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Do Unions and Works Councils really dampen the Gender Pay Gap? Discordant Evidence from Germany

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Do unions and works councils really dampen the gender pay gap? Discordant evidence from Germany*

Michael Oberfichtner, Claus Schnabel[a] and Marina Töpfer

Abstract: Using a large employer-employee dataset, we provide new evidence on the relationship between the gender pay gap and industrial relations from within German workplaces. Controlling for unobserved workplace heterogeneity, we find no evidence that introducing or abandoning collective agreements or works councils affects the gender pay gap. This result holds at the mean and along the distribution, challenging the stylized fact that unions and works councils dampen the gender pay gap.

Zusammenfassung: Mit einem großen Arbeitgeber-Arbeitnehmer-Datensatz liefern wir neue Erkenntnisse aus deutschen Betrieben über den Zusammenhang zwischen dem geschlechtsspezifischen Lohndifferenzial und den betrieblichen Arbeitsbeziehungen. Wenn wir unbeobachtete betriebliche Heterogenität berücksichtigen, finden wir keine Hinweise, dass die Einführung oder Abschaffung von Tarifverträgen oder Betriebsräten das geschlechtsspezifische Lohndifferenzial beeinflusst. Diese Erkenntnis gilt sowohl am Mittelwert als auch entlang der Verteilung und stellt das vermeintlich gesicherte Wissen infrage, dass Gewerkschaften und Betriebsräte das geschlechtsspezifische Lohndifferenzial verringern.

Keywords: gender pay gap, industrial relations, works council, collective bargaining, Germany
JEL: J31, J50

* The authors would like to thank Boris Hirsch and Elke Jahn for helpful comments and suggestions. They are grateful to Nicole Gürtzgen for sharing the STATA code identifying changes in collective agreement status with them. This study uses the LIAB cross-sectional model 2, version 1993-2014, of the Linked-Employer-Employee Data (LIAB) from the IAB. Data access was provided via on-site use at the Research Data Centre (FDZ) of the German Federal Employment Agency (BA) at the Institute for Employment Research (IAB) and subsequently remote data access.

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1. INTRODUCTION

This note questions the stylized fact that the gender pay gap is lower when wages are bargained collectively (see e.g. the survey by Blau/Kahn 2017). This association is said to reflect that unions fight for equal pay and that worker representatives like works councils often have a legal mandate to combat discrimination at the workplace. The stylized fact rests on empirical evidence from three different sources of variation. First, international comparisons that relate differences in collective bargaining coverage to the gender pay gap (e.g. Blau/Kahn 2003); second, within-country comparisons that contrast workplaces and workers with and without bargaining coverage (e.g. Heinze/Wolf 2010); third, within-country comparisons that link changes in bargaining coverage over time to the evolution of the gender pay gap (e.g. Bruns 2019).

Using a large German linked employer-employee dataset, we provide evidence from a new source of variation. We explore the relationship between within-workplace changes in industrial relations and within-workplace changes in the unexplained gender pay gap. Our approach goes beyond the previous literature by controlling for time-constant unobserved heterogeneity of workplaces (such as a corporate culture that favors mutual trust and cooperation), which can confound evidence from the three other sources of variation. To account for the institutional setting in Germany, we distinguish between collective bargaining agreements negotiated by unions and employers (associations) at the sectoral and at the firm level, and we include works councils in our analysis.[1] We not only look at the mean difference in pay between men and women but also check whether the potentially dampening effects of collective agreements and works councils vary along the wage distribution, thus accounting for potential “sticky floor” or “glass ceiling” effects.

2. DATA

We use the Linked Employer-Employee dataset of the Institute for Employment Research (LIAB QM2 1993-2014, for details see Klosterhuber et al. 2016). The LIAB links worker-level information from mandatory social security notifications with the *IAB Establishment Panel,* a representative survey among German workplaces. Because

[1] Works councils are representative bodies that workers may elect in establishments with five or more employees and that are independent from unions. They have extensive rights of consultation and co-determination prescribed by law. Although they have no legal mandate to bargain on wages, works councils exert sizeable influence on wages (see, e.g., Addison et al. 2010).

eastern Germany is included in the survey only from 1996 onwards, we discard earlier waves of the data.

Regarding the workers, the data contain information on their daily wage, sex, age, and years of schooling. We impute missing values for education following Fitzenberger et al. (2006). Regarding the workplaces, the data include collective bargaining coverage, the existence of a works council, the number of workers, workforce composition, sector, and location. Absent information on working hours, we restrict our analysis to regular full-time workers, and we exclude workers with (implausible) implied hourly wages below 5.00 Euro (inflation-adjusted to 2010). As wages are top-coded, which affects 10.7% of observations in our sample, we use the standard imputation procedure by Gartner (2005).

