Gender differences in the union wage premium? A comparative case study

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Abstract

Trade unions have changed from male-dominated to majority-female organizations. We use linked employer-employee surveys for Norway and Britain to examine whether, in keeping with a median voter model, the gender shift in union membership has resulted in differential wage returns to unionization among men and women. In Britain, while only women receive a union wage premium, only men benefit from the increased bargaining power of their union as indicated by workplace union density. In Norway, however, both men and women receive a union wage premium in male-dominated workplaces; but where the union is female-dominated, women benefit more than men. The findings suggest British unions continue to adopt a paternalistic attitude to representing their membership, in contrast to their more progressive counterparts in Norway.

Introduction

Union membership has been falling for decades in much of the developed world (Schnabel, 2013), and collective bargaining is under threat, even in countries like Germany. However, unions continue to procure a wage premium for employees covered: there is little evidence of a substantial decline in the union wage premium, at least in the Anglophone countries where evidence is available (Blanchflower and Bryson, 2003, 2007). There has also been a remarkable transformation in the unionized workforce: unions are now often majority-female membership organizations serving predominantly white-collar workers, mainly in the public sector (Schnabel and Wagner, 2007). In Britain and Norway, which we examine in this study, density has been greater among women than men since the early 1990s and 2000s, respectively (Appendix Figures A1a and A1b). Union membership has also become increasingly educated, older, and more white-collar in both countries (Appendix Figure A2a and A2b).

Unions are voluntary, democratically-run membership organizations, so it seems reasonable to assume that representatives will aggregate their members' preferences and seek to maximize the benefits accruing to the median member, as one might anticipate under a median voter model (Booth, 1994). The dominant model used to examine union effects on wages is the monopoly model under which unions monopolize the supply of labour to an employer in order to maximize the union's bargaining power (Hicks, 1932). The median voter model can be accommodated in this setting. The shift in unions' membership base means that the median voter is increasingly likely to be a woman. We therefore hypothesize that women are increasingly likely to benefit from union bargaining behaviour.

There is a contrary view which sees unions as hierarchical, bureaucratic organizations, with a separation between the interests of union functionaries and the rank-and-file membership (Dunlop, 1944; Pemberton, 1988). This issue is particularly acute in the case of women. First, union representatives tend to reflect the demographics of past cohorts of members who were predominantly male and white. Second, women face particular problems in receiving adequate representation by their union because the jobs they undertake and the employers they work for are often among the most difficult to reach: they are more likely than men to work on non-standard contracts on the periphery of the firm, experiencing more frequently periods outside the labour market and less likely to work in larger firms providing access to internal labour markets. (In this respect, Norway and the UK are comparable.) The marginal costs unions face in representing such workers are high relative to those in the primary sector. For these reasons it is possible that women do not benefit proportionately from their majority status in the union movement.

Although the feminization of union movements in both countries, and gender segregation in the labour market, are similar in Britain and Norway, unions' ability to address gender equality issues in the two countries may be different. First, there is much more gender inequality in the UK. It is ranked 25th on gender equality by the UN Development Programme, compared to Norway which is ranked third. Second, unions in Britain have been slow to address gender equality (Beirne and Wilson, 2015). By contrast, gender equality issues have been high on the trade union agenda in Norway over recent decades. The centralized bargaining model has allowed special increments for low-wage groups (where women are a majority) and widespread adoption of guidelines to promote gender equality in company-level bargaining. This may also help secure wage increases for groups with low bargaining power at local level. It is plausible, therefore, that unions in Norway are more likely than in Britain to use their workplace bargaining power to further women's interests. Our empirical analysis compares these two countries where local bargaining is prevalent but differs quite markedly when it comes to the promotion of gender equality at local level.

We use national population-wide register data for Norway and representative linked employer-employee surveys for Britain to examine whether, in keeping with a median voter model, the gender shift in union membership has resulted in differential wage returns to unionization among men and women. We start our analyses in 2004, when unionization rates of men and women in Britain were approximately equal, and study the changes to 2011, when women in Britain dominated unions.

In Britain, while only women receive a membership wage premium, only men benefit from the increased bargaining power of their union as indicated by workplace union density. In Norway, on the other hand, there is no wage premium arising from individual union membership for men or women across workplaces as a whole. However, where the union is female-dominated women benefit more than men as union density rises. The findings are consistent with the proposition that British unions continue to adopt a paternalistic attitude to representing their membership, in contrast to their more progressive counterparts in Norway.

We next describe and discuss more closely the institutional similarities and differences between the UK and Norway. Then we briefly review the literature on the union wage premium and the role of unions in tackling gender issues. After this we describe our data and outline the empirical approach, before presenting the results and then concluding.

Wage-setting, bargaining and institutional differences

Britain and Norway have different wage-setting regimes. The OECD (2018: 81) places the UK among *fully decentralized collective bargaining systems,* where bargaining occurs at firm or establishment level with little or no sectoral or government influence. In such an environment, local union density is a good indicator of bargaining strength (Booth, 1994), and thus will be positively correlated with wages. But membership declined rapidly during the 1980s and members' characteristics also changed. According to Charlwood and Forth (2009: 85) 'senior shop stewards may have become less representative of the wider union membership over the previous twenty-five years, rather than more so', potentially undermining their ability to address gender equality issues. Dex and Forth (2009: 231) argue 'unions often had their own internal struggles about taking equality seriously as the old male-

dominated leadership and agendas had to face the reality of the growth in women's trade union participation and demands. Some pioneer legal cases fought and led by women did, however, help to turn around union agendas.'

