What Do Unions Do to Wage Inequality: The Roles of Gender, Skill and Public Sector Employment

Morley Gunderson Lecture
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Relationship between unions and wage inequality continues to attract research and policy interest

Ongoing struggle to understand the relative importance of market-based and institutional forces in explaining the rise in income inequality

Central issue: can trends in inequality be rationalized by technological change and globalization, or do labour market institutions play an independent role?

Numerous studies have concluded that the decline in unions *within* specific countries has contributed to growing inequality

Differences in the extent of unionization contribute to cross-country differences in the *level* of wage inequality

Differences in de-unionization account for some of cross-country differences in the *growth* of inequality

This evidence has led some pundits to argue that labour law reforms should be part of any policy response to rising inequality and secular declines in labour's share of national income.

Talk examines the changing nature of the relationship between unionization and wage inequality in Canada and the United States over the past four to five decades.

Key motivation: profound changes in the composition of the unionized workforce during this period.

Historically, union jobs largely held by unskilled and semi-skilled men in the private sector

However, with private sector unionization falling and rising union influence in the public sector, union coverage rates are now **5 times higher** in the public sector than the private sector in both Canada and U.S.

Though the public sector contains only 15-20% of all jobs in the two economies, half of unionized workers in both countries are in the public sector

These sectoral changes are accompanied by a remarkable rise in the share of women in the unionized workforce.

Currently, 47% percent of all unionized employees in the US, and 53% of those in Canada, are women.

A typical union worker today is more likely to be a female teacher or nurse with a university degree than a male factory worker with only a high school education.

Key lesson of earlier research: important to account for skill heterogeneity in union effects

Effect of unions on wage inequality depends on:
- Which skill groups are most likely to be represented by unions
- The extent to which unions raise wages for more versus less highly paid groups

Estimates of union impacts on inequality are typically lower when skill heterogeneity is taken into account

Early studies of unions and inequality focused on male workers; more recent studies examine men and women and reveal striking gender differences.

Consistent finding in Canada, U.S. and UK: unions reduce wage inequality among men but not among women

Analysis allows for heterogeneity by skill and gender, but also for differences across the public and private sectors

Explore extent to which differences in union impacts between men and women are due to public-private differences in the coverage patterns and wage effects, rather than to a gender-specific effect.

Focus on the U.S. and Canada for several reasons. The two countries share a common legal framework that results in a sharp distinction between union and non-union workplaces.

In contrast, in Australia and European countries collective agreements are often extended to all workers in a sector, creating large gaps between collective bargaining coverage and union membership and a fuzzy boundary between union and non-union sectors.

Also, in both Canada and the U.S. the non-union sector is large, yielding a good approximation to the wage structure that would prevail in the absence of unions.

Canada and the U.S. provide contrasting experiences that are relevant. Inequality is lower in Canada than the U.S. and rose more slowly.

Unionization followed similar trends in the immediate post-war period, and rates were equal in the early 1960s. Since then, however, unionization has diverged – now 30% in Canada but only 12% in the U.S.

These differences in the timing of union growth and decline and in levels and movements in wage inequality provide an opportunity to further assess the contribution of institutional change to trends in income inequality.

Additional objective: to provide estimates of the impact unions exert on the current wage structure.

Labour law reform – if ever enacted -- would likely influence union coverage at the margin, so estimates of the consequences should reflect the dramatic changes that have taken place in the unionized work force.

Outline of Talk

1. Introduction and motivation

2. Brief summary of previous literature

3. Estimating the effects of unions on wage inequality

4. Data sources

5. Patterns of union coverage

6. Unions and the wage structure

7. Unions and wage inequality

8. Conclusions

Unions and Wage Inequality: Brief Summary of Previous Literature

Evidence points to four main conclusions:

1. Unions tend to reduce wage dispersion for male workers. As a result, declining unionization has contributed to rising wage inequality among men since the 1970s or early 1980s.

2. Unions have little impact -- or even a small disequalizing effect -- on female wage inequality. An unresolved puzzle is whether this is a pure gender effect or due to other factors such as differences between male-dominated and female-dominated types of employment.

3. There is some evidence of non-random selection into union and nonunion jobs. Existing evidence suggests that this selectivity leads to a relatively small over-estimate of the equalizing effect of unions on male workers.

4. Relatively little is known about the impacts of unions on the wage structure in the public sector, and how this differs from the private sector.

Estimating the Effects of Unions on Wage Inequality

A natural measure of the effect of unions on wage inequality is the difference between the observed variance of wages and the variance that would prevail if everyone were paid his or her nonunion potential wage.

We observe the variance of wages in the economy but not the variance of wages that would prevail in the absence of a union sector.

Details on how we estimate the variance of potential nonunion wages in paper.

Data Sources

Study uses the U.S. Current Population Survey (CPS) and the Canadian Labour Force Survey (LFS) together with supplements to these surveys

The CPS has been collecting data on wages and union status annually since 1973. We use CPS data for the years 1973/74, 1984, 1993 and 2015.

The Canadian LFS added questions on wages and union status in 1997. Prior to that time we use supplements to the regular LFS that included questions that provide this information for 1984 and 1991/95.

To allow for heterogeneity by skill we divide workers in each sample into skill groups based on age and educational attainment.

The number of skill groups used differs by country, depending on data availability

In the Canadian data, consistent information is provided on 5 age categories and 5 education categories. Thus we use 25 skill groups for Canada.

In the U.S. samples, we are able to use a much larger number of skill categories because of the larger sample sizes and detailed age and education information

Patterns of Union Coverage

Our empirical framework suggests that the effect of unions on wage inequality depends in part on how union coverage varies by skill level.

Table 1 shows average coverage rates over time by country, gender and sector

Figures 1 and 2 show the unionization rates of men and women in the private and public sectors in the U.S. and Canada, by the level of real hourly wages.

Graphs are constructed by calculating union coverage rates for workers in narrow wage bins, and smoothing across bins.

