Gender Wage Gap:
Union Membership & It's Effect

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Abstract

Some differences in negotiating behaviour have been suggested as explanations for at least some of the continuously existing wage gap between men and women: women may face certain structural barriers or may negotiate less aggressively, which would bring about lower pay. Since unions bargain collectively for employees, they may assist in narrowing this gap by providing standardized wages which reduce reliance on individual negotiation. There is a correlation that can be seen which observed a reduction in wage gaps in unionized workplaces as opposed to non-union settings. However, one cannot know whether membership in unions has lessened the wage gap and establish a cause and effect relationship. Using panel data from the PSID, we follow individuals going from non-union to union status, observing their wages before and after unionization to try and pinpoint the effect of collective bargaining on earnings for women and men. Very early results show that the gap seems to narrow a bit, although this wouldn't rule out the effects of other structural factors causing wage discrepancies. In terms of policy, extending or broadening the union coverage may be one approach to deal with gender wage differences. This is because these efforts could be incorporated or complemented by, for instance, broader reforms, which are influenced by a much wider spectrum of factors contributing to the existence of the wage gap.

*This submission contains 5 pages of text, and 3 pages of Appendices, excluding references, cover page and table of contents.

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1 Introduction and Literature Review

The 21st century has seen an uproar of women empowerment efforts. A number of these social efforts have identified and fought for women's rights in the workplace and their compensation for the same. The gender wage gap is one such phenomena that has risen in importance and is often discussed. As something that is multifaceted and is caused by a culmination of multiple factors, it is extremely difficult to pinpoint one such factor and establish a cause and effect relationship. One such factor is the belief that women negotiate less than men.

Women are more likely to avoid salary negotiations or accept reduced initial offers, with long-term harmful effects on their life-term earnings (Babcock and Laschever, 2003; Leibbrandt and List, 2015) One of the most common solutions to this problem is asking for the assistance of labour unions. Unions are well known for negotiating on behalf of workers to receive fair wages. In this overall discussion, labor unions are a structural intervention that lowers the dependence on single bargaining by collectively establishing pay scales. Unionization is identified by numerous studies as a force compressing wage distributions to the advantage of lower-paid workers, for instance, women (Western and Rosenfeld, 2011). Nevertheless, the degree of this advantage is occupation- and industry-specific. Other writers observe that union wage premiums are higher in male-dominated jobs, thus making it even harder to determine if women benefit sufficiently to bridge the gap (Reed, 2020). Others contend that more important than overall union coverage is women's levels of union membership and the particular contracts negotiated (Blau and Kahn, 2017). Despite these disagreements, there are no causal tests connecting union coverage changes and the earnings outcomes for men and women. Cross-section comparisons have a tendency of finding covered women to have wages closer to the wages of men compared to their uncovered counterparts, indicating a positive relationship between a union status and a smaller pay gap (Card, 2001). However, selection bias—women becoming or being able to become union members may vary on unmeasured aspects—disables causal interpretations. Also, there is occupational segregation within unions that restrict women's work to lower-paid work relative to men's union work (Milkman and Appelbaum, 2013). We examine the contribution of union membership to the gender wage gap based on the following hypotheses:

1. ***Hypothesis:*** Women's wages rise more than men's wages upon joining a union, hence narrowing the wage gap. This would imply that collective bargaining effectively makes up for bargaining disadvantages that women are frequently subject to.
2. ***Null Hypothesis***: When women's wage gains from union membership are limited or not greater than men's, it implies other structural forces still predominate, preventing unions from fully offsetting gender pay inequalities

2 Data and Empirical Methods

2.1 Data

For this study, we are solely relying on the Panel Study of Income Dynamics (PSID) because it tracks individuals over time. Since the PSID studies the same individuals before and after they enter unions, it is very suitable for a DiD framework in the study of inference that estimates cause and effect relationships rather than mere correlations (unlike any cross-sectional datasets such as Current Population Surveys (CPS) that only capture some different individuals at different times).

2.2 Difference-In-Differences Analysis

We will estimate the causal effect of entering a union on wage using a Difference-in-Differences (DiD) design, assessing whether this effect differs by gender. DiD is a suitable approach for our study because:

- It effectively sorts through changes in union status over time within individuals. Hence, bias due to unobserved, time-invariant personal characteristics (for instance, ability, motivation) is reduced.
- It makes a "treat" vs. "control" comparison based on actual transitions and not just differences across cross sections.

