(0.057)	(0.089)	(0.089)
Trend-break in 1964	-0.038	-0.006	-0.073
	(0.038)	(0.061)	(0.057)
Pre-trend slope, 1949-1964	-0.020	-0.000	-0.033
	(0.014)	(0.016)	(0.027)
C. Log number of annual hours worked, mean 1960 level:	*132 M*	*136 M*	*125 M*
Spline estimate in 1968 at mean *Gap*	-0.043	-0.066	-0.049
	(0.065)	(0.109)	(0.103)
Trend-break in 1964	-0.029	-0.045	-0.031
	(0.044)	(0.075)	(0.067)
Pre-trend slope, 1949-1964	-0.027	-0.002	-0.047
	(0.015)	(0.019)	(0.027)
Group Mean *Gap*	0.374	0.364	0.392
Observations	2,159,471	1,435,264	724,204
Industry-Occupation-State-Year Cells	15,904	9,904	5,968

Notes: Table presents the spline estimates and standard errors for women relative to men as described in the text. Column 1 replicates column 3 of Table 3. Columns 2 and 3 split the sample by the existence of a state-level equal pay law within the state group in 1963 and those without such a law (U.S. Congress 1963). The states with equal pay laws are Alaska, Hawaii, Oregon, Washington, Arizona, Colorado, Montana, Wyoming, Arkansas, California, Connecticut, Illinois, Maine, Massachusetts, New Hampshire, Rhode Island, Michigan, Wisconsin, New Jersey, New York, Ohio, and Pennsylvania. The spline estimates in 1968 are scaled using the mean gender gap from the 1960 census for the group (value reported in the third-to-last row). Individual observations are reported for Panel A, and the number of job cells are reported for Panel B. Standard errors are corrected for heteroskedasticity, an arbitrary correlation by industry-occupation-state-group, and sampling variability in the gender gap variable via a nonparametric pairs bootstrap with 500 replications.

wage distribution changed much more in the 1960s than at the median among full-year workers (Figure 1), and the timing of the increase in women's relative wages corresponds closely to the enactment of the legislation.

A second observation relates to the role of off-setting changes in labor markets, which served to increase the gender gap. This is apparent when using the pre-trend in the 1950s to generate counterfactual wages for 1970. Simply extrapolating the changes from 1950 to 1960 in Figure 10B suggests that the 10th percentile would have fallen by 8 points rather than increasing by 13 points, and the 25th percentile would have fallen by 6 points rather than increasing by 5 points. To better understand what is driving these off-setting changes in wages, we decompose changes in women's and men's wages across the distribution using the 1960 and 1970 Censuses based on the approach of Firpo, Fortin, and Lemieux (2018). This decomposition estimates how much of the total change in wages is explained by changes in individual characteristics and the wage structure at different points in the wage distribution (Firpo, Fortin, and Lemieux 2009). The explanatory variables in Table 6 are the 1960 gender wage gap, race (nonwhite indicator), age (categorical variables for 25-29, 30-34, …, 55-59), marital status (indicator), education (categorical variables for years 9-12 and 13+), industry (8 indicators), occupation (7 indicators), and state (20 indicators). The omitted group consists of 60–64-year-olds with 0-8 years of education, in the service industry, in a professional occupation, and in California. The estimated contribution of the gender wage gap variable is not sensitive to the choice of omitted group.