Unions in Britain have since been successful in negotiating improvements in workplace policies and practices that have been of particular benefit to primary carers, most of whom are women (Bryson and Forth, 2016; Budd and Mumford, 2004). However, Kirton's research (Healy and Kirton, 2000; 2013; Kirton, 2006, 2015) suggests that the largely male-dominated unions are less responsive to women's needs and that women face difficulties balancing union participation with other areas of life.

Although Norway has among the highest union density in the world, the OECD (2018) classes it among the middle ground of *organized decentralized and coordinated collective bargaining systems*, a category which includes Germany, Austria, Denmark, Sweden and the Netherlands. In these countries sectoral agreements play an important role, but also leave room for bargaining at a lower, decentralized level. One implication is that union strength (and gender representativeness or lack thereof) is relevant both at firm and sector or national level. In Norway the extension of collective agreements is largely confined to labour immigrants (Arnholz et al., 2018).

The 2011 British Workplace Employment Relations Survey (WERS) shows that sectoral collective agreements are virtually non-existent. Its 2012 Norwegian equivalent (NWERS) shows that 85 percent of Norwegian workers have wages set through collective bargaining, but for two-thirds this follows partly from local bargaining (Appendix Table A1).

Pattern bargaining is the principal coordinating mechanism in Norway (Dølvik et al., 2018): the internationally exposed but strongly organized metalworking sector takes the role as pattern-setter. Strong mechanisms for coordination, including powerful confederations and tripartite institutions, underpin the model (Alsos et al., 2017) to ensure that 'sheltered' sectors and the public sector follow the lead. Procedural mechanisms ensure consistency between agreements at different levels (Stokke 2008). In the Nordic countries in general, and Sweden and Denmark in particular, Dølvik and co-authors note that 'the setting of actual pay, including local increments and other conditions, is increasingly delegated to company-level negotiations' (Dølvik et al., 2018:12). Dale-Olsen et al. (2019) document the increased prevalence of local bargaining in parts of the private sector previously dominated by sectoral negotiations, and even in the public sector. The Norwegian pattern bargaining system has been under strain because of an expanding public sector and high wage drift among white-collar workers in the private sector. To bolster the norm-setting effect of pattern-setting, white-collar wage growth was included in the export sector 'norm' (Müller et al., 2018), thereby meeting some of the criticism from female-dominated professional unions in the public sector. However, ample room for flexible wage-setting at firm level remains (Müller et al., 2018).

While there is flexibility in wage-setting at firm level, the centralized bargaining structure, combined with single-channel representation in a two-tiered bargaining system (Stokke, 2008; Nergaard, 2014), means that decisions at the central level will influence priorities and activities at local level. Norway has no tradition of 'opening clauses', meaning that local unions cannot go below rates set in the sectoral agreements.

In contrast to the UK, union density and union structures in Norway have been relatively stable for many decades, although (as in other Scandinavian countries) both density and bargaining coverage are gradually declining (Nergaard et al., 2015). Norway is also notable for the degree of gender equality in the social, political and economic domains, with unions to the fore in promoting it (Paraskevopoulou and McKay, 2015). Gender equality issues have become more important for Norwegian unions, especially in the powerful and traditionally male dominated blue collar confederation LO (*Landsorganisasjonen i Norge*), which was seen as lagging behind. Today a majority of LO members are women, and the number of women in top positions has increased substantially over time (Nergaard et al., 2013). There are only minor differences between men and women in terms of union office at company level: the 2016 working environment survey (LKU, 2016) showed that 16 percent of male members and 15 percent of female members currently held a union office or had done during the previous three years. By the end of 2018, 7 of the 15 members of the LO Executive Board were women. One example of the emphasis given to gender equality issues is the introduction in the 2010 bargaining round of a duty for the parties at company level to review pay differences between women and men and to remedy any that cannot be justified.

The centralized bargaining system in Norway does appear to benefit women, and it may do so at local level, even if the local union is male-dominated. For example, most central agreements provide increments for low-wage workers in order to promote gender equality However, the bargaining orientation of a local union might also reflect the gender composition of its membership, as we might anticipate in the wholly decentralized bargaining system in the UK.

Previous literature

The union wage premium literature is dominated by studies of Anglophone countries. It has traditionally focused on membership as its preferred measure of union presence, partly for pragmatic reasons since most household surveys used to estimate the premium lack other measures. This is not usually thought to be a big problem since other measures tend to be strongly positively correlated with membership. Recent contributions to this literature have suggested that there has been a slow, small secular decline in the union membership wage premium (Blanchflower and Bryson, 2007; Brown et al., 2009). Some have suggested this reflects declining union bargaining power with the intensification of product market competition, often from non-unionized producers. Falling union membership is also thought to affect employer responses to union wage claims, because the ability to monopolize the supply of labour to the employer falls with declining membership.

Much of the literature is confined to union effects in the private sector, in part because interest lies in how unions affect wages which would otherwise be set by the market. However, the public sector is heavily unionized; indeed, in Britain public sector workers constitute the majority of union members (Appendix Figure A2a). In Norway the public sector accounts for about half of all union members, a situation that has been roughly constant since the mid-1990s (Appendix Figure A2b). It therefore makes sense to compare and contrast union effects on wages across the whole economy. One of the few studies in Britain to do so found union membership wage effects were substantially higher in the public than in the private sector, perhaps because union strength in the sector and the absence of overt product competition make it easier for unions to capture rents (Blanchflower and Bryson, 2010).

