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**Union Decline in Britain**

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**Abstract**

This paper investigates the demise of unionisation in British private sector workplaces over the last quarter century. We show that dramatic union decline has occurred across all types of workplace. Although the union wage premium persists it is quite small in 2004. Negative union effects on employment growth and financial performance are largely confined to the 1980s. Managerial perceptions of the climate of relations between managers and workers has deteriorated since the early 1980s across the whole private sector, whether the workplace is unionised or not.

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## Introduction

Declining trade union density is a feature of most, though not all, developed countries in the last quarter century (Ebbinghaus and Visser, 1999; Visser, 2003). Although unionization remains an important feature in public sector employment, unions' decline in the private sector has been rapid. Britain is no exception: it has seen a substantial decline in the propensity of workers to join unions and a fall in the incidence of workplace-level union recognition by employers for pay bargaining. It is often assumed that union decline is an inevitable consequence of structural change in the economy and, in particular, the demise of large-scale manufacturing plants. Of course, decline in once strong union bastions of the economy has deprived unions of members, but employer engagement with unions is not purely a function of industry location. Rather, in the voluntarist climate that prevailed until recently, it was an employer choice, albeit a constrained one influenced by employer and worker bargaining power. Further, it does not necessarily follow that unions will be unable to colonise new workplaces and new occupations. It is also assumed that union decline must, inevitably, entail a diminution in the effects unions have on workers and firms. Of course the effects of unions on workers and firms across the economy will diminish with a decline in their incidence. But, *a priori*, it is unclear what effect unions will have on those workplaces that remain unionized. Unions' effects will depend on their ability to do what they have traditionally done, namely bargain on behalf of their members using their ability to restrict the supply of labour as a bargaining tool, and to act as the representative voice of workers to management (Freeman and Medoff, 1984). Whether unions are able to do so depends on which unions remain – the strong ones, the weak ones, or perhaps a mixture of the two. Their effects also depend upon firms' preparedness and ability to either resist union demands or accommodate them.

Figure 1 reports data on the hundred year trends in union density rates in the UK, the USA and Canada. It is apparent that all three countries saw a rising trend with a peak at the end of World War 1 and another at the end of the Second World War. The UK and Canada saw further increases during the 1960s and 1970s. Both the UK and the US have experienced dramatic declines in density since the late 1970s. The US decline started in the 1950s and predates that of the UK that started around 1980, the year in which the first Workplace Industrial Relations Survey was conducted.

There have been somewhat different trends in the public and private sectors in the three countries. Table 1 provides details of changes in overall density rates as well as in the public and private sector by year since 1993 for Great Britain. Both the Labour Force Surveys and Workplace Industrial Relations Surveys show declines in union density in the private and the public sectors.

In this paper we examine the decline in unionization in the **private sector** and consider the role played by compositional change in workplaces. We then move on to look at changes in the impact of unions on four outcomes: wages, employment growth, financial performance and the climate of relations between managers and workers. Our primary data source is the five Workplace Industrial Relations Surveys conducted in 1980, 1984, 1990, 1998 and 2004. These cover workplaces that employ at least 25 employees, either full or part-time. However, this threshold was lowered in the more recent surveys so, for some investigations, we include workers in workplaces with 5 or more employees. The 25-employee selection rule means that the survey covers roughly two-thirds of employees each year. These surveys exclude the

self-employed, who were approximately 13% of workers over the period (Blanchflower and Shadforth, 2007),

Our main finding is that the negative effects of unions observed in the 1980s has diminished and, in most instances, disappeared. There is evidence that unions still have a significant impact on wages, but the size of this effect is quite small, especially in larger workplaces. We also find statistically significant evidence that unions negatively affect employment growth, financial performance and the climate of relations between employees and managers. This evidence is strongest when examining the WIRS surveys for the early 1980s but is also present when all five of the WIRS data files are pooled and, in the case of employment growth and industrial relations climate, we cannot reject the possibility that there has been no significant time trend. However, unionised workplaces have closed the financial performance gap on non-unionised workplaces. It would appear that union power has diminished somewhat over the years since Margaret Thatcher took on the unions in the early 1980s. In this respect, industrial relations in Britain is quite different