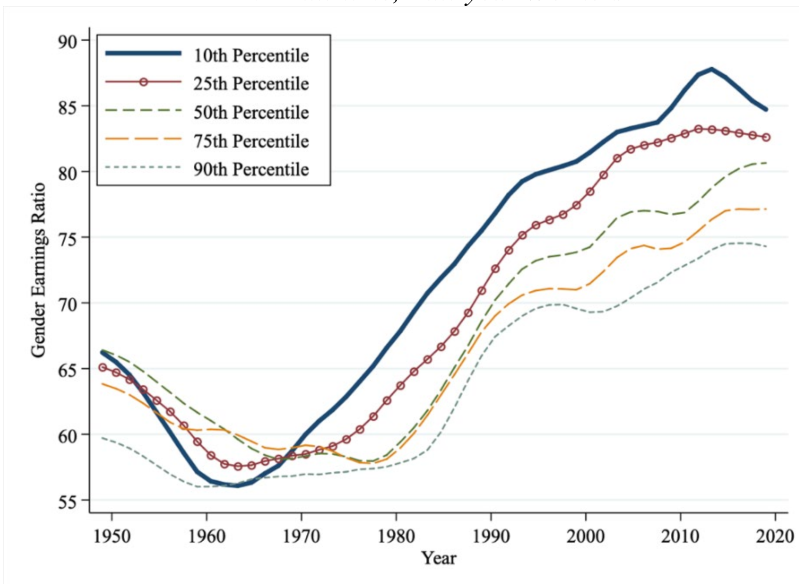
Table 6A shows that changes in the wage structure account for nearly all the observed change in wages from 1960 to 1970 at each percentile, which is consistent with the descriptive evidence in Bailey, Helgerman, and Stuart (2021). Within the set of wage structure variables, the 1960 gender wage gap has a pronounced positive effect at the 10th and 25th percentiles of women's wage distribution, with little effect elsewhere, as in Figure 8.[21] This implies that legislation-induced reductions in sex discrimination—as

---

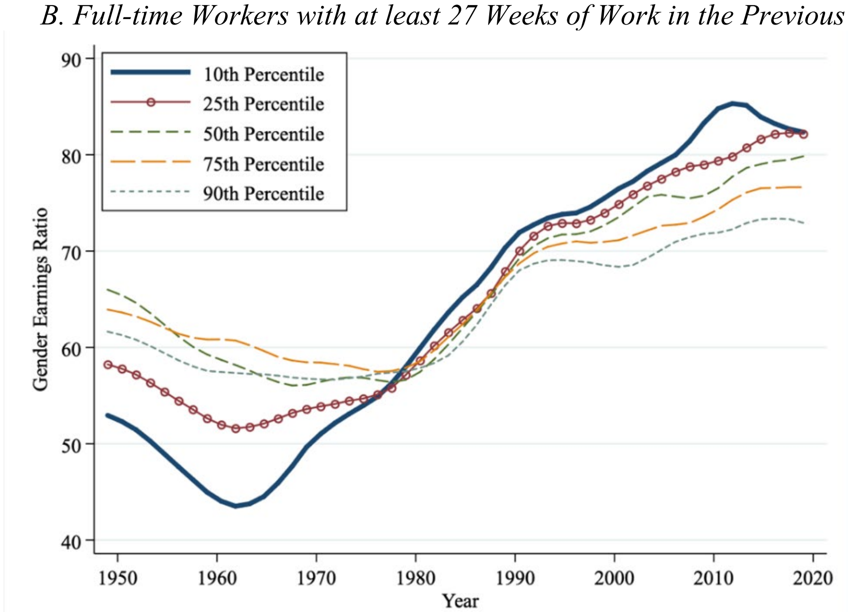
[21] The magnitude of the wage structure effects in Table 6 differ from those in Figure 8, because the estimates in Table 6 do not include industry-occupation-state fixed effects, as they would absorb the gender wage gap variable. Instead, we include separate fixed effects for industry, occupation, and state.

Figure 10. The Gender Gap in Annual Earnings across the Distribution for Different Samples, 1949-2019

A. Full-time, Full-year Workers



B. Full-time Workers with at least 27 Weeks of Work in the Previous Year



Notes: Figures use the 1950 and 1960 Decennial Censuses (Ruggles et al. 2020) and the 1962 to 2020 ASEC (Flood et al. 2020). We linearly extrapolate values for earnings years 1950-1958 and 1960, when Census and CPS data are not available. We smooth the series using a local linear regression with a bandwidth of 2 years. In panel A, we use all full-time (35+ hours), full-year (50+ weeks worked) wage and salary workers ages 16-64 reporting positive wage income in the previous year. We plot the gender earnings ratio at the *pth* percentile/mean by taking the ratio of the *pth* percentile of the wage distribution for women over the *pth* percentile of the wage distribution for men. Panel B plots the same statistics for a sample of 25-64 year-old, full-time workers working at least 27 weeks in the previous year.