Union wage-setting has the capacity to increase gender equality by driving out discriminatory employer behaviour and by attaching wage rates to jobs rather than workers (Flanders, 1970; Slichter et al., 1960). This is what Flanders (1961) termed the ‘sword of justice’ effect. Using data for 1998, Metcalf et al. (2001: 72) confirm that unions in Britain narrowed gender differentials by delivering a much higher union wage premium for women than for men. Other studies for Britain also find unions have a bigger positive effect on wages for women than for men (Harkness, 1996).

However, some studies for Britain reach different conclusions. Millward and Woodland (1995) find unions only increased men's pay and that this effect occurred only where there was strong workplace organization. The inconsistency in previous studies may partly reflect differences in data sets, the measures of unionization and model specifications. It is also possible that union effects may have changed since these studies were conducted, given the changes in the gender composition of the union and non-union sectors noted above. Blanchflower and Bryson (2010) estimate trends in the union wage premium by gender in the public and private sectors for the periods 1993-1999 and 2000-2006. They find the union wage premium for women is larger than that for men in both sectors in both periods. For both sexes the premium is roughly constant in the public sector but falls in the private sector.

For the USA, Rosenfeld (2014: 72-73) found the private sector union wage premium was persistently higher for men than for women over the period 1973-2009. Furthermore, the premium remained constant for men but declined for women. Blanchflower and Bryson (2003) also found that the wage premium in the USA was slightly higher among women in the 1970s compared to men but that the premium had fallen markedly for women by the 1990s. However, the situation was quite different in the public sector: throughout the 1980s and 1990s the union membership wage premium stood at around 10 percent for men compared to 16-17 percent for women.

The Norwegian literature is limited, with no evidence on trends in union wage premia by sector and gender. Using manufacturing workplace data, Balsvik and Sæthre (2014) identify an

average union density wage premium effect of 6.7 percent for 1996-2007 (when density increases by 10 percentage points wages increase by 0.67 percent). Similar figures were found by Barth et al. (2000) on 1989 survey data. This latter study also exploits individual-level data, finding no individual union membership effect when taking density into consideration, indicating that the union wage effect is a pure public good.

There are several difficulties interpreting wage gaps between union members and non-members as a premium attributable to union activities. In both Britain and Norway employees choose whether or not to be a union member and may do so based on their assessments of the costs and benefits. Unobserved factors correlated with both membership and wages will result in an upward bias in estimates of a union wage premium. If selection on unobservables differs across men and women it is not possible to assert that any gender differentials in the union wage premium based on OLS estimates capture the causal impact of unions. One example is safety, which Donaldo and Walde (2012) identify as a key topic for unions. Evidence suggests that women are more risk-averse than men (Borghans et al., 2009); hence they might value the insurance component of the union good more than men, increasing their relative propensity to unionize, and perhaps to trade higher wages for greater certitude. Recent laboratory and field research on gender differences in bargaining also reveal that women may be less successful negotiators, both when it comes to initiating negotiations (Bowles et al., 2005) and for outcomes (Artz et al., 2016). This may affect their propensity to unionize and the outcomes of negotiations in male and female-dominated union settings. Although women are thought to be more altruistic and oriented towards cooperation, the empirical evidence on this in the experimental literature is mixed and ambiguous.

Female-dominated unions could give priority to family-friendly company policies and to a lesser extent focus on money wages. This notion is reasonable if female workers are also the primary carer at home. Previous research has not identified family-friendly fringe benefits as particularly prevalent in Norway, with two exceptions: flexible work hours contracts (Nergaard et al., 2018), which more men than women are able to exploit; and working from home. Jenssen and Schøne (2007) find that women with small children are much more likely than similar male workers to be employed in workplaces where employers provide a kindergarten, house cleaning services and working from home.

Finally, the union wage gap could potentially follow from individual worker sorting and selection, with union and non-union workers differing individually in productivity. If this is the case, both regressions of individual union membership and union density might reveal significant correlations. A priori, however, the direction of selection is not clear. We account for some of this bias using linked employer-employee data containing rich workplace covariates and, for both Britain and Norway, we can account for bias associated with workplace fixed unobservable traits by estimating workplace fixed effects models where our data contain multiple employee observations per workplace. We ignore the potential endogeneity of union membership and union density, and simply present conditional associations, as is common in the literature. In the Norwegian case, we take into account bias from individual productivity differences by incorporating fixed individual effects.

Data and empirical approach

Data

We use the British Workplace Employment Relations Surveys (WERS) 2004 and 2011 and linked employer-employee register data for 1995-2012 (for active jobs May 15th each year) from Statistics Norway. We focus on 2004 and 2011 for comparison purposes. The analyses presented below are confined to employees in workplaces with at least 5 employees, the lower threshold for inclusion in WERS. Information in WERS was acquired through face-to-face interviews and the response rate was 64 percent.

We identify union wage effects using two measures of unionization. The first is individual membership status (1=union member, 0=non-member), obtained via an employee survey in WERS while in Norway the data are taken from an administrative register. Our second measure is workplace

union density, often viewed as a useful proxy for bargaining power. Even when several unions bargain separately at a workplace, density will provide a joint proxy for unionization and bargaining power although it might overestimate each union's bargaining power. In WERS the density measure is derived from questions asked of the HR Manager whereas in Norway it is derived from administrative data.