To obtain sufficiently precise estimates of within-workplace wage differences, we use only workplace-year-cells that include at least 20 men and women each and 50 workers in total. We keep only workplaces that we observe at least twice and follow them until the second change in one of their industrial relations institutions. Our estimation sample comprises 7,551 workplaces, 1,803 of which change their collective bargaining status (firm-level, sector-level or no bargaining) and 383 of which introduce or abandon a works council.

3. METHODOLOGY

We employ a two-step estimation procedure. In the first step, we obtain the year-specific unexplained within-workplace gender pay gap at the mean and along the distribution. To adjust wages for different characteristics of men and women, we use the reweighting procedure described by Fortin et al. (2011, p. 63–69). For workers in each workplace-year-cell, we fit a probit model that the worker is female using the following predictors: quadratics of potential experience and tenure, a dummy for censored tenure (jobs starting before 1975) and education in years.[2] These estimations yield weights that allow us to reweight the observations of men in each workplace so that they resemble their female coworkers in each year in these characteristics. A comparison between this reweighted wage distribution of men and the observed wage distribution of women gives the unexplained gender wage gap

[2] On average, these probits use 470 observations.

within the respective workplace using men as the reference group. We evaluate this unexplained gender pay gap at the mean and at the 20th, 50th, and 80th percentile.[3]

In the second step, we examine how this within-workplace gender pay gap responds to changes in industrial relations institutions at that workplace. To this end, we run OLS regressions of the following form

$$\widehat{\Delta}_{jt}^{s} = \beta_1 sector\ cba_{jt} + \beta_2 firm\ cba_{jt} + \beta_3\ council_{jt} + \alpha_j + z_{jt}'\gamma + \theta_t + \varepsilon_{jt}$$

where $\widehat{\Delta}_{jt}^{s}$ indicates the gender pay gap at statistic s (mean or a percentile) in workplace j in year t. The regressors are dummy variables for collective bargaining agreements (*cba*) at the sector- and firm-level and the presence of a works council, workplace fixed effects as well as further control variables and year dummies. To obtain standard errors for this two-step approach, we run a bootstrap procedure that is clustered at the workplace-level.

4. RESULTS

To compare our results with previous within-country analyses (such as Heinze/Wolf 2010), Panel A of Table 1 displays the second step estimation results without controlling for workplace-fixed effects. The average unexplained gender pay gap is 3.7 (2.9) log points smaller in workplaces that have a sector-level (firm-level) collective agreement, which corresponds to a difference of 31% (24%) of the average unexplained within-workplace gender pay gap. Furthermore, the gap is 2.5 log points smaller (21%) in workplaces that have a works council. The following columns show that these differences tend to be larger in the upper part of the wage distribution. All of these estimates are statistically significant at the 1%-level. These results thus seem to confirm the stylized fact that the gender pay gap is smaller in workplaces with collective bargaining.

(Table 1 about here)

To examine whether the observed relationship between gender pay differences and industrial relations institutions reflects more than unobserved workplace heterogeneities, we go beyond the literature by adding workplace-fixed effects to our second step estimations, see Panel B of Table 1. In this way controlling for unobserved

[3] At the mean, within-workplace Oaxaca/Blinder-decompositions (as implemented by Heinze/Wolf 2010) are an alternative way to obtain the unexplained gender pay gap. Reassuringly, this approach yields the same conclusions (see Table A1 in the Appendix).

workplace heterogeneity, we find no statistically significant relationship between the presence of industrial relations and the unexplained gender pay gap at the mean. Moreover, our precise point estimates are close to zero.

Along the distribution, the point estimates are slightly less precise than at the mean, but the results reiterate the previous finding that within-workplace changes in industrial relations are not associated with within-workplace gender pay gaps. The estimated coefficients are small and statistically insignificant, and our point estimates yield no systematic relationship for any institution nor at any part of the distribution.[4]

As collective agreements and works councils may have additive or interactive effects, we also include interaction terms of the presence of works council and collective agreements. We further account for median-voter considerations by adding interaction terms for workplaces whose share of female workers is above the industry average. These modifications do not change our insights (see Table A3 and Table A4, respectively, in the Appendix).