Specifically, we define the wage change $\Delta wage_{it} = wage_{i,t} - wage_{i,t-1}$ for each individual i across consecutive waves t−1 and t. We then estimate:

$$\Delta wage_{it} = \beta_0 + \beta_1(treated_{it}) + \beta_2(female_i) + \beta_3(treated_{it} \times female_i) + X'_{it}\gamma + \varepsilon_{it},$$

where:

- $treated_{it}$ is 1 if the individual moves from non-union in wave t−1 to union in wave t, and 0 if they remain non-union.
- f$female_i$ is 1 if the individual is female, 0 if male.
- X_{it}includes demographic and regional controls (e.g., age, schooling, region).
- ε_{it} is an error term capturing unobserved factors affecting wage changes.

Interpretation of Variables

- β_1 measures the average wage change for men who enter a union job, relative to men who remain non-union.
- β_3 indicates how much more (or less) women gain from union entry compared to men. A positive and significant β_3 implies that union entry yields a larger wage boost for women.

2.3 Mitigating Errors and Potential Flaws

- Controlling for Observed Differences: Including demographic variables such as age, schooling, and region allows us to control for systematic factors that might influence wage growth and unionization.
- Consecutive-Wave Focus: By looking at consecutive waves, we reduce recall errors and specify wage changes for a shorter, more accurate interval.
- Additional Limitations:
    - Time-Varying Confounders: If time-varying factors not captured by the design (such as sudden shifts in local labor demand) affect both joining the union and wage growth, our estimates may still be biased.
    - Selective Transitions: Those who opt to unionize may differ from non-union members in ways not fully captured by our demographic controls.
    - External Validity: since our results refer to PSID participants, they may not be applied to all labor markets.

Despite this, the DiD framework remains a reliable observational tool, leveraging within-person changes as well as the natural comparison group, namely non-union "stayers," to provide a picture of how entry into the union affects wages for men compared to women. .

3 Discussion of Results

3.1 Panel Regression Results

Our findings (Appendix C) reveal three key takeaways:

1. Unionization leads to higher wages, but the effect is significantly larger for women.
    - Men who transitioned into union jobs saw an average wage increase of $1.44 compared to their non-union counterparts.
    - Women who transitioned into union jobs saw a $4.80 increase—more than three times the male gain.
    - This suggests that unions help narrow gender pay disparities, as women experience a larger wage boost upon joining.
2. Non-union women actually experience a slight wage decline.
    - Women in the control group (those who stayed non-union) had a slight negative wage trend (-$0.47 on average), whereas non-union men saw minimal wage growth ($0.26).
    - This indicates that women who remain non-union may face more downward wage pressures, further emphasizing the protective role of unions.
3. Statistical significance confirms gendered union effects.
    - The DiD regression confirms a statistically significant interaction effect ($p < 0.01$), meaning that the wage benefit of unionization is significantly larger for women than for men.
    - The coefficient for female-treated workers ($3.36) suggests that the union wage effect for women is not only positive but also substantially stronger than for men.

These findings, supported by the Bar Chart (Appendix A) and Trend Analysis (Appendix B), provide clear evidence that unionization disproportionately benefits women in terms of wage growth.

3.2 Policy Implications

The difference-in-differences results show significant wage gains for women upon joining unions compared to their male counterparts and underscore the importance of creating collective bargaining structures that can narrow the gender wage gap. Unions that can be optimized with reduced bargaining disparity might ensure a more consistent and reasonable wage jump for women across industries and occupations. This is in line with earlier research indicating that uniform wage schedules tend to work in favor of those most disadvantaged in individual negotiations (Babcock and Laschever, 2003).

Given this evidence, policy assumes that an increase in unionization among sectors with a high share of women typically would do less to mitigate the existing wage differentials. And while we caution against generalized claims from these results, they do show how unions can intervene as a mediating institution that may improve women's ability to negotiate. If a workplace were to promote the formation of unions or create pay systems together that are transparent to all employees, the 'union effect' on women's wages expectedly would be more pronounced, thus reducing the gender gap.

One organizational conclusion would be to allow union growth in fields traditionally employing more women, such as healthcare and education. That way, collective bargaining does not act exclusively in favor of industries that are mostly male. In this manner, employers confronting public criticism due to large discrepancies between the wage rates would be warranted in adopting union-based or union-influenced pay-setting mechanisms by which wages earned by women would more closely follow those earned by men. This would limit the effect of individual negotiation on final pay outcomes, hence curtailing any persistent gender differentials.

Our study adds that pro-union outreach tailored to women may benefit their wage moves later compared to men given the relatively bigger boost to wages upon joining unions. This indicates the significance of outreach and recruitment by existing unions, especially in lower-paying service occupations, which have higher concentrations of women. Empowering unions to provide leadership and negotiation training might also help women retain the wage increases over the longer run.