Our wage equations estimate log hourly wages at individual employee level, after dropping outliers (the top and bottom 1 percent of earners). WERS does not collect continuous data on wages; instead it asks employees to categorize their gross weekly earnings into one of 14 bands ranging from 'less than £60 per week/£3120 per year' to '£1051 or more per week/£54601 per year'. There is no explicit instruction to respondents whether to include performance payments, and since respondents may not have annual bonuses in mind when making the calculation, this measure may understate earnings variance associated with performance pay. To obtain a continuous measure of gross hourly earnings the convention is to take the mid-point of the respondent's earnings band and divide this by the survey's continuous measure of hours worked (which includes overtime). It is also conventional to top-code those in the top category, which has no ceiling, using an earnings figure that is 1.5 times the lower bound of this top category. We check whether these procedures introduce error into the dependent variable by imputing earnings within the bands using wage data from the Annual Survey of Hours and Earnings (a random sample of 1 per cent of all employees in Britain for which employers are required by law to provide information based on payroll records). A comparison of imputed gross hourly earnings based on the conventional approach with those based on this survey indicates a correlation of 0.99.

The Norwegian hourly wage measure is calculated for all active jobs on May 15th each year as reported to the tax authorities. The earnings for the period spanning May 15th are divided by the contracted weekly working hours multiplied by the number of weeks employed to obtain the hourly rate. This measure comprises all wages, sick pay and taxable fringe benefits. To ease interpretation, we derive the equivalent monetary values by using the NOK-pound average yearly currency rates for 2004 and 2011.

Empirical approach

We examine union effects on individual wages. The analysis for Britain is weighted for the inverse of the probability that the employee will be sampled and standard errors are clustered at workplace level to account for the non-independence of observations. The analysis for Norway is based on population data so weights and clustering are unnecessary.

First, we present the raw member/non-member log hourly wage gap in 2003/4 and 2011/12. Then we recover a regression-adjusted gap conditioned on traits that are standard in the literature: individual (age and education), job (occupation, hours and tenure) and workplace (industry, size and location). Then we present a workplace fixed-effects model identifying the differential between observationally equivalent workers at the same workplace, having accounted for fixed unobservable traits of the workplace. For Norway only we draw on panel linked employer-employee data to estimate the effects of changes in individual union membership and changes in workplace union density on wages.

All analyses are run separately by gender for the whole economy (separate analyses for the private sector only yield qualitatively similar results and are available from the authors upon request).

Results

Appendix Table A2 presents descriptive information on union membership rates in Britain and Norway. In both countries the percentage of employees who are union members is roughly constant over time, in both the private and public sectors, with density considerably higher in the public sector (three times in Britain and around twice in Norway). The stability in union density in Britain contrasts

with the remarkable rate of union decline experienced in the 1980s and 1990s. Unionization rates are much higher in Norway than in Britain, in both the public and private sectors.

Very few Norwegian workplaces have no union members, whereas in Britain over 40 percent have no members, rising to 60 percent in the private sector. Whereas around a quarter of workplaces in Britain have density of 50 percent or more, this is the case in nearly two-thirds of workplaces in Norway (and almost 100 percent in the public sector). These union membership distributions across workplaces are fairly stable over the period.

Table 1a presents the union membership wage premium in Britain for the whole economy, for women and men separately. Among women the raw hourly wage gap between members and non-members is around 0.2 log points and does not vary much over time. Much of this raw differential is accounted for by observable demographic, job and workplace traits but a sizeable and statistically significant union wage premium persists. The premium is 0.06 log points in 2004 and a little higher in 2011. Women's wages do not rise with union density.

[Table 1a about here]

For men, once controls are introduced there is no evidence of a union wage premium, either in 2004 or 2011. Even the raw membership wage gap apparent in 2004 disappeared by 2011. However, in contrast to women, men's wages rise with union density, albeit non-monotonically, an effect that is stronger in 2011 than it was in 2004. These results are replicated when we confine the analysis to the private sector. The effects are quantitatively large. For example, in the whole economy model, those men with 100 per cent union membership at their workplace earned 0.14 log points more than an observationally equivalent man in a workplace with no union members.

One worry regarding these results is that they are driven by public sector pay setting. Thus, we have also conducted similar analyses for the private sector only. A premium of a similar size is apparent, although the fixed-effects estimate for 2011 is somewhat smaller and non-significant (0.03 log points); full results are available from the authors on request. However, in both the whole economy and the private sector, women's wages do not rise with workplace union density.

The implications from the British analysis by gender are the following. First, and unexpectedly, there is little evidence of positive selection into union membership among men on observable traits, certainly by 2011, whereas it is very evident among women, as indicated by the reduction in the size of the raw wage gap when controls are added to the model. Second, there is a substantial and persistent union wage premium in Britain, but it is confined to women. This is the case in whole economy and private sector estimates. Third, only men benefit from higher union density. One possible interpretation of this union density effect is that unions use their bargaining power at the workplace to deliver wage increases for men, but not for women. Women do benefit, on average, from their membership since they receive a wage premium, but there is no additional benefit arising from the additional bargaining power with higher density. The fact that the union membership wage premium is confined to women is consistent with unions maximizing their members' benefits according to a median voter model, although we can not discount the possibility that union membership may be picking up the effects of women's unobservable traits that are correlated both with union membership and wages. The fact that increasing union density does not benefit women runs counter to the proposition that unions will use higher bargaining power to deliver greater benefits to their median voters, namely women.