Table 6. Decomposing the Hourly Wage Distribution at Different Percentiles Using 1960 Gender Wage Gaps

	Women						Men					
	Mean	P10	P25	P50	P75	P90	Mean	P10	P25	P50	P75	P90
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
A. 1959 to 1969												
Total change in wages	0.286	0.385	0.284	0.233	0.268	0.305	0.275	0.274	0.241	0.259	0.293	0.317
Due to												
Wage structure	0.252	0.339	0.253	0.204	0.238	0.268	0.258	0.275	0.240	0.246	0.259	0.282
Composition	0.033	0.047	0.033	0.031	0.027	0.043	0.016	-0.008	0.004	0.013	0.029	0.043
Wage structure												
Gender gap in the 1960 census	0.111	0.465	0.135	0.040	0.012	0.034	-0.009	0.037	0.000	-0.003	-0.027	-0.043
Race	0.003	0.018	0.006	0.001	0.000	0.001	0.004	0.015	0.007	0.001	0.000	-0.001
Age	-0.008	-0.027	-0.025	-0.013	0.001	0.019	0.018	0.002	0.017	0.018	0.031	0.038
Marital status	-0.007	-0.012	-0.009	-0.001	-0.008	-0.023	-0.010	-0.015	-0.016	0.009	0.007	-0.000
Education	0.026	0.018	0.038	0.006	0.011	0.012	0.022	0.037	0.005	0.030	0.022	0.004
Industry	-0.028	-0.057	-0.047	-0.046	-0.018	0.002	-0.074	-0.103	-0.104	-0.035	-0.042	-0.059
Occupation	-0.036	-0.123	0.025	0.065	-0.060	-0.059	-0.019	-0.013	0.020	-0.025	-0.039	-0.027
State	0.054	0.110	0.068	0.065	0.033	0.043	0.042	0.076	0.065	0.016	0.014	0.019
Constant	0.138	-0.052	0.061	0.086	0.267	0.239	0.284	0.239	0.246	0.236	0.295	0.351
Reweighting error	-0.001	0.001	0.000	-0.001	-0.001	-0.002	0.000	0.002	0.001	0.000	-0.000	-0.000
Composition												
Gender gap in the 1960 census	0.012	0.043	0.015	0.005	0.002	0.003	-0.001	0.000	-0.000	-0.000	-0.001	-0.001
Race	-0.001	-0.002	-0.001	-0.000	-0.000	-0.000	-0.003	-0.007	-0.003	-0.001	-0.001	-0.000
Age	-0.000	-0.001	-0.000	-0.001	-0.001	0.001	-0.002	-0.005	-0.003	-0.002	-0.002	0.001
Marital status	0.001	0.003	0.001	-0.001	-0.000	0.002	-0.002	-0.004	-0.002	-0.001	-0.001	-0.001
Education	0.016	0.027	0.016	0.015	0.013	0.017	0.026	0.031	0.026	0.018	0.025	0.030
Industry	-0.006	-0.012	-0.010	-0.009	-0.004	0.003	-0.012	-0.018	-0.015	-0.008	-0.008	-0.006
Occupation	0.015	-0.004	0.017	0.024	0.019	0.022	0.013	0.007	0.009	0.010	0.020	0.023
State	-0.004	-0.007	-0.004	-0.003	-0.002	-0.004	-0.005	-0.012	-0.007	-0.003	-0.002	-0.002
Specification error	0.000	-0.002	-0.002	-0.001	0.004	-0.004	0.000	0.006	-0.004	0.000	0.004	-0.007

Table is continued on the next page.

Table 6. Decomposing the Hourly Wage Distribution at Different Percentiles Using 1960 Gender Wage Gaps, Continued