In some workplaces, one reason for the persistence of such a gap might be that female workers either do not have access to union jobs or experience systemic barriers to participating in them. This situation is analogous in some respects to resource constraints-analogous to personal protective equipment-PPE-in the context of the hospital, which limits the effectiveness of otherwise good interventions. Here, the insufficient union representation or legal barriers to collective bargaining are functioning as "resource constraints" stopping full realization of potential wage gains for women. Thus, there is the necessity for reducing the legal barriers to unionization and to allow all relevant workers, especially women, to gain maximum benefit.

Finally, an even distribution of all unions across male-dominated and female-dominated occupations could preclude women from holding positions in unions that would eventually land them in relatively lower-paying jobs. If the analogy in the provision of hospital PPP in healthcare was about sharing PPE and caseloads, a parallel in the labor market could be about sharing or mirroring best practices from union-heavy high-wage industries with female-friendly occupations. Contractual language, wage structures, or discrimination clauses might be mirrored so that women in other sectors will gain equivalent wage benefits.

4 Conclusion

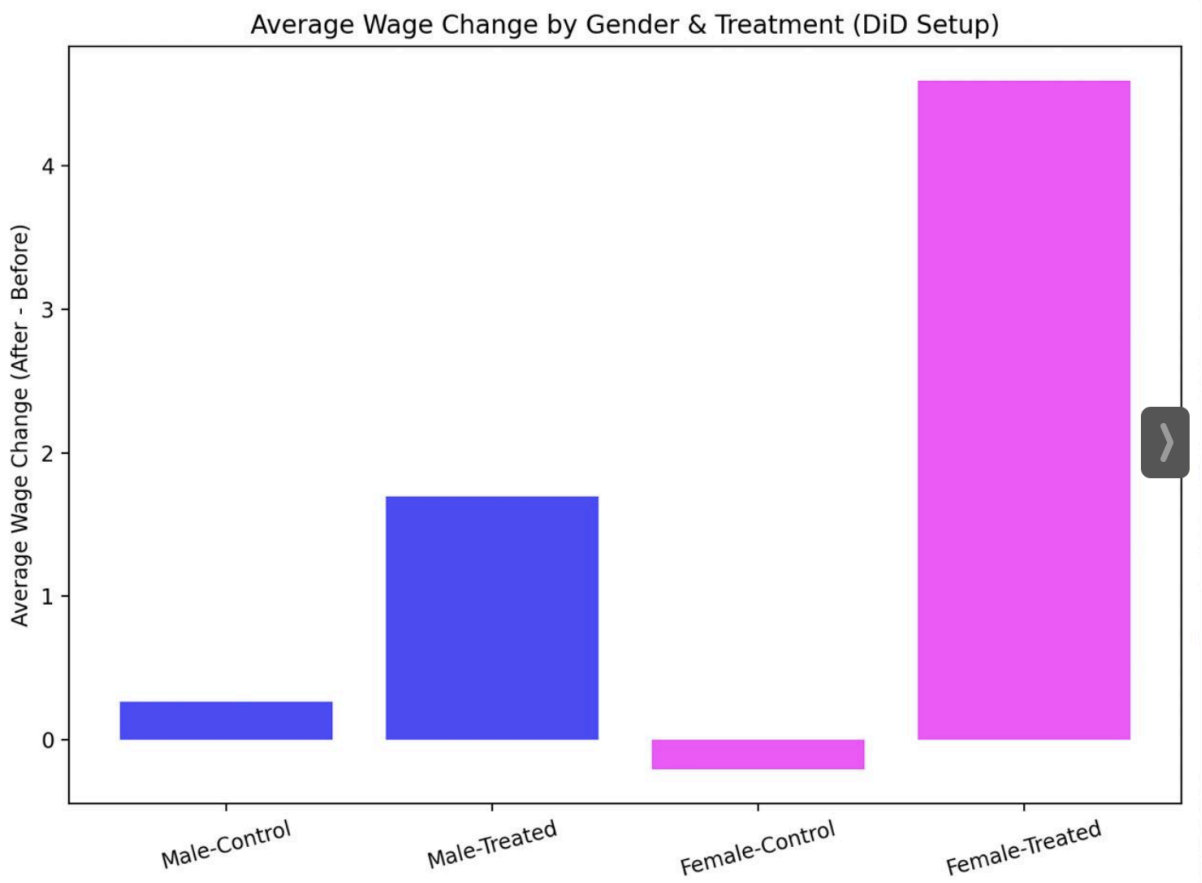
In evaluating the existing literature, we intend to make a reasonable contribution by providing quantitative estimates of whether union membership has decreased the gender wage gap through the analysis of panel data from the PSID. The Difference-in-Differences framework offers causal perspectives into how wages evolve before and after individuals join a union, giving a more stringent test of the relationship between collective bargaining and gender disparities in pay. Our results show that, while both men and women benefit from union membership in terms of wage increases, the gains are much greater for women. This suggests that unions could assist in redressing historically disadvantaged negotiating positions for female workers. There are important policies to be considered: increasing union representation in sectors where women dominate and incorporating provisions in collective agreements targeting the gender wage gap.