Average Union Coverage Rates: US and Canada

U.S.	1970s	1980s	2015
Total workforce:			
Males	.31	.24	.13
Females	.14	.14	.13
Private sector:			
Males	.31	.21	.09
Female	.13	.09	.06
Public sector:			
Males	.29	.40	.43
Females	.18	.33	.41

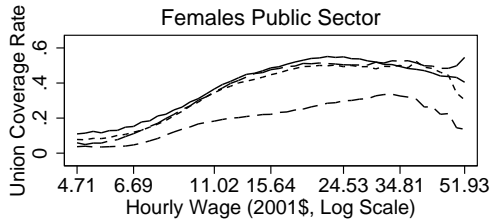| Canada	1980s	2015
Total workforce:		
Males	.47	.29
Females	.37	.32
Private sector:		
Males	.37	.20
Female	.25	.13
Public sector:		
Males	.81	.75
Females	.78	.77

Figure 1: Union Coverage by Wage Level, USA
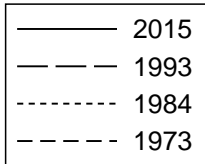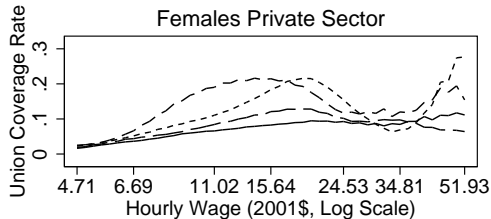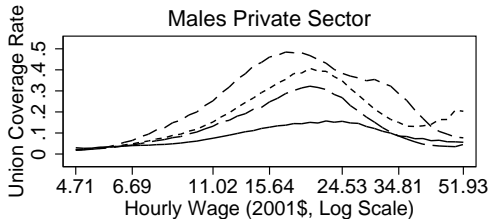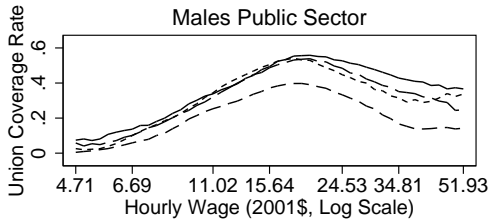
Figure 2: Union Coverage by Wage Level, Canada
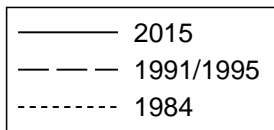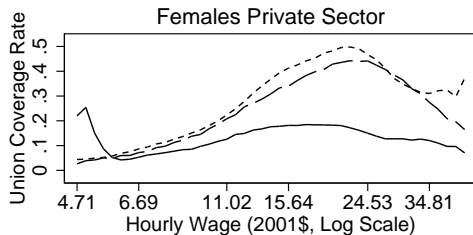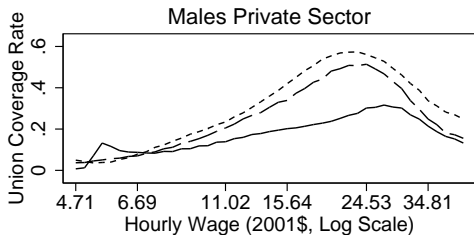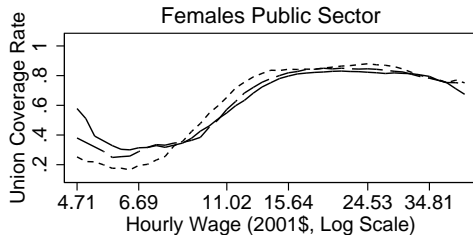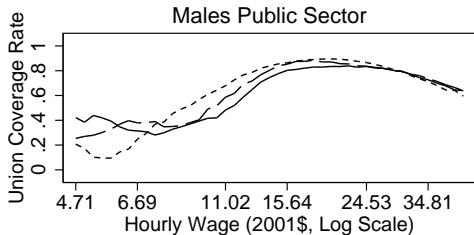
Noteworthy features of union coverage

1. *Gradual disappearance over time of the "hump- shaped" distribution of union coverage among private sector employees in both countries*

In the past, unionization rates of men in the private sector were low at the bottom and top of the wage distribution and peaked near the middle or upper middle.

By 2015 this hump-shaped pattern had largely disappeared in the U.S. and substantially disappeared in Canada.

A similar, but less dramatic, change has also occurred among private sector women.

2. *Shape of distribution has changed much less in the public sector*.

Unionization rates of public sector women in Canada are low at the bottom of the wage distribution, rise to a peak around the middle, and remain about the same for highly paid workers as in the middle.

The U.S. pattern is similar, although there is a small decline in coverage at the very top among public sector women.

Among public sector men there is a slight hump-shape to the coverage distribution, but decline in unionization at higher wages is modest in both countries and has become less pronounced over time in the U.S.

3. *Rapid decline over time in unionization of private sector employees in both countries.*

Declines largest in the middle of the wage distribution for both men and women, resulting in a more uniform distribution of union coverage by skill.

Noteworthy decreases in coverage among private sector women at the very top of the distribution in both countries.

4. *Most striking feature: different trends in the public and private sectors.*

In U.S. dramatic decline in private sector unionization contrasts with increased coverage in the public sector.

In Canada public sector unionization has been very stable over time in the upper half of the male and female distributions.

In the lower half, decreases in coverage just below the peak have been offset by increases at the very bottom.

Unions and the Structure of Wages

Two dimensions:

Differences in average wages between union and non-union workers, controlling for gender, skill and sector of employment – referred to as "union-nonunion wage gaps"

Impact of unions on wage compression within narrowly defined skill groups, controlling for gender and sector of employment

Average Union – Nonunion Wage Gaps (Regression adjusted)

U.S.	1970s	1980s	2015
Total workforce:			
Males	.20	.23	.15
Females	.23	.22	.09
Private sector:			
Males	.23	.28	.20
Female	.23	.28	.12
Public sector:			
Males	.10	.11	.13
Females	.18	.14	.11

Canada	1980s	2015
Total workforce:		
Males	.24	.16
Females	.31	.23
Private sector:		
Males	.26	.13
Female	.27	.06
Public sector:		
Males	.06	.02
Females	.21	.10

Combination of declining unionization and a fall in adjusted wage gaps implies that the overall average impact of unions on wages – $E[U(c)D_W(c)]$ – has declined dramatically in both countries.

Impact on male wages in the U.S.:

Fell from 6.3 percentage points in 1970s to 2.0 percentage points in 2015.

Impact on female wages in the U.S.:

Overall impact went from 3.2 to 1.1 percentage points.

Canadian union impacts are much larger due to greater union coverage and adjusted wage gaps that are generally larger than in U.S.

Men: union impact fell from 11.1 percentage points to 4.5

Women: 13.1 percentage points to 7.8.

Effects of Unions on Wage Inequality

Estimates of the impacts of unionization on wage inequality show:

*variance of log wages for all workers

*difference between the overall variance and the counterfactual variance of potential nonunion wages

Estimated effect of unions on wage inequality is the difference between overall variance and the counterfactual variance

Union impacts on wage inequality: U.S.