	Women						Men					
	Mean	P10	P25	P50	P75	P90	Mean	P10	P25	P50	P75	P90
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
B. 1949 to 1959												
Total change	0.255	0.214	0.229	0.261	0.279	0.306	0.334	0.312	0.319	0.332	0.340	0.367
Due to												
Wage structure	0.241	0.204	0.220	0.241	0.265	0.287	0.291	0.270	0.291	0.299	0.307	0.296
Composition	0.014	-0.004	0.006	0.013	0.017	0.031	0.042	0.040	0.035	0.032	0.047	0.055
Wage structure												
Gender gap in the 1960 census	0.016	-0.028	0.022	0.007	0.019	0.017	0.013	0.015	-0.007	0.007	0.036	0.038
Race	-0.000	-0.002	0.003	0.004	0.002	0.001	0.002	0.009	0.004	0.002	0.001	0.002
Age	-0.077	-0.101	-0.079	-0.067	-0.050	-0.088	-0.030	-0.042	-0.028	0.000	-0.013	0.012
Marital status	-0.004	0.017	-0.007	-0.015	-0.015	0.010	0.016	0.009	0.014	-0.005	0.005	-0.016
Education	0.017	-0.000	0.006	0.029	0.016	0.039	0.030	0.019	0.037	0.015	0.026	-0.008
Industry	-0.006	-0.036	-0.045	0.016	0.019	-0.005	0.022	-0.035	0.029	0.004	0.033	0.011
Occupation	-0.057	-0.027	0.009	-0.106	-0.065	-0.129	-0.011	-0.002	-0.009	0.007	-0.034	0.031
State	0.016	-0.011	0.024	-0.022	0.008	0.061	-0.001	0.032	-0.005	0.013	-0.017	-0.015
Constant	0.337	0.391	0.287	0.395	0.331	0.381	0.250	0.264	0.257	0.256	0.270	0.240
Reweighting error	0.001	0.012	0.005	0.000	-0.003	-0.006	0.001	0.002	0.001	0.001	0.000	-0.001
Composition												
Gender gap in the 1960 census	0.004	0.013	0.005	0.001	0.001	0.001	0.000	-0.000	0.000	0.000	0.000	0.000
Race	-0.001	-0.002	-0.001	-0.000	-0.000	-0.000	-0.000	-0.001	-0.000	-0.000	-0.000	-0.000
Age	0.003	-0.001	-0.001	0.002	0.005	0.012	0.005	0.005	0.004	0.003	0.006	0.007
Marital status	0.005	0.007	0.003	0.002	0.003	0.006	0.005	0.010	0.005	0.003	0.003	0.002
Education	0.009	0.017	0.011	0.007	0.006	0.006	0.018	0.021	0.016	0.013	0.018	0.023
Industry	-0.005	-0.009	-0.010	-0.006	-0.003	-0.000	0.001	0.001	0.001	0.001	0.001	0.001
Occupation	0.002	-0.020	0.004	0.009	0.007	0.007	0.016	0.013	0.014	0.013	0.019	0.023
State	-0.003	-0.010	-0.005	-0.001	-0.001	-0.002	-0.003	-0.010	-0.004	-0.001	-0.000	-0.001
Specification error	-0.001	0.002	-0.002	0.007	-0.001	-0.006	0.001	0.000	-0.009	0.000	-0.014	0.016

Notes: Table reports decomposition of wages using the approach of Firpo, Fortin, and Lemieux (2018). The composition and wage structure effects in rows 2 and 3 come from reweighting the earlier period to look like the later period as in DiNardo, Fortin, and Lemieux (1996). Detailed composition effects equal the change in the indicated covariate from the earlier period to the earlier period reweighted to look like the later period, evaluated at the earlier period wage structure. Detailed wage structure effects equal the change in the indicated wage structure from the reweighted earlier period to the later period, evaluated at the later period value of the covariate. The specification error comes from using a linear function to approximate the recentered influence function, while the reweighting error comes from finite sample bias in the DiNardo et al. (1996) reweighting. The omitted group consists of 60-64 year-olds with 0-8 years of education, in the service industry, in a professional occupation, and in California.

proxied by the gender gap in the 1960 census—account for an increase of 46.5 log points at the 10th percentile of women's wages at its mean and 13.5 log points at the 25th percentile (columns 2-3), compared to 3.7 and 0.0 log points for men (columns 8-9). A key advantage of the decomposition is that it quantifies changes in the wage structure as well. Table 6A shows that changes in the wage structure worked to offset reductions in discrimination, especially at lower percentiles of the wage distribution. While separating the contribution of each industry, occupation, and state is not possible, Table 6 shows the magnitudes of these offsetting pre-trends were large, obscuring the effects of anti-discrimination legislation in the timeseries.[22]

A natural question is whether larger relative gains for women due to the wage structure preceded the enactment of the Equal Pay Act and Title VII. To test this, Table 6B reports an analogous decomposition for the 1949 to 1959 period. In contrast to the 1960s, men's wages grew more quickly at every point in the distribution relative to women's wages in the decade prior to the Equal Pay Act and Title VII. These changes in the wage structure drive the rising gender gaps in Figures 1 and 10 over the 1950s. Again, consistent with our research design capturing reductions in discrimination due to federal legislation in the 1960s, the 1960 gender gap in wages does not correspond to faster growth in women's wages in the 1950s. In sum, changes in sex discrimination—as proxied by the 1960 gender wage gap—explain very little of the differential composition or wage structure effects in the decade before federal legislation took effect but a large share of women's wage gains in the 1960s.