That said, a few limitations have to be kept in mind. Although our estimation model accounts for time-invariant individual characteristics, the parallel trends assumption becomes critical; should men and women's wages differ in their evolution without unionization, our estimates may tend to overestimate or underestimate the true impact. Verification of the no-anticipation assumption is difficult as individuals might modify their employment behavior in ways that predate even formal entry into unionism in ways that would bias our results. For this reason, that would be an avenue for future exploration- things like legislative shifts or employer-level shocks to unionization would allow for stronger identification of causal effects.

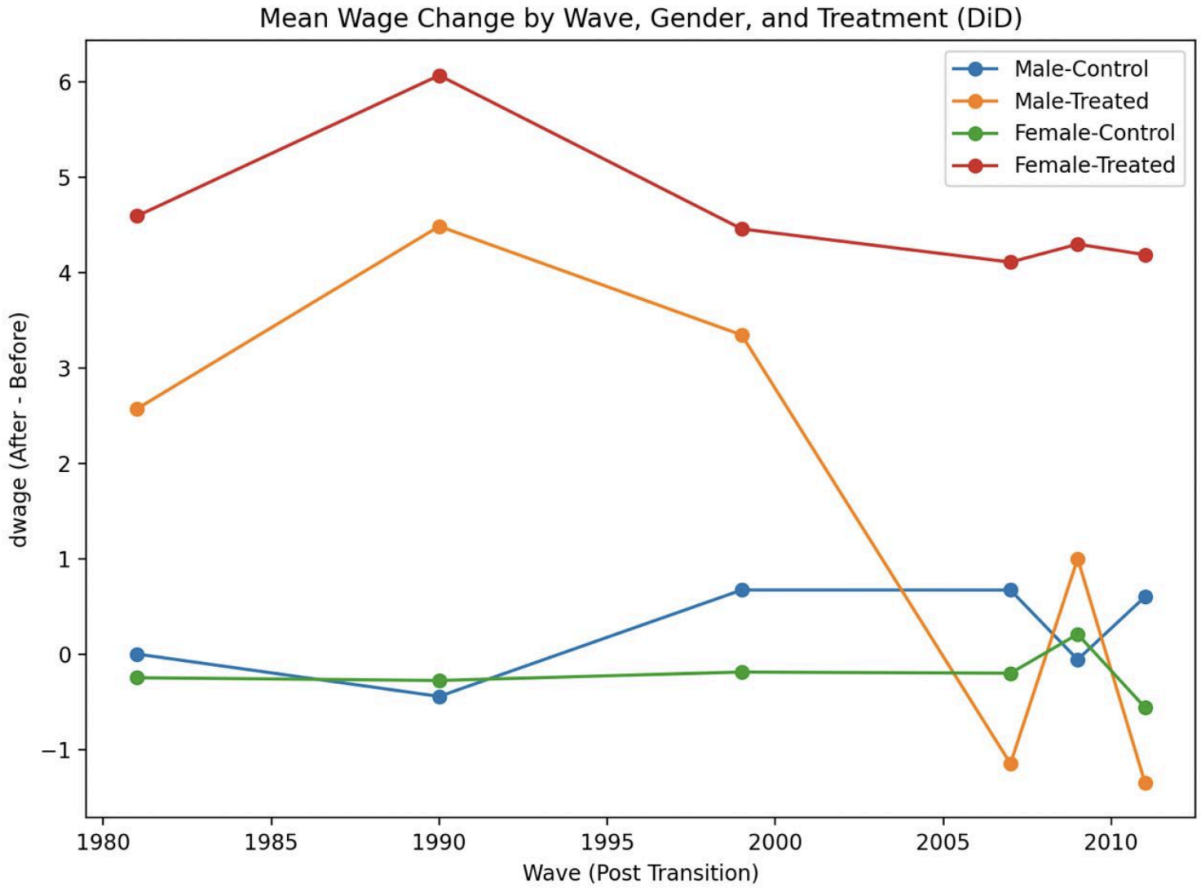
Another key assumption in our framework is the Stable Unit Treatment Value Assumption (SUTVA)—that one individual's union membership does not directly affect another's wages. In reality, if union membership affects wider norms within workplaces (e.g. spillover effects on non-unionized workers), this assumption may not hold completely. Future research could investigate the breadth of union wage effects beyond the formally unionized worker. Also, differential attrition may be a concern as if some individuals exit the labor market or leave the PSID sample in anticipation of union membership, it could bias our estimates.