Since bargaining takes place at the workplace level, a precise test of the median voter proposition requires information on the gender split of union members by workplace to distinguish majority male and majority female unions. WERS does not collect these data for all workplaces. However, we can identify circumstances in which the majority of union members are female at the workplace using membership data from the subset of employees who return an employee questionnaire. To minimize measurement error we run analyses for the subset of employees where all employees at the workplace submitted a questionnaire return. We pooled data for both years, given the low estimation sample (826 observations in 93 workplaces). This confirmed that, conditioning on individual union membership, women only received a wage premium associated with union density when a majority of union members were women. This premium was .44 log points raw (t=2.78) and .26 log points (t=1.67) conditioning on demographic and workplace characteristics. In the private

sector the figures were .55 log points raw (t=3.31) and .35 log points (t=2.06) with controls. However, this is an imperfect test given the non-random nature of this estimation sample.

In Norway, the raw gap between union members and non-members is substantial among women but the regression-adjusted differential is negligible: in 2004 it is 0.01 log points but by 2011 it has become zero (Table 1b). Among men a sizeable raw wage premium disappears with the addition of controls: men faced a union wage penalty of 0.02 log points in 2004 and no significant effect in 2011 (Table 2b). The individual union wage premia in 2011 are clearly not different for men and women, and the negative male premium in 2004 could be associated with 2003 being a bad year for the male-dominated export industries. However, and in contrast to Britain, the wages of both men and women rise substantially in workplaces with higher union density. In both cases this effect strengthens between 2004 and 2011. In the private sector the individual membership premium for both men and women was .55 log points raw (t=3.31) and .35 log points (t=2.06) with controls.

[Table 1b about here]

Both Britain and Norway face the challenge of gender labour market segregation, with Norway having slightly greater segregation than Britain (European Commission, 2009). One aspect of this is segregation across workplaces. Table 2 abstracts away from this by estimating the union wage returns for members in the same workplace based on workplace fixed effects models. These indicate a sizeable union membership premium for women only in Britain, whereas in Norway there is no significant effect of individual union membership for women's wages while male union members suffer a negligible wage penalty relative to their non-member counterparts, but only for 2004. The similarity between the OLS and workplace fixed effects models in the British and Norwegian analyses suggests that worker selection across workplaces plays little role in the determination of the union wage premium in either country.

[Table 2 about here]

For Norway only we are able to draw on panel linked employer-employee data to estimate the effects of changes in individual union membership and changes in workplace-level union density on employees' wages, and we can also identify whether unions are male-dominated or female-dominated. The results, presented in Table 3, indicate that women earn considerably less than men in the same workplace, but that this effect is ameliorated a little by being a union member, as indicated by the positive coefficient on the interaction between membership and being a woman in the first four columns. In workplaces where the union is female-dominated (column 3) women benefit more than men from the increased bargaining power of the union as union density rises. Where the union is male-dominated (column 4) men and women both benefit to a similar degree from rising union density (although there is a small negative premium for women where union density is under 75 percent).

[Table 3 about here]

One worry is that less productive workers would be more likely to join unions than more productive workers, to gain the protection associated with unions. The last four columns of Table 3 examine union effects on workers who have switched union status over time, and thus where we are able to completely control away fixed individual productivity differentials. Both men and women benefit from individual union membership under male-dominated unions only (column 4 vs column 3). However, where the union is female-dominated, increasing union density has a disproportionately large positive effect on women's wages, as indicated by the positive and statistically significant interaction terms in the penultimate column in Table 3. Men do not benefit in a similar fashion from male-dominated unionized workplaces (final column), where both men and women receive the same benefits from increasing union density.

Discussion and conclusion

Using nationally representative linked employer-employee data for Britain and Norway over the period 2003-2012, we find that in Britain there is a union wage premium of 6-7 percent for women but no premium for men. These findings are apparent in estimates for both the whole economy and the private sector only. However, higher union density only raises *men's* wages, not women's. Thus, in Britain, although women appear to benefit from their investment in union membership, there are no additional returns to being in a workplace where union bargaining power is strengthened through high density, raising questions about the extent to which unions are focused on using their organizational strength to tackle gender wage inequality.

Consistent with earlier research, for Norway we find little or no wage premium associated with individual union membership. Indeed, men experienced a small wage penalty of 1-2 percent in 2004, while women obtained a small premium of 1-2 percent, but for both this disappeared in 2011. Furthermore, albeit significant, the correlations in 2004 are economically minor, and are only significant due to the large number of observations. Still, these correlations could also reflect sorting and selection effects yielding productivity differentials, which then show up as premia or penalties.

However, wages of both men and women rise substantially in workplaces with higher density in Norway, consistent with the idea that union efforts to raise wages at workplace level result in a public good. Furthermore, the returns from increasing union density are larger for women than for men when the union is female-dominated, a finding that is consistent with the median voter model. This could indicate that although central agreements contain gender equality provisions, local support is still important.

The median voter model receives only limited support in Britain: only women receive a union membership wage premium and, in the small unrepresentative sample where we observe the gender composition of the union, women see their wages rise with union density. However, in general only men benefit from higher density, despite women being the median voters. The returns to union density are more equitably distributed in Norwegian workplaces where the union is male-dominated, perhaps reflecting unions' desire to address gender equity issues at the workplace. Furthermore, where unions are female-dominated, the wage premium attached to higher density is greater for women than for men, consistent with the median voter model. The findings might be interpreted as supporting claims made in the past that British unions adopt a paternalistic attitude to their membership. The results for Norway might be interpreted in quite a different way, as supporting the contention that unions there adopt a more progressive stance on gender, since higher union bargaining power at workplace level, as indicated by union density, benefits both men and women.