VI. How the Equal Pay Act and Title VII Affected the Gender Gap in Wages

More than 50 years later, very little quantitative work suggests the Equal Pay Act and Title VII reduced pervasive employment discrimination against women in the 1960s and early 1970s. Positive conclusions about the legislation tend to discuss Title VII's achievements after 1974, when the EEOC broadened its focus to include sex discrimination. Gunderson's (1989) *Journal of Economic Literature* review cautiously concluded that, "the evidence does not unambiguously indicate that the EEO[C]

---

[22] For details on the challenge of identifying detailed wage structure effects when there are categorical variables, see Section 3.2 of Fortin, Lemieux, and Firpo (2011).

initiatives of Title VII were a resounding success."[23] Other scholars note that segregating workers across occupations or establishments allowed compliance with the letter of the law, while maintaining discriminatory pay practices (Goldin 1990).

This paper provides new evidence that the Equal Pay Act and Title VII were more consequential than previously believed. Using two complementary research designs, we find that federal legislation prohibiting sex-based discrimination in employment led to large increases in women's wages, especially in jobs where the "equality of work" was more easily measured and the WHD focused its minimum wage compliance investigations. After the legislation took effect, women's wages grew by around 12 percent, with most of these effects benefitting women below median hourly pay. Consistent with firms having some monopsony power, the results show that upward wage pressure created by the Equal Pay Act and Title VII had little effect on women's short-term employment. In the longer-term, however, some evidence suggests that firms shifted their hiring away from women workers. Finally, we reconcile these findings with timeseries changes in the gender gap. Examining a broader set of workers and accounting for changes in the lower percentiles in the distribution, the timeseries exhibits similar changes in women's relative wages to those found in this analysis.

In conclusion, our findings claim an important role for the Equal Pay Act and Title VII in reducing labor-market discrimination against U.S. women in the 1960s, laying the foundation for the remarkable transformation in women's careers and roles that unfolded over the next sixty years.

VII. References

Fair Labor Standards Act of 1938. PL 75-718.

1966. Wirtz v. Basic Incorporated. U.S. District Court D. Nevada.

1976. General Electric Co. v. Gilbert. 426 US 125.

Almond, Douglas, Kenneth Y. Chay, and Michael Greenstone. 2003. "Civil Rights, the War on Poverty, and Black-White Convergence in Infant Mortality in the Rural South and Mississippi." *MIT Working Paper*.

Arellano, Manuel. 1987. "Computing Robust Standard Errors for Within-Groups Estimators." *Oxford Bulletin of Economics and Statistics* 49 (4):431-434.

Bailey, Martha J., John E. DiNardo, and Bryan A. Stuart. 2021. "The Economic Impact of a High National Minimum Wage: Evidence from the 1966 Fair Labor Standards Act." *Journal of Labor Economics* 39 (S2):S329-S367.

[23] See Gunderson (1989) for a detailed review of the large literature on policies targeting pay inequities, including a review of Equal Pay legislation in other countries.

Bailey, Martha J., and Nicolas J. Duquette. 2014. "How Johnson Fought the War on Poverty: The Economics and Politics of Funding at the Office of Economic Opportunity." *Journal of Economic History* 74 (2):351-388.

Bailey, Martha J., Thomas Helgerman, and Bryan Stuart. 2021. "Changes in the U.S. Gender Gap in Wages in the 1960s." *American Economic Review, Papers and Proceedings* 111.

Bertrand, Marianne, Esther Duflo, and Sendhil Mullainathan. 2004. "How Much Should We Trust Differences-in-Differences Estimates?" *Quarterly Journal of Economics* 119 (1):249-275.

Blau, Francine D. 1978. *Equal Pay in the Office*. Lexington, Massachusetts: Lexington Books.