	1970s	1980s	2015
Total workforce, males:			
Actual variance	.258	.289	.402
Total union effect	-.026	-.017	-.016
Total workforce, females:			
Actual variance	.195	.223	.349
Total union effect	.000	.001	-.012
Private sector, males:			
Actual variance	.260	.295	.411
Total union effect	-.023	-.009	-.007
Private sector, females:			
Actual variance	.173	.218	.352
Total union effect	-.001	.005	-.002
Public sector, males:			
Actual variance	.223	.229	.296
Total union effect	-.027	-.041	-.048
Public sector, females:			
Actual variance	.204	.200	.289
Total union effect	.002	-.009	-.031

Union impacts on wage inequality: Canada

	1980s	2015
Total workforce, males:		
Actual variance	.231	.222
Total union effect	-.037	-.008
Total workforce, females:		
Actual variance	.218	.214
Total union effect	.009	.006
Private sector, males:		
Actual variance	.234	.216
Total union effect	-.022	-.005
Private sector, females:		
Actual variance	.198	.183
Total union effect	.008	-.004
Public sector, males:		
Actual variance	.150	.171
Total union effect	-.114	-.081
Public sector, females:		
Actual variance	.150	.151
Total union effect	-.104	-.067

Unions and the Wage Structure

Effect of unions on wage inequality depends in part on how the union – nonunion wage differential varies across the skill distribution.

Figures 3a to 3c illustrate the evolution of this dimension of the union and nonunion wage structures for Canada from 1984 to 2015.

These figures plot mean union wages in a given age – education cell by the mean nonunion wage for the same skill group.

If union and nonunion workers in the same skill group have the same average wage the points will lie on the 45-degree line (solid line).

However, if the average union wage exceeds its nonunion counterpart, the points will lie above the 45-degree line.

Furthermore, if unions raise the wages of low skilled workers relatively more than those of the high skilled, the points will be further above the 45-degree line at the low end of the wage distribution than at the upper end.

This tendency of unions to compress the wage distribution is evident in Figure 3a for male and female workers in the public sector and for men in the private sector.

Among private sector men, compression of the union wage structure is strongest in 1984, lessens over time as union coverage among this group declines, and is minimal by 2015.

Among private sector females, there is very little compression by skill level of the union wage structure over the sample period: gap is relatively constant across skill distribution.

Primary change has been a decline in the union – nonunion wage gap. By 2015 the gap between union and nonunion women in the private sector is very small.

The story is very different in the public sector where there is substantial wage compression in all periods for both men and women.