5. ROBUSTNESS TESTS

The absence of union effects in our study could reflect that employers adjust wages only slowly. For instance, collective agreements in Germany still apply after they have expired as long as they are not replaced by a new agreement. This provision would imply that employers cannot quickly adjust the gender pay gap after abandoning collective bargaining with unions, but it could not explain why the introduction of collective agreements does not have an effect. To examine whether introducing a collective agreement affects the gender pay gap with a delay, we focus on workplaces that initially have no agreement and run an event-study regression at the mean (see Table 2). Again, we find no relationship between collective bargaining and the gender pay gap even three or more years after the agreement was introduced. That said, bargaining and works council switching may be endogenous in ways that affect worker bargaining power and may not be fully addressed by the event study design.

(Table 2 about here)

To mitigate concerns that (unobserved) worker heterogeneity and changes in the workforce composition affect our results, we additionally investigate the effect on the gender pay gap at the mean using worker-level regressions that control for match-fixed

[4] Note that these insights also hold when repeating our analyses with the raw gender pay gap as dependent variable (see Table A2 in the Appendix).

effects. This regression identifies the effect of changes in industrial relations on the gender pay gap at the mean only from workers who are employed before and after the change. Reassuringly, this regression yields the same conclusion as our two-step estimation controlling for workplace-fixed effects (see Table 3).

(Table 3 about here)

6. CONCLUSIONS

This note challenges the stylized fact that unions and works councils dampen the gender pay gap. Within workplaces, we find no evidence that introducing (or abandoning) collective agreements or works councils affects the gender pay gap. This result holds at the mean and along the distribution. Our finding implies that political support for strengthening industrial relations institutions is unlikely to succeed in combatting gender pay gaps, “sticky floors”, and “glass ceilings”.

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TABLES

Table 1: Unexplained within-workplace gender pay gaps and industrial relations

	Mean	20th Pct.	50th Pct.	80th Pct.
Panel A: OLS				
Sector-level agreement	-0.037***	-0.034***	-0.037***	-0.042***
	(0.003)	(0.001)	(0.004)	(0.003)
Firm-level agreement	-0.029***	-0.022***	-0.028***	-0.040***
	(0.001)	(0.002)	(0.001)	(0.003)
Works council	-0.025***	-0.024***	-0.023***	-0.033***
	(0.002)	(0.001)	(0.004)	(0.008)
Panel B: FE				
Sector-level agreement	0.001	-0.000	0.002	0.002
	(0.002)	(0.003)	(0.002)	(0.003)
Firm-level agreement	0.002	-0.001	0.002	0.006
	(0.002)	(0.004)	(0.003)	(0.004)
Works council	0.003	0.001	0.003	-0.001
	(0.003)	(0.004)	(0.003)	(0.006)
Unexplained within-workplace gender pay gap	0.120	0.079	0.101	0.157

Notes: 39,443 workplace-year observations from 7,551 workplaces. The dependent variables are the unexplained within-workplace gender pay gap at the mean and the reported percentiles. Additional control variables are the fractions of female and fixed-term employees, and dummy variables for workplace size, industry and federal state as well as year dummies. Bootstrapped standard errors (500 replications) clustered at the workplace-level in parentheses. *** p<0.01, ** p<0.05, * p<0.1.
Source: LIAB QM2 1993-2014.

Table 2: Effects of introducing collective bargaining agreements on unexplained within-workplace gender pay gaps at the mean – event-study regression

Effect after	1 year	2 years	3 years	4+ years
Sector-level agreement	-0.004	-0.004	0.003	0.00004
	(0.004)	(0.006)	(0.007)	(0.008)
Firm-level agreement	0.004	0.016	-0.010	-0.019
	(0.009)	(0.014)	(0.016)	(0.024)

Notes: Regression restricted to 6,184 workplace-year observations from 1,370 workplaces that initially had no collective agreement; estimated coefficients for having introduced a collective agreement in previous years, further specification as in Table 1 (Panel B). Bootstrapped (500 replications) standard errors clustered at the workplace-level in parentheses. *** p<0.01, ** p<0.05, * p<0.1.
Source: LIAB QM2 1993-2014.

Table 3: Worker-level wage regression including match-fixed effects

Female dummy interacted with	
Sector-level agreement	0.001
	(0.003)
Firm-level agreement	-0.003
	(0.003)
Works council	0.002
	(0.003)

Notes: 21,270,873 observations from 5,843,995 worker-workplace matches. The dependent variable is the log daily wage. Worker-level control variables are educational attainment, quadratic polynomials of labor market experience and tenure. Further specification as in Table 1 (Panel B). Standard errors clustered at the workplace-level in parentheses. *** p<0.01, ** p<0.05, * p<0.1.
Source: LIAB QM2 1993-2014.