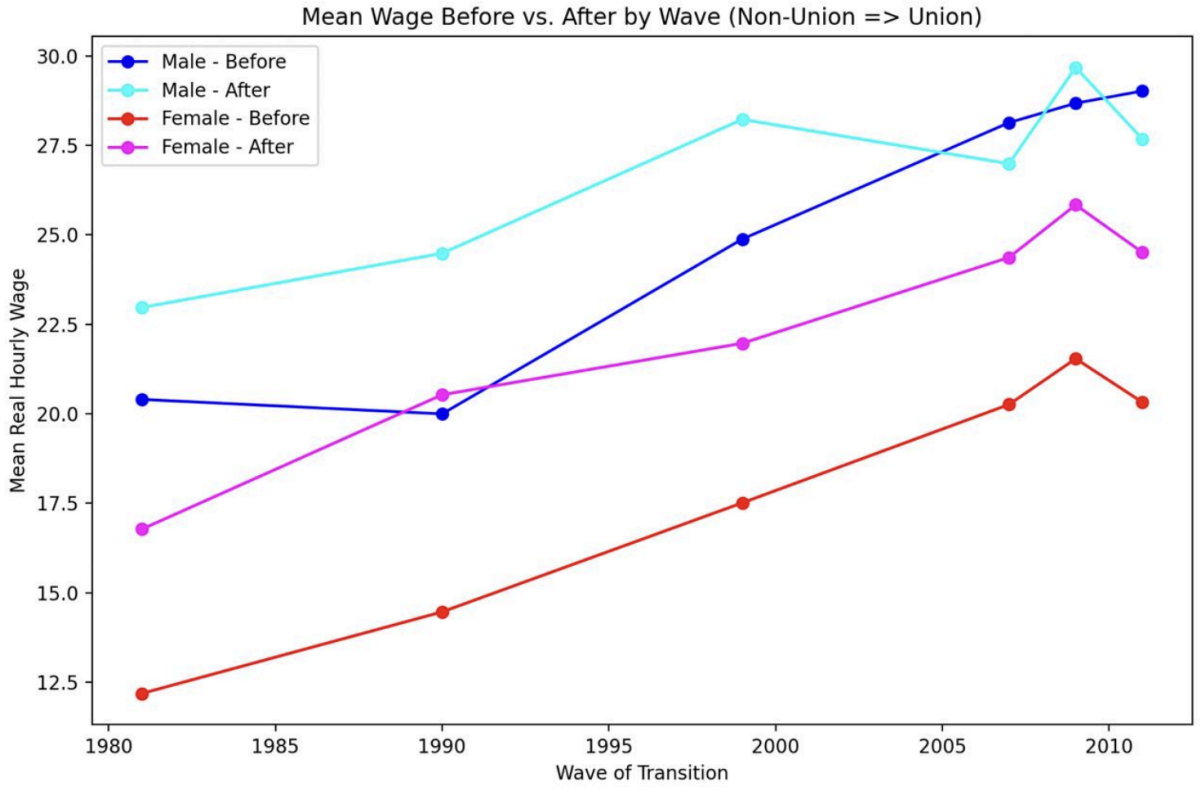
5 Appendices

Appendix A:



Appendix B:


Mean Wage Change by Wave, Gender, and Treatment (DiD)
Male-Control
Male-Treated
Female-Control
Female-Treated
dwage (After - Before)
Wave (Post Transition)


Mean Wage Before vs. After by Wave (Non-Union => Union)
Male - Before
Male - After
Female - Before
Female - After
Mean Real Hourly Wage
Wave of Transition

Appendix C:

VARIABLES	Wage Change	Std. Error
Treated (Union Transition)	1.435**	(0.627)
Female	-0.467	(0.399)
Treated × Female	3.362***	(0.906)
Observations	26,649	
R-squared	0.002	

Table 1: Difference-in-Differences (DiD) Regression Results

5 References

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