Figure 3a: Union and Nonunion Wage Structures, Canada 1984
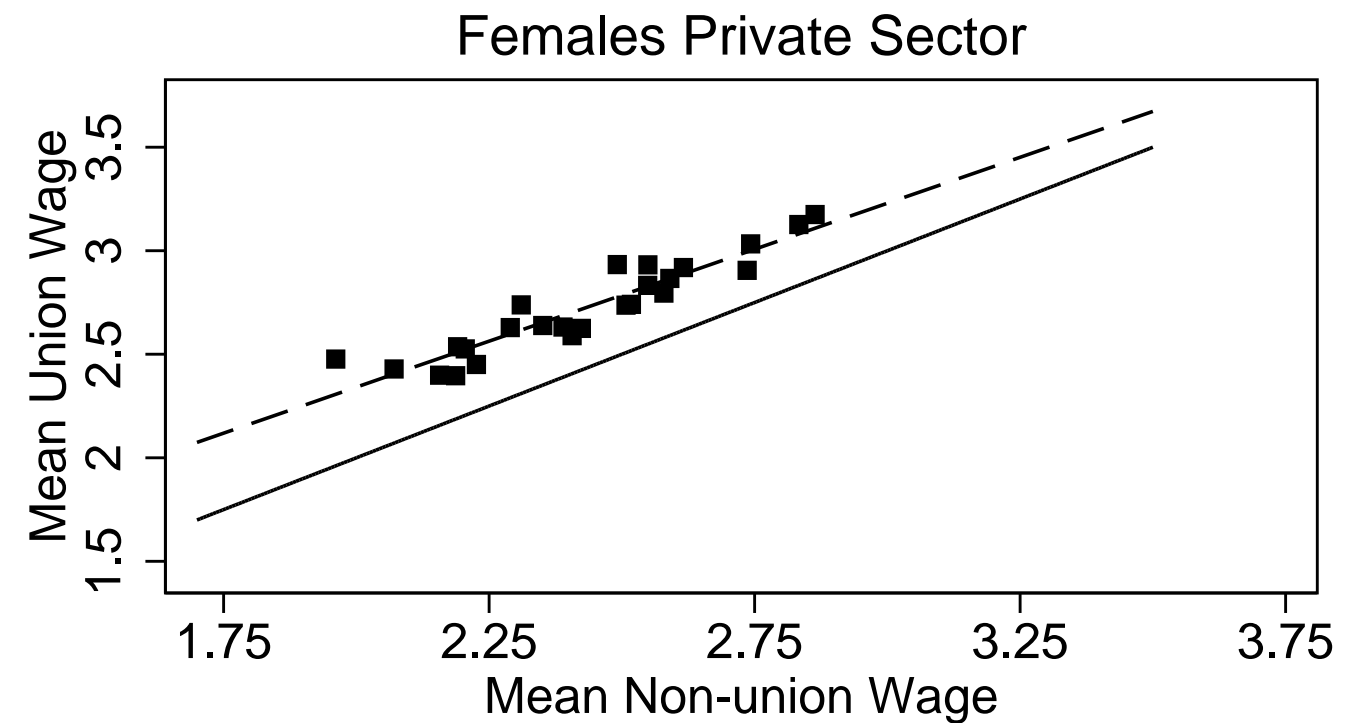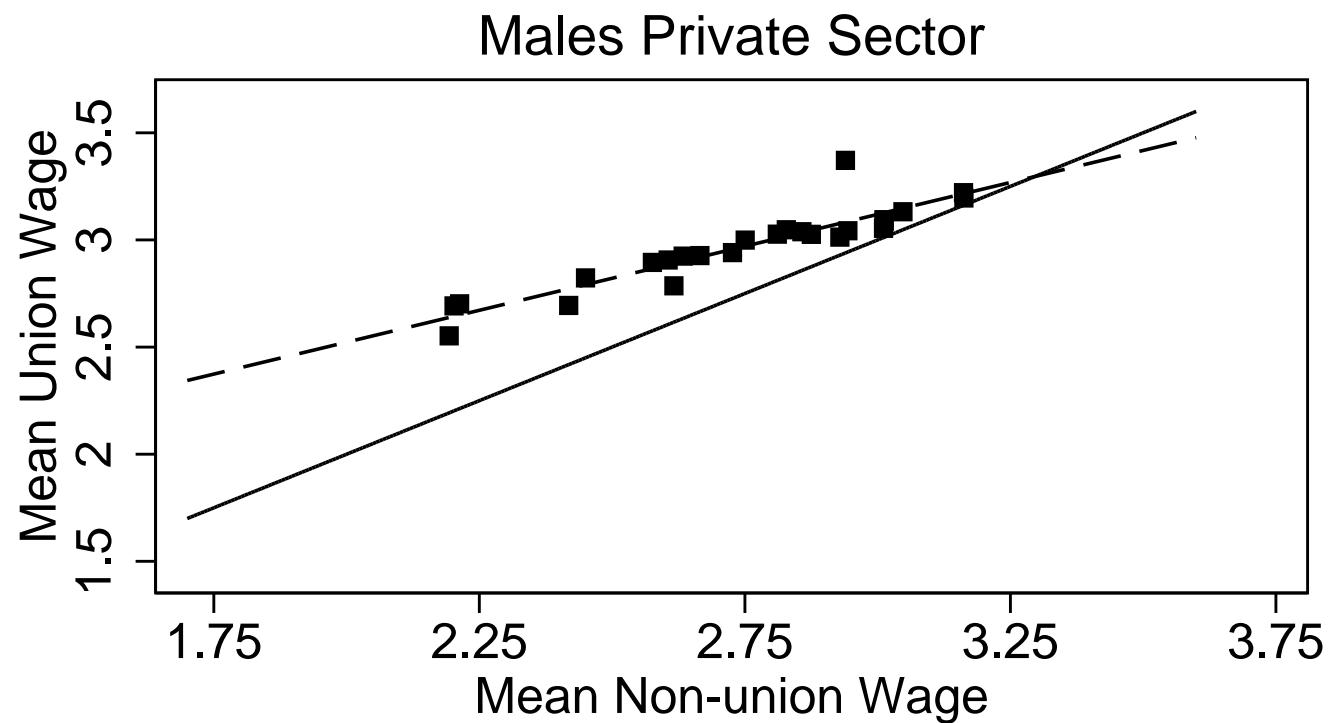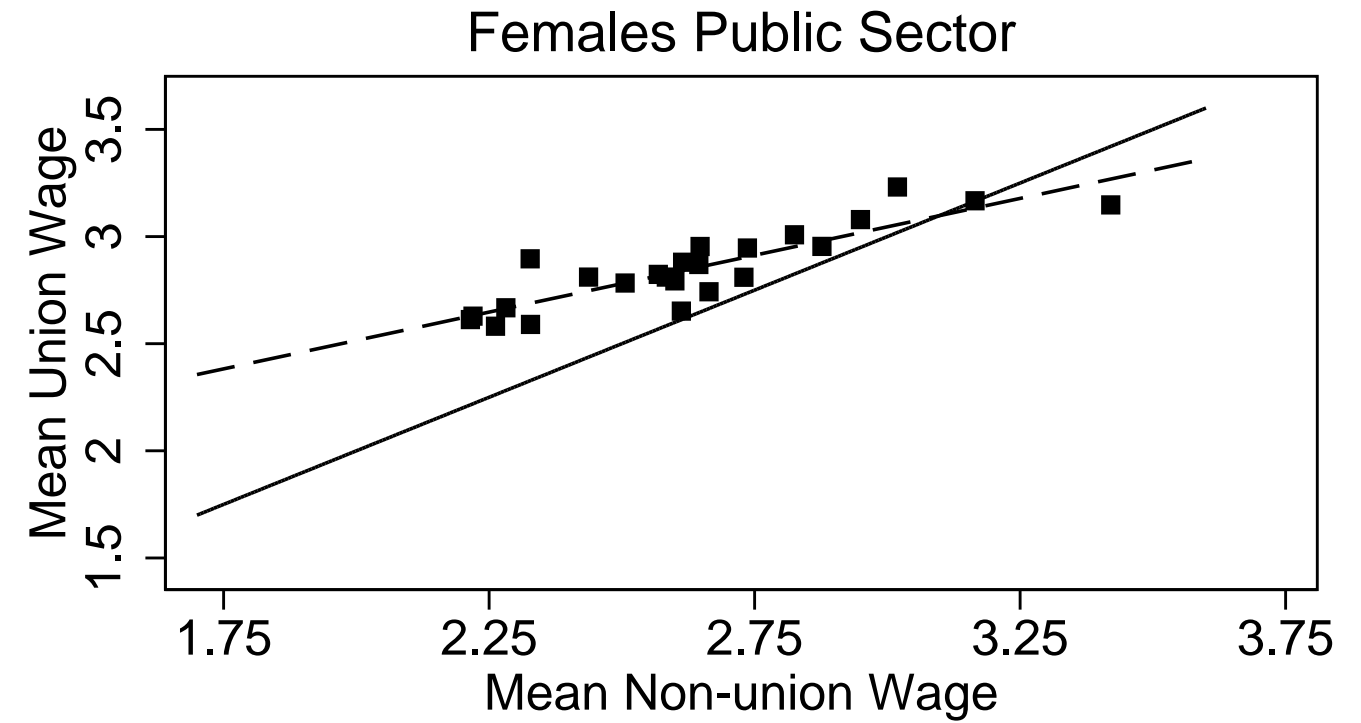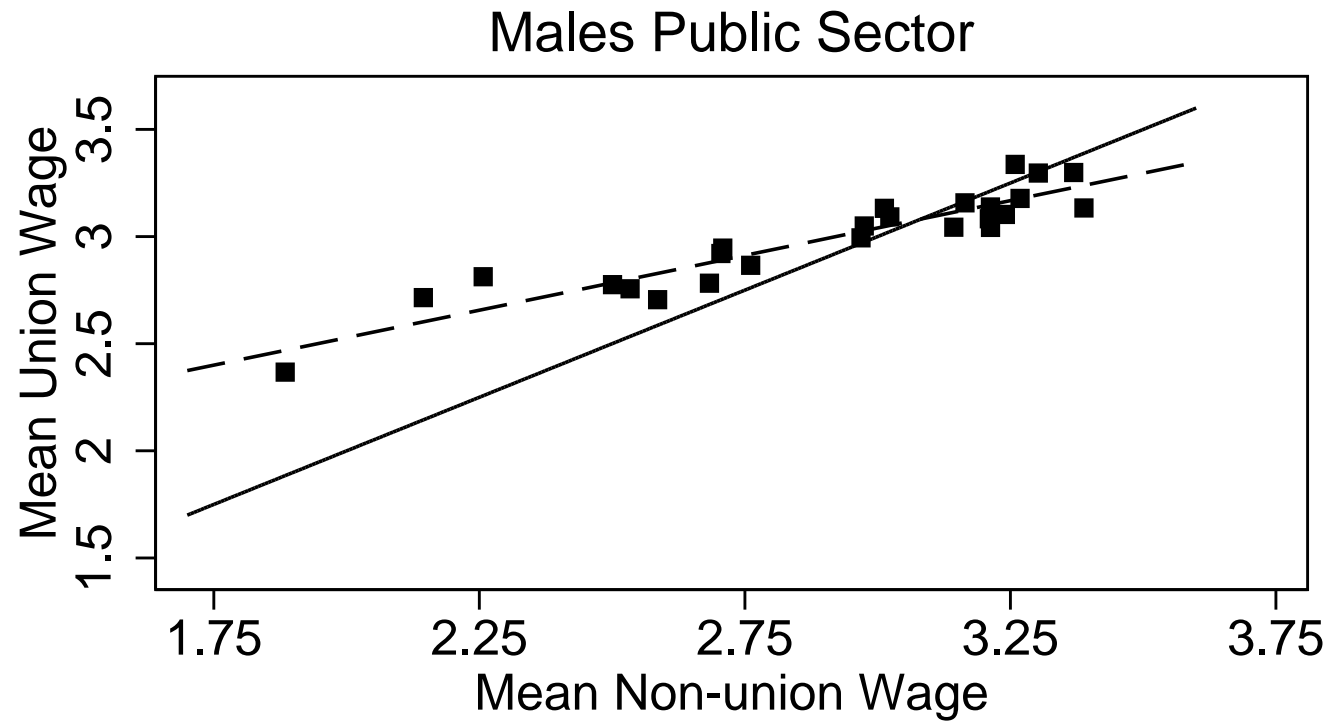
Note: Each point represents an age-education cell. Solid line is the 45 degree line, dashed line is fitted regression line.