It is not only in Norway and Britain that women constitute an increasing proportion of union members. Unions across Europe face the challenge of servicing this new membership base and these members' preferences. The experience in Norway, in particular, may be good news for women since it appears that female-dominated unions are of particular benefit to women and may be able to play a particularly strong role in combatting the gender wage gap. However, reductions in union membership in many European countries will limit unions' ability to influence wage bargaining, potentially increasing gender wage inequality.

There are some important caveats to these tentative conclusions, however. First, this might change in the future. Women started dominating unions roughly ten years later in the UK than in Norway. Since it takes time for bargaining priorities to change, the apparently more egalitarian attitudes of Norwegian unions could just reflect their becoming female-dominated earlier. Second, we have concentrated solely on bargaining over wages. Other recent research for the UK suggests that unions have played an important role in securing better non-wage terms and conditions that are valued highly by women. Our focus therefore provides only a partial picture regarding unions' ability to deliver for female members, especially if there are gender differences in preferences for non-wage amenities. It is also worth recalling that women (like men) benefit in terms of both wage and non-wage benefits from employment in unionized workplaces, whether they are members or not, so they can benefit from the provision of union-generated public goods which they would not otherwise be able to obtain.

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References

Arnholz, J, Meardi G and Oldervoll J (2018) Collective wage bargaining under strain in northern European construction: Resisting institutional drift? *European Journal of Industrial Relations* 24(4): 341–356.

Artz B, Goodall AH and Oswald AJ (2016) Do Women Ask? Bonn: IZA Discussion Paper 10183.

Balsvik R and Sæthre M (2014), Rent sharing with Footloose Production. Foreign Ownership and Wages Revisited. Bertgen: NHH Discussion paper SAM 30-2014.

Barth E, Naylor R and Raaum O (2000) Union Wage Effects: Does Membership Matter? *Manchester School* 68(3): 259-275.

Beirne M and Wilson F (2015) Running with 'wolves' or waiting for a happy release? Evaluating routes to gender equality. *Work, Employment and Society* 30(2): 220–236.

Blanchflower D and Bryson A (2003) Changes over time in union relative wage effects in the UK and the US Revisited. In Addison J T and Schnabel C (eds) *International Handbook of Trade Unions*. Cheltenham: Edward Elgar, pp. 197 - 245.

Blanchflower D and Bryson A (2007) What Effect Do Unions Have on Wages Now and Would 'What Do Unions Do?' Be Surprised'. In Bennett J T and Kaufman B F (eds), *What Do Unions Do?: A Twenty-Year Perspective*. New Brunswick: Transaction Publishers, pp.79-113.

Blanchflower D G and Bryson A (2010) The Wage Impact of Trade Unions in the UK Public and Private Sectors. *Economica* 77(305): 92-109.

Booth A L (1994) *The Economics of the Trade Union*. Cambridge: Cambridge University Press.

Borghans L, Golsteyn B H H, Heckman J J and Meijers H (2009) Gender Differences in Risk Aversion and Ambiguity Aversion. Washington: NBER Working Paper 14713.

Bowles, H R, Babcock L, and McGinn K L (2005) Constraints and triggers: Situational Mechanics of Gender in Negotiations. *Journal of Personality and Social Psychology* 89(6): 951 – 965.

Brown W, Bryson A and Forth J (2009) Competition and the retreat from collective bargaining. In Brown W, Bryson A, Forth J and Whitfield K (eds) *The Evolution of the Modern Workplace*. Cambridge: Cambridge University Press, pp. 22-47.

Bryson A and Forth J (2016) Work-life balance and Trade Unions: Evidence from the Workplace Employment Relations Survey 2011. https://www.tuc.org.uk/sites/default/files/WERS%20study%20WLB%20SR%20format%20RS.pdf

Budd J and Mumford K (2004) Trade unions and family-friendly policies in Britain. *Industrial and Labor Relations Review* 53(2): 204-22.

Card D, Lemieux T and Riddell C W (2007) Unions and Wage Inequality. In Bennett JT and Kaufman BE (eds) *What Do Unions Do? A Twenty Year Perspective.* London: Transaction Publishers, pp. 114-159.

Charlwood A and Forth J (2009) Employee Representation. In Brown W, Bryson A, Forth J and Whitfield K (eds) *The Evolution of the Modern Workplace*. Cambridge: Cambridge University Press, pp. 74-96.