Blau, Francine D., and Lawrence M. Kahn. 1997. "Swimming Upstream: Trends in the Gender Wage Differential in 1980s." *Journal of Labor Economics* 15 (1):1-42.

Blau, Francine D., and Lawrence M. Kahn. 2017. "The Gender Wage Gap: Extent, Trends, and Explanations." *Journal of Economic Literature* 55 (3):789-865.

Blau, Francine D., and Lawrence M. Kahn. 2006. "The U.S. Gender Pay Gap in the 1990s: Slowing Convergence." *Industrial and Labor Relations Review* 60 (1):45-66.

Cameron, A. Colin , Jonah B. Gelbach, and Douglas L. Miller. 2008. "Bootstrap-Based Improvements for Inference with Clustered Errors." *Review of Economics and Statistics* 90 (3):414-427.

Cameron, A. Colin, and Douglas L. Miller. 2015. "A Practitioner's Guide to Cluster-Robust Inference." *Journal of Human Resources* 50:317-372.

Cascio, Elizabeth, Nora Gordon, Ethan Lewis, and Sarah J. Reber. 2010. "Paying for Progress: Conditional Grants and the Desegregation of Southern Schools." *Quarterly Journal of Economics* 125 (1):445-482.

Chay, Kenneth Y. 1998. "The Impact of Federal Civil Rights Policy on Black Economic Progress: Evidence from the Equal Employment Opportunity Act of 1972." *Industrial and Labor Relations Review* 51 (4):608-632.

DeNavas-Walt, Carmen, and Bernadette D. Proctor. 2015. Income and Poverty in the United States: 2014. edited by U.S. Census Bureau. Washington, D.C.: Goverment Printing Office.

Derenoncourt, Ellora, and Claire Montialoux. 2021. "Minimum Wages and Racial Inequality." *Quarterly Journal of Economics* 107 (1):151-200.

DiNardo, John, Nicole M. Fortin, and Thomas Lemieux. 1996. "Labor Market Institutions and the Distribution of Wages, 1973-1992: A Semiparametric Approach." *Econometrica* 64 (5):1001-1044.

Donohue, John, and James Heckman. 1991. "Continuous versus Episodic Change: The Impact of Civil Rights Policy on the Economic Status of Blacks." *Journal of Economic Literature* 29 (4):1603-1643.

Eaton, William J. 1965. "Women Earning Equality." *The Washington Post*, June 17, E1.

Firpo, Sergio, Nicole M. Fortin, and Thomas Lemieux. 2009. "Unconditional Quantile Regressions." *Econometrica* 77 (3):953-73.

Firpo, Sergio P., Nicole M. Fortin, and Thomas Lemieux. 2018. "Decomposing Wage Distributions Using Recentered Influence Function Regressions." *Econometrics* 6 (2).

Fisher, Marguerite J. 1948. "Equal Pay for Equal Work Legislation." *Industrial and Labor Relations Review* 2 (1):50-7.

Flood, Sarah, Miriam King, Renae Rodgers, Steven Ruggles, and J. Robert Warren. 2020. Integrated Public Use Microdata Series, Current Population Survey: Version 7.0 [dataset]. edited by IPUMS. Minneapolis, MN.

Fortin, Nicole M., Thomas Lemieux, and Sergio Firpo. 2011. "Decomposition Methods in Economics." In *Handbook of Labor Economics*, edited by O. Ashenfelter and D. Card, 1-102.

Freyaldenhoven, Simon, Christian Hansen, and Jesse M. Shapiro. 2019. "Pre-event Trends in the Panel Event-Study Design." *American Economic Review* 109 (9):3307-38. doi: 10.1257/aer.20180609.

Fuchs, Victor. 1990. *Women's Quest for Economic Equality*. Cambridge, MA: Harvard University Press.

Goldin, Claudia. 1990. *Understanding the Gender Gap: An Economic History of American Women*. New York: Oxford University Press.

Goldin, Claudia. 2006a. "The Quiet Revolution That Transformed Women's Employment, Education, and Family." *American Economic Review* 96 (2):1-21.

Goldin, Claudia. 2006b. "The Rising (and then Declining) Significance of Gender." In *The Declining Significance of Gender?*, edited by Francine D. Blau, Mary C. Brinton and David B. Grusky. New York, NY: The Russell Sage Press.