Figure 3b: Union and Nonunion Wage Structures, Canada 1993
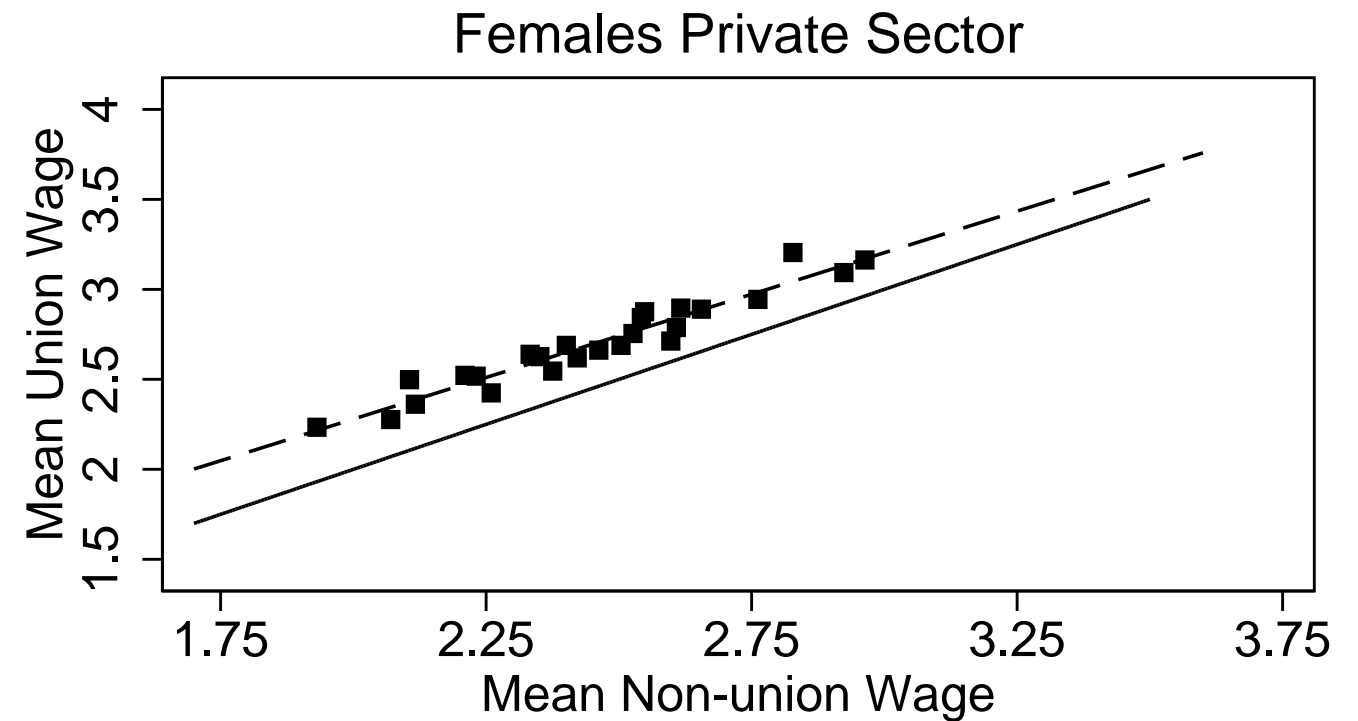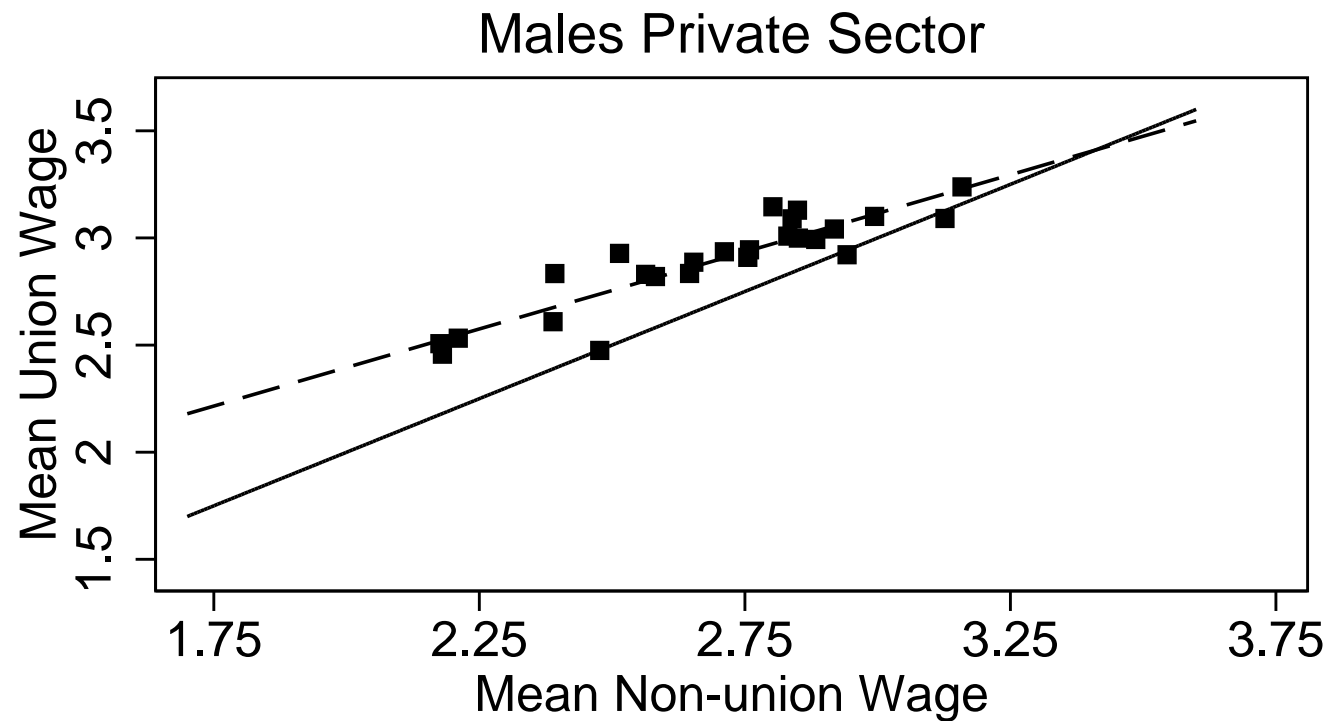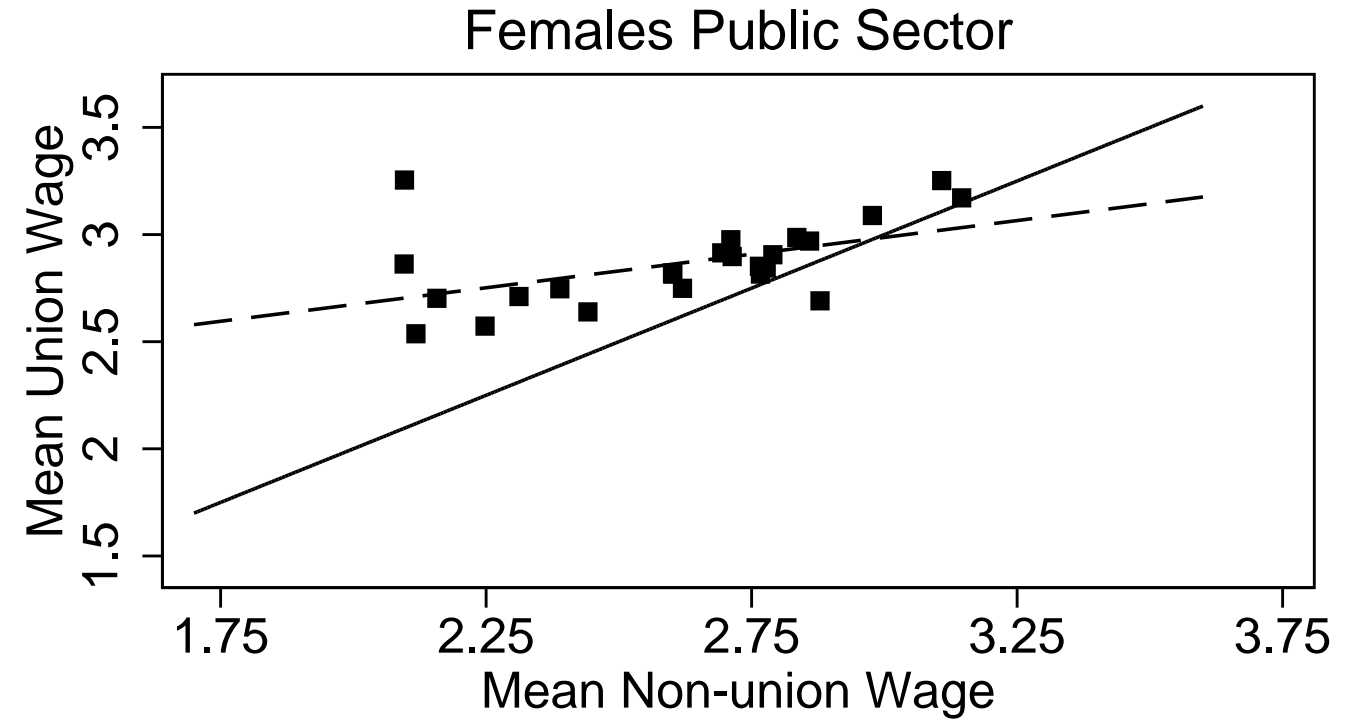