Dale-Olsen H (2002) *Kjønnsforskjeller i frysnsegoder, 1992-97*. Oslo: ISF-rapport 2002:4.
Dale-Olsen H, Strøm M, Østbakken K M, and Barth E (2018) *Avtaleformer, lønnsvekst og lønnsspredning*. Oslo: ISF-rapport 2018:5.
Department for Business, Innovation and Skills (2015) Trade Union Membership 2014. https://www.gov.uk/government/statistics/trade-union-statistics-2014
Dex S and Forth J (2009) Equality and Diversity at Work. In Brown W, Bryson A, Forth J and Whitfield K (eds.) *The Evolution of the Modern Workplace*. Cambridge: Cambridge University Press, pp. 230-255.
Dunlop J (1944) *Wage Determination Under Trade Unions*, New York: Macmillan
Dølvik J E, Marginson P, Alsos K, Arnholtz J, Meardi G, Müller T and Trygstad S (2018), Collective wage regulations in northern Europe under strain: Multiple drivers of change and differing responses. *European Journal of Industrial Relations*, 24(4): 321–339.
European Commission (2009) Gender Segregation in the Labour Market: Root Causes, Implications and Policy Responses in the EU. Luxembourg: Publications Office.
Flanders A (1961) Trade unions in the Sixties. *Socialist Commentary*, August.
Flanders A (1970) *Management and Unions: The Theory and Reform of Industrial Relations*. London: Faber.
Forth J and Bryson A (2015) *Trade Union Membership and Influence, 1999-2014*. NIESR Report, http://www.niesr.ac.uk/publications/trade-union-membership-and-influence-1999-2014#.VhKSc_m6eWg
Freeman R and Medoff J (1984) *What do Unions do?* New York: Basic Books.
Harkness S (1996) The Gender Earnings Gap: Evidence from the UK. *Fiscal Studies* 17(2): 1-36.
Healy G and G Kirton (2000), Women, Power and Trade Union Government. *British Journal of Industrial Relations* 38(3): 343 – 360.
Healy G and G Kirton (2013) The early mobilization of women union leaders – a comparative perspective. *British Journal of Industrial Relations* 51(4): 709 – 732.
Hicks J (1932) *The Theory of Wages*. New York: Macmillan.
Kirton G (2006) Alternative or parallel careers for women: The case of trade union participation. *Work, Employment and Society* 20(1): 47 – 66.
Kirton G (2015) Progress towards gender democracy in UK unions 1987 – 2012. *British Journal of Industrial Relations* 53(3): 484 – 507.
Metcalf D, Hansen K and Charlwood A (2001) Unions and the Sword of Justice: Unions and Pay Systems, Pay Inequality, Pay Discrimination and Low Pay. *National Institute Economic Review* 176: 61-75
Millward N and Woodland S (1995) Gender Segregation and Male/Female Wage Differences. *Gender, Work & Organization* 2(3): 125 – 139.
Müller T, Dølvik J E, Ibsen C and Schulten T (2018) The manufacturing sector: Still and anchor for pattern bargaining within and across countries? *European Journal of Industrial Relations* 24(4): 357 - 374.
Nergaard K (2014) *Trade Unions in Norway: Coordinated Wage Bargaining and Workplace Level Co-determination*. Berlin: Friedrich-Ebert-Stiftung.
Nergaard K, Andersen, R K, Alsos K and Oddervoll J (2018) *Fleksibel arbeidstid. En analyse av ordninger i norsk arbeidsliv*. Oslo: Fafo-rapport 2018:15.
Nergaard K, Bråten M and Ødegård A M (2013) *Kvinner i fagbevegelsen 2013, Representasjon i LO og forbundene*. Oslo: Fafo-rapport 2013:10.
Nergaard K, Dale-Olsen H and Barth E (2015) Lavere organisasjonsgrad, et spørsmål om nykommere? *Søkelys på arbeidslivet* 32(1-2): 91-110.
NOU (1997:10), *Arbeidsvurdering som virkemiddel for likelønn*. Oslo: Barne og likestillingsdepartementet.
Paraskevopoulou A and McKay S. (2015) *Workplace equality in Europe: The role of trade unions* Farnham: Ashgate.
Pemberton J (1988) A 'Managerial' Model of the Trade Union. *Economic Journal* 98(392): 755-771
Rosen S (1974) Hedonic Prices and Implicit Market: Product Differentiation in Pure Competition. *Journal of Political Economy* 82(1): 34–55.
Rosenfeld J (2014) *What Unions No Longer Do.* Cambridge:: Harvard University Press

Schnabel C (2013) Union Membership and Density: Some (Not So) Stylized Facts and Challenges. *European Journal of Industrial Relations* 19 (3): 255-272.
Schnabel C and Wagner J (2007) Union density and determinants of union membership in 18 EU countries: evidence from micro data, 2002/03. *Industrial Relations Journal* 38(1): 5-32.
Smith A (1776) *The Wealth of Nations*. London: Penguin Classics.
Slichter S, Healy J and Livernash R (1960) *The Impact of Collective Bargaining on Management*, Washington: Brookings Institution.
Stokke T A (2008) The anatomy of two-tier bargaining models. *European Journal of Industrial Relations* 14(1): 7 – 24.
World Economic Forum (2018) *Global Gender Report 2018*. Geneva: World Economic Forum.
Østbakken K M, Reisel L, Schøne P, Barth E and Hardoy I (2017), *Kjønnssegregrering og mobilitet i det norske arbeidsmarkedet*. Oslo: ISF-rapport 2017:09.

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Table 1a. Female and male union wage premium whole economy. Britain. OLS.

	Female				*Male*			
	No controls		Controls		No controls		Controls	
	2004	2011	2004	2011	2004	2011	2004	2011
Member	0.23***	0.19***	0.06***	0.09***	0.08***	-0.03	0.02	0.00
	(13.79)	(9.42)	(6.20)	(6.49)	(3.98)	(-1.23)	(1.40)	(-0.02)
Workplace union density (ref: 0%)								
1-24%			0.01	0			0.03	0.09***
			(0.77)	(0.03)			(1.50)	(3.82)
25-49%			-0.01	0.01			-0.01	0.05
			(-0.37)	(0.48)			(-0.41)	(1.49)
50-74%			0.02	0.03			0.05**	0.12***
			(1.00)	(1.18)			(2.04)	(4.01)
75-99%			0.02	0.02			0.06**	0.11***
			(0.99)	(0.72)			(2.49)	(3.71)
100%			0.05	0.02			0.03	0.14***
			(1.39)	(0.43)			(0.36)	(3.88)
r2	0.05	0.03	0.54	0.53	0.01	0	0.59	0.62
N	11165	10888	10974	10668	9809	8640	9682	8460

Controls: age (6 dummies); highest qualification (8 dummies); workplace tenure (5 dummies); usual weekly hours (5 dummies).
OLS workplace controls: 2-digit industry; located in capital city; N employees; N employees squared; 2-digit occupation; union density (7 dummies). t-statistics in parentheses.
Significance tests: * 90% ** 95% *** 99%

Table 1b. Female and male union wage premium whole economy. Norway. OLS.