Goldin, Claudia 1991. "Marriage Bars: Discrimination Against Married Women Workers from the 1920's to the 1950's." In *Favorites of Fortune: Technology, Growth, and Economic Development Since the Industrial Revolution*, edited by Henry Rosovsky, David Landes and Patrice Higgonet. Cambridge, MA: Harvard University Press.

Goodman-Bacon, Andrew J. 2018. "Public Insurance and Mortality: Evidence From Medicaid Implementation." *Journal of Political Economy* 126 (1):216-62.

Gruber, Jonathan. 1994. "The Incidence of Mandated Maternity Benefits." *American Economic Review* 84 (3):622-641.

Gunderson, Morley. 1989. "Male-Female Wage Differentials and Policy Responses." *Journal of Economic Literature* 27 (1):46-72.

Harrison, Cynthia. 1989. *On Account of Sex: The Politics of Women's Issues, 1945-1968*. Berkeley and Los Angeles: University of California Press.

Heckman, James J., and Brook S. Payner. 1989. "Determining the Impact of Federal Antidiscrimination Policy on the Economic Status of Blacks: A Study of South Carolina." *The American Economic Review* 79 (1):138-177.

Hole, Judith, and Ellen Levine. 1971. *Rebirth of Feminism*. New York: Quadrangle Books.

Hunt, Jennifer, and Caroline Moehling. 2021. "Do Female-Named Employment Agencies Expand Opportunity for Women?" *Working paper*.

Hyatt, James C. 1973. "Flexing a Muscle: Women, Government, Unions Increasingly Sue Under Equal-Pay Act." *The Wall Street Journal*, August 22.

LeGrande, Linda H. 1978. "Women in Labor Organizations: Their Ranks Are Increasing." *Monthly Labor Review* 101 (8):8-14.

Lemieux, Thomas. 2006. "Increasing Residual Wage Inequality: Composition Effects, Noisy Data, or Rising Demand for Skill." *American Economic Review* 96 (3):461-498.

Manning, Alan. 1996. "The Equal Pay Act as an Experiment to Test Theories of the Labour Market." *Economica* 63 (250):191-212. doi: 10.2307/2554759.

Manning, Alan. 2003. *Monopsony in Motion*. Princeton, NJ: Princeton University Press.

Marchingiglio, Riccardo, and Michael Poyker. 2021. "The Economics of Gender-Specific Minimum-Wage Legislation." *University of Nottingham Working Paper*.

Martin, Edward C. 1967. "Extent of Coverage Under FLSA as Amended in 1966." *Monthly Labor Review* 90 (4):21-24.

Mellor, Earl F. 1984. "Investigating the Differences in Weekly Earnings of Women and Men." *Monthly Labor Review* 107 (6):17-28.

Moran, Robert D. 1970. "Reducing Discrimination: Roe of the Equal Pay Act." *Monthly Labor Review* 93 (6):30-34.

Munts, Raymond, and David C. Rice. 1970. "Women Workers: Protection or Equality." *Industrial and Labor Relations Review* 24 (1):3-13.

Neumark, David, and Wendy Stock. 2006. "The Labor Market Effects of Race and Sex Discrimination Laws." *Economic inquiry*:385-419.

Pedriana, Nicholas, and Amanda Abraham. 2006. "Now You See Them, Now You Don't: The Legal Field and Newspaper Desegregation of Sex-Segregated Help Wanted Ads 1965-75." *Law and Social Inquiry* 31 (4):905-38.

Posner, Richard A. 1989. "An Economic Analysis of Sex Discrimination Laws." *University of Chicago Law Review* 56 (4):1311-1335.

Proctor, Bernadette D. , Jessica L. Semega, and Melissa A. Kollar. 2016. Income and Poverty in the United States: 2015. edited by U.S. Census Bureau. Washington, D.C.: Government Printing Office.

Rambachan, Ashesh; , and Jonathan Roth. 2020. "An Honest Approach to Parallel Trends." *Working Paper, http://jonathandroth.github.io/assets/files/HonestParallelTrends_Main.pdf*.

Ruggles, Steven, Sarah Flood, Ronald Goeken, Josiah Grover, Erin Meyer, Jose Pacas, and Matthew Sobek. 2020. IPUMS USA: Version 10.0 [dataset]. Minneapolis, MN: IPUMS.