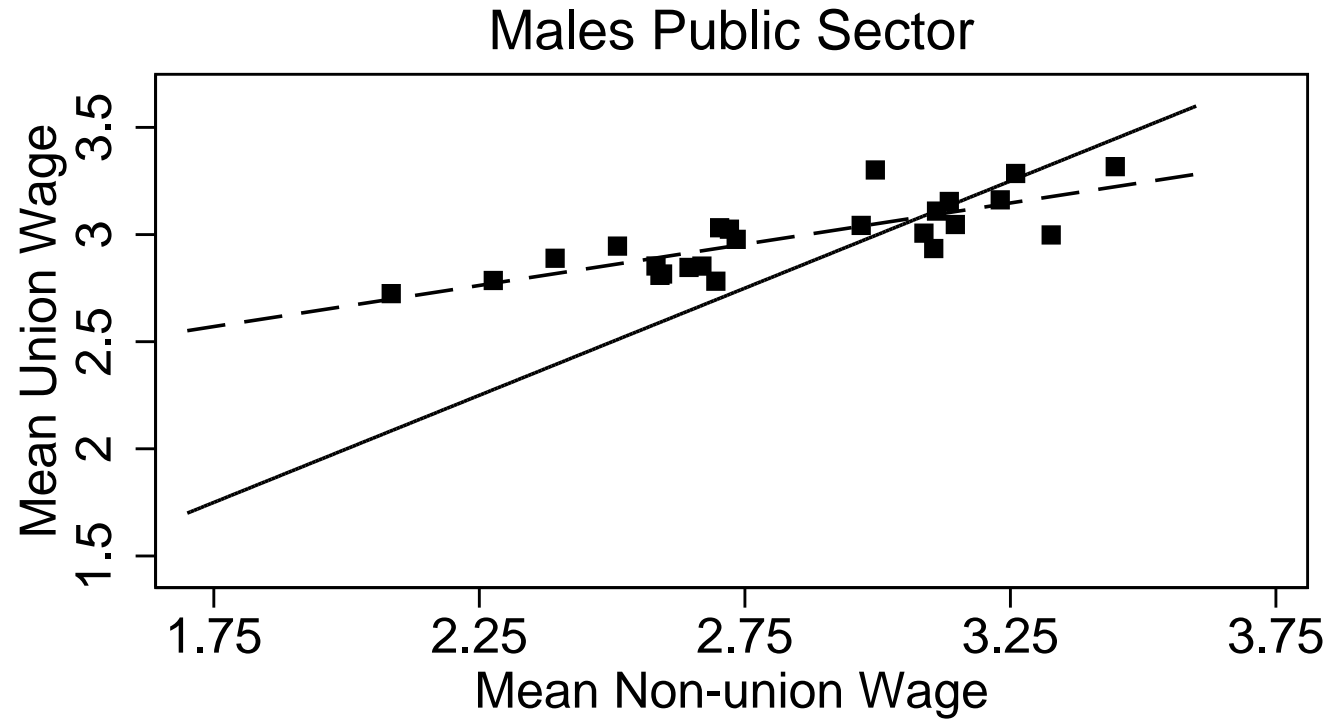
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Figure 3c: Union and Nonunion Wage Structures, Canada 2015