APPENDIX

Table A1: Unexplained within-workplace gender pay gap (estimated with Oaxaca/Blinder-decompositions) and industrial relations at the mean

	OLS	FE
Sector-level agreement	-0.008***	-0.001
	(0.003)	(0.002)
Firm-level agreement	-0.009**	0.001
	(0.004)	(0.002)
Works council	-0.003	-0.001
	(0.004)	(0.002)
Unexplained within-workplace gender pay gap (estimated with Oaxaca/Blinder-decompositions)		0.124

Notes: 39,443 workplace-year observations from 7,551 workplaces. The dependent variable is the unexplained within-workplace gender pay gap estimated at the mean using firm-level Oaxaca/Blinder decompositions. Specification as in Table 1 (Panel A for OLS and B for FE). Bootstrapped standard errors (500 replications) clustered at the workplace-level in parentheses. *** p<0.01, ** p<0.05, * p<0.1.
Source: LIAB QM2 1993-2014.

Table A2: Raw within-workplace gender pay gaps and industrial relations

	Mean	20th Pct.	50th Pct.	80th Pct.
Panel A: OLS				
Sector-level agreement	-0.042***	-0.037***	-0.039***	-0.052***
	(0.003)	(0.004)	(0.003)	(0.003)
Firm-level agreement	-0.038***	-0.026***	-0.036***	-0.057***
	(0.003)	(0.003)	(0.003)	(0.004)
Works council	-0.016***	-0.012***	-0.014***	-0.025***
	(0.001)	(0.0001)	(0.0001)	(0.001)
Panel B: FE				
Sector-level agreement	0.001	0.001	0.004	0.001
	(0.002)	(0.003)	(0.002)	(0.004)
Firm-level agreement	0.002	0.001	0.003	0.001
	(0.002)	(0.003)	(0.003)	(0.004)
Works council	-0.002	-0.001	-0.002	-0.007
	(0.003)	(0.004)	(0.004)	(0.006)
Raw within-workplace gender pay gap	0.160	0.118	0.146	0.197

Notes: 39,443 workplace-year observations from 7,551 workplaces. Specification as in Table 1 (Panel A for OLS and Panel B for FE). Bootstrapped standard errors (500 replications) clustered at the workplace-level in parentheses. *** p<0.01, ** p<0.05, * p<0.1.
Source: LIAB QM2 1993-2014.

Table A3: Unexplained within-workplace gender pay gaps and industrial relations

	Mean	20th Pct.	50th Pct.	80th Pct.
Sector-level agreement	-0.001	-0.001	-0.005	- 0.008
	(0.004)	(0.005)	(0.005)	(0.009)
Firm-level agreement	0.005	0.005	0.001	0.015
	(0.006)	(0.008)	(0.006)	(0.011)
Works council	0.002	0.002	-0.002	-0.006
	(0.004)	(0.005)	(0.005)	(0.009)
Works council interacted with				
Sector-level agreement	0.002	0.001	0.008	0.012
	(0.005)	(0.006)	(0.006)	(0.009)
Firm-level agreement	-0.004	-0.007	0.002	-0.009
	(0.006)	(0.009)	(0.007)	(0.012)

Notes: 39,443 workplace-year observations from 7,551 workplaces. Further specification as in Table 1 (Panel B). Bootstrapped (500 replications) standard errors clustered at the workplace-level in parentheses. *** p<0.01, ** p<0.05, * p<0.1.
Source: LIAB QM2 1993-2014.

Table A4: Unexplained within-workplace gender pay gaps, industrial relations and share of females

	Mean	20th Pct.	50th Pct.	80th Pct.
Sector-level agreement	0.003	-0.0004	0.003	0.007
	(0.004)	(0.005)	(0.005)	(0.006)
Firm-level agreement	0.001	-0.003	-0.0004	0.004
	(0.005)	(0.006)	(0.005)	(0.007)
Works council	-0.006	-0.008	-0.006	-0.008
	(0.006)	(0.007)	(0.007)	(0.008)
High share of females interacted with				
Sector-level agreement	-0.005	-0.001	-0.003	-0.008
	(0.006)	(0.006)	(0.007)	(0.009)
Firm-level agreement	0.003	0.005	0.005	0.006
	(0.007)	(0.006)	(0.009)	(0.011)
Works council	0.013	0.014*	0.014	0.011
	(0.008)	(0.008)	(0.009)	(0.011)

Notes: 39,443 workplace-year observations from 7,551 workplaces. High share of females is a dummy that equals one in workplaces whose share of female workers is above the industry average. Further specification as in Table 1 (Panel B). Bootstrapped (500 replications) standard errors clustered at the workplace-level in parentheses. *** p<0.01, ** p<0.05, * p<0.1.
Source: LIAB QM2 1993-2014.

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