	Female				*Male*			
	No controls		Controls		No controls		Controls	
	2004	2011	2004	2011	2004	2011	2004	2011
Member	0.18***	0.20***	0.01***	-0.00	0.12***	0.17***	-0.02***	-0.00
	(52.52)	(60.46)	(5.16)	(-1.44)	(17.08)	(23.59)	(-5.80)	(-1.36)
Workplace union density (ref: 0%)								
1-24%			0.02***	0.06***			0.04***	0.08***
			(3.91)	(9.46)			(7.10)	(13.95)
25-49%			0.09***	0.14***			0.08***	0.15***
			(14.04)	(20.11)			(8.70)	(21.10)
50-74%			0.16***	0.23**			0.10***	0.17***
			(26.04)	(34.86)			(13.50)	(21.32)
75-99%			0.15***	0.23***			0.12***	0.18***
			(22.95)	(29.67)			(13.91)	(18.72)
100%			0.12***	0.18***			0.13***	0.22***
			(17.84)	(24.62)			(13.62)	(24.37)
r2	0.03	0.04	0.22	0.26	0.01	0.03	0.30	0.30
N	880009	1003065	880009	1003065	907684	1043414	907684	1043414

Source: Norwegian tax authorities' employment registers.
See Table 1a on controls.

Table 2: Female and male union wage premium whole economy. Britain and Norway. Workplace fixed effects with controls.

	Britain				*Norway*			
	Female 2004	Female 2011	Male 2004	Male 2011	Female 2004	Female 2011	Male 2004	Male 2011
Member	0.06***	0.07***	0.00	0.00	0.02***	0.00	-0.02***	-0.01***
	(5.72)	(4.70)	(-0.10)	(-0.13)	(8.60)	(-1.84)	(-5.89)	(-4.94)
r2	0.67	0.66	0.73	0.76	0.35	0.45	0.47	0.51
N	10974	10668	9682	8460	880009	1003065	907684	1043414

Notes: see Table 1a and b.

Table 3: Female and male union wage premium whole economy. Norway.

	Within workplace (Workplace FE)				*Within individual (Worker FE)*			
	No Union density	Union density	Female dominated	Male dominated	No Union density	Union density	Female dominated	Male dominated
Woman	-0.13***	-0.14***	-0.15***	-0.14***				
	(-87.45)	(-46.23)	(-45.70)	(-44.40)				
Member	-0.01***	-0.01***	-0.02***	-0.01***	0.07***	0.02***	0.01	0.02***
	(-5.47)	(-2.65)	(-5.96)	(-3.73)	(17.63)	(6.21)	(0.94)	(4.03)
WomanX Member	0.02***	0.01*	0.02***	0.02***	-0.02***	-0.03***	-0.00	-0.01
	(8.16)	(1.76)	(6.51)	(7.16)	(-4.84)	(-7.49)	(-0.25)	(-0.83)
Workplace union density (ref: 0%)								
1-24%		-0.02***	-0.04***	-0.01**		0.01**	-0.01	0.01**
		(4.71)	(-5.34)	(-2.45)		(2.22)	(-0.84)	(2.23)
25-49%		-0.02***	-0.05***	-0.00		0.07***	0.06***	0.06***
		(2.56)	(-3.40)	(-0.37)		(11.41)	(5.45)	(8.04)
50-74%		-0.01	-0.05***	0.01		0.14**	0.16***	0.11***
		(1.45)	(-3.31)	(1.02)		(23.78)	(14.00)	(14.99)
75-99%		-0.01	-0.04***	0.02		0.15***	0.17***	0.13***
		(1.10)	(-2.62)	(1.35)		(23.01)	(14.01)	(13.93)
100%		0.00	-0.02	0.02		0.16***	0.16***	0.13***
		(0.01)	(-1.46)	(1.52)		(19.12)	(11.00)	(11.46)
WomanX 1-24%		-0.00	0.01**	-0.01***		-0.00	0.01	0.01
		(1.15)	(2.23)	(-3.35)		(-0.35)	(0.52)	(0.46)
WomanX 25-49%		0.01	0.04***	-0.03***		0.04***	0.06***	0.00
		(1.43)	(8.48)	(-5.22)		(4.66)	(4.33)	(0.38)
WomanX 50-74%		0.03***	0.06***	-0.01***		0.08***	0.09***	0.01
		(7.07)	(10.25)	(-2.62)		(11.14)	(6.85)	(0.52)
WomanX 75-99%		0.03***	0.05***	-0.01		0.09***	0.10***	0.00
		(8.41)	(9.78)	(-1.31)		(10.41)	(7.64)	(0.17)
WomanX 100%		0.03***	0.04***	-0.01		0.08***	0.10***	-0.00
		(6.34)	(7.59)	(-1.46)		(8.24)	(6.54)	(-0.20)
r2	0.59	0.59	0.57	0.61	0.86	0.86	0.89	0.91
N	3834172	3834172	2207218	1986420	3834172	3834172	2207218	1986420

Source: Norwegian tax authorities' employment registers.
See Table 1a on controls.