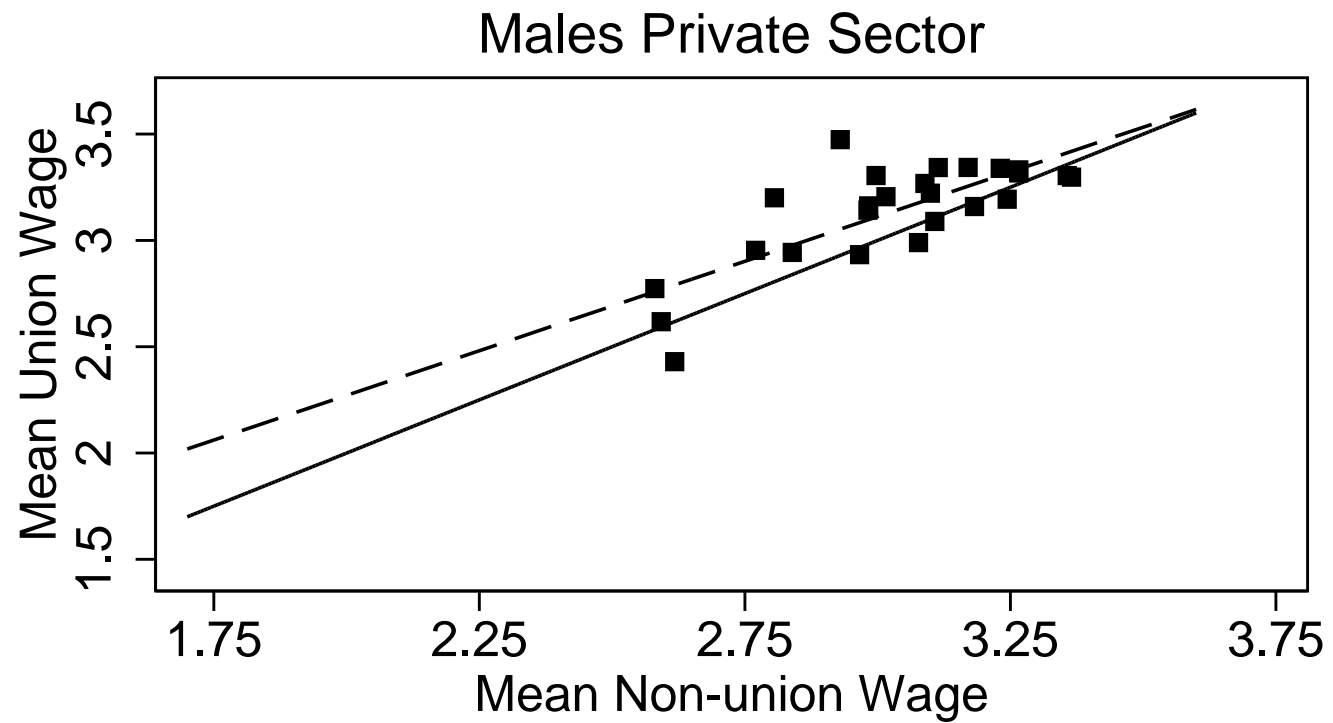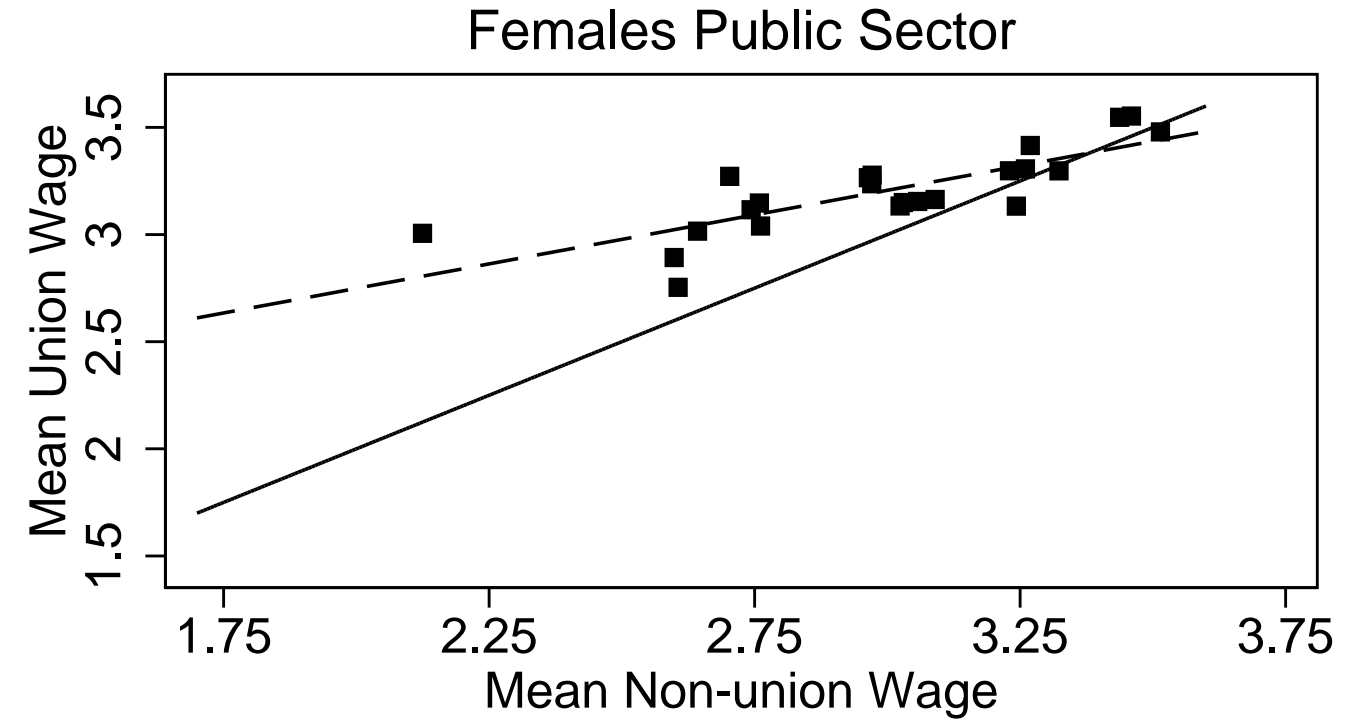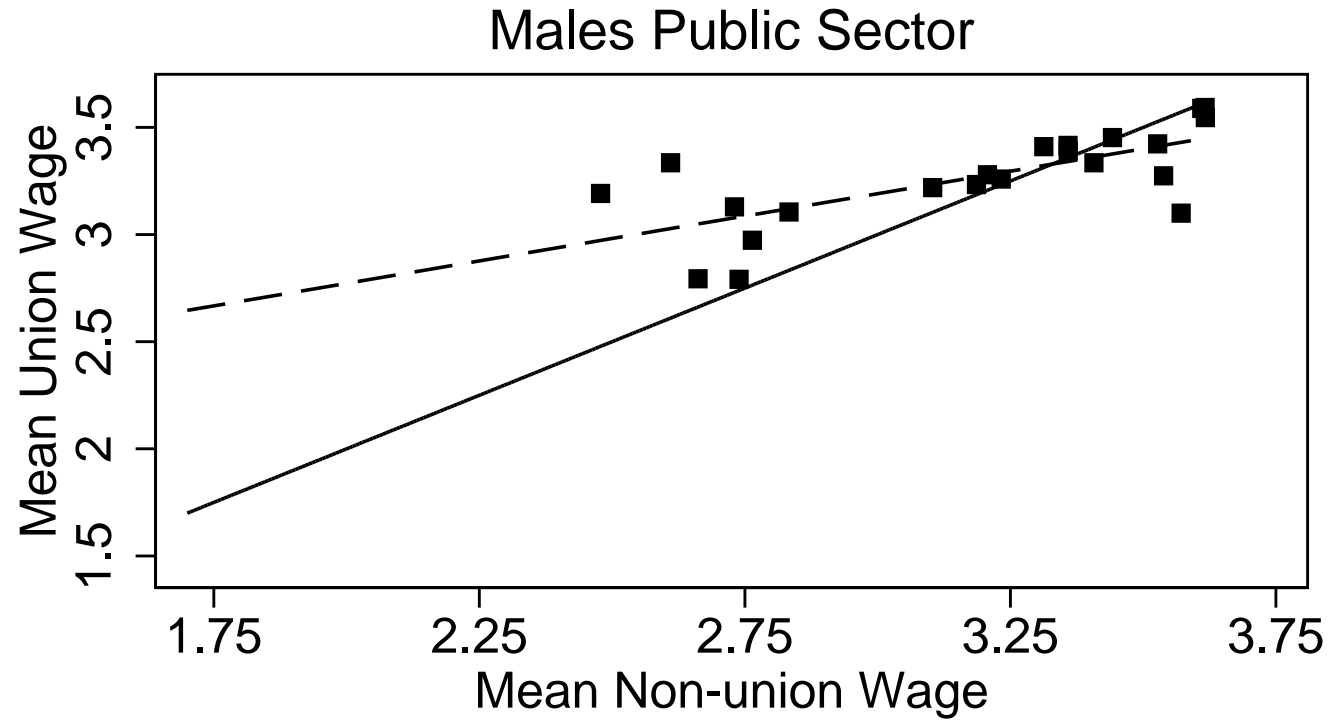
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Conclusions