Simchak, Morag MacLeod. 1971. "Equal Pay in the United States." *International Labor Review* 103:541-558.

Solon, Gary, Steven J. Haider, and Jeffrey M. Wooldridge. 2015. "What are We Weighting For?" *Journal of Human Resources* 50 (2):301-316.

Thomas, Gillian. 2016. *Because of Sex: One Law, Ten Cases, and Fifty Years that Changed American Women's Lives at Work*. New York: St. Martin's Press.

U. S. Bureau of Labor Statistics. 1963. Occupational Wage Survey. Washington, D.C.: U.S. Department of Labor, Bureau of Labor Statistics.

U.S. Census Bureau, Current Population Reports, P60-23. 1956. Income of Families and Persons in the United States: 1955. Washington, D.C.: Government Printing Office.

U.S. Census Bureau, Current Population Reports, P60-27. 1958a. Income of Families and Persons in the United States: 1956. Washington, D.C.: Government Printing Office.

U.S. Census Bureau, Current Population Reports, P60-30. 1958b. Income of Families and Persons in the United States: 1957. Washington, D.C.: Government Printing Office.

U.S. Census Bureau, Current Population Reports, P60-33. 1960. Income of Families and Persons in the United States:

1958. Washington, D.C.: Government Printing Office.
U.S. Census Bureau, Current Population Reports, P60-35. 1961. Income of Families and Persons in the United States: 1959. Washington, D.C.: Government Printing Office.
U.S. Census Bureau, Current Population Reports, P60-37. 1962. Income of Families and Persons in the United States: 1960. Washington, D.C.: Government Printing Office.
U.S. Congress, Senate Commitee on Labor and Public Welfare. Subcommittee on Labor. 1962. Hearing Before the Subcommitee on Labor of the Commitee on Labor and Public Welfare on S. 2494 and H.R. 11677 to Provide Equal Pay for Equal Work Regardless of Sex. Eighty-seventh Congress, second session, August 1, 1962. Washington, DC: Government Printing Office.
U.S. Congress, Senate Committee on Labor and Public Welfare. Subcommittee on Labor. 1963. Hearings Before the Subcommittee on Labor of the Committee on Labor and Public Welfare on S. 882 and S.910 to Amend the Equal Pay Act of 1963. Eighty-eighth Congress, first session, April 2,3, and 16, 1963. Washington, DC: Government Printing Office.
U.S. Department of Labor. 1965. An Evaluation of the Minimum Wage and Maximum Hours Standards of the Fair Labor Standards Act, January 1965. edited by Wage and Hour and Public Contracts Divisions. Washington: Government Publishing Office.
U.S. Department of Labor. 1966. Minimum Wage and Maximum Hours Standards under the Fair Labor Standards Act: An Evaluation and Appraisal. Washington, D.C.: Government Printing Office.
U.S. Department of Labor. 1969. United States Department of Labor Annual Report, 1968. Washington, D.C.: Government Printing Office.
U.S. Department of Labor, Bureau of Labor Statistics. 2015. Highlights of women's earnings in 2014.
U.S. Department of Labor, Bureau of Labor Statistics 2020. Labor Force Statistics from the Current Population Survey, 2016 Annual Averages, Household Data, Tables from Employment and Earnings, Table 37.
U.S. Equal Employment Opportunity Commission. 1967. First Annual Report. Washington, D.C.: Government Printing Office.
U.S. Equal Employment Opportunity Commission. 1968. Second Annual Report. Washington, D.C.: Government Printing Office.
U.S. Equal Employment Opportunity Commission. 1969. Third Annual Report. Washington, D.C.: Government Printing Office.
U.S. Equal Employment Opportunity Commission. 1970. Fourth Annual Report. Washington, D.C.: Government Printing Office.
U.S. Equal Employment Opportunity Commission. 1971. Fifth Annual Report. Washington, D.C.: Government Printing Office.
U.S. Equal Employment Opportunity Commission. 1972. Sixth Annual Report. Washington, D.C.: Government Printing Office.
U.S. Equal Employment Opportunity Commission. 1973. Seventh Annual Report. Washington, D.C.: Government Printing Office.
Washington Post, Times Herald. 1964. "Pay is Up: Will Jobs Go Down?", June 14, F14.