Over past four to five decades, unionization has grown or remained stable in the public sector but declined substantially in the private sector.

The gap in union coverage is now enormous – 38% in the U.S. public sector vs 7% in the private sector and 76% vs 16% in Canada.

As a consequence, almost one-half of unionized workers in each country are employed in the public sector even though that sector accounts for only 15% to 20% of total employment.

A central objective of talk is to examine the implications of this dramatic divergence for the impacts of unions on the wage structure.

Second objective is to assess whether distinguishing between the public and private sectors might shed light on the puzzling gender difference found in previous studies.

In both countries we find that there are striking differences between the private and public sectors in the effects of unionization on male and female wage inequality.

These differences have become more pronounced over time as public-private sector unionization has diverged.

In 2015, the overall effects of unions on economy-wide wage inequality are small:

Reductions in male wage inequality of 4.0% in U.S. and 3.6% in Canada

Reduction in female inequality of 3.4% in US and an _increase_ in inequality of 2.8% in Canada.

However, disaggregating by sector of employment yields striking differences:

Reductions in male wage inequality in the _private sector_ of 1.7% in U.S. and 2.3% in Canada versus reductions in male wage inequality in the respective _public sectors_ of 16.2% and 47.4%.

Similarly, our estimates imply that unions reduce female wage inequality by 0.6% and 2.2% in the U.S. and Canadian private sectors respectively but 10.7% and 44.4% in their public sectors.

Once we disaggregate by sector the effects of unions on male and female wage inequality no longer differ – union coverage reduces wage inequality among women and men to a similar extent in both sectors and in both countries.

The key differences in the impacts of unions are between the public and private sectors – not between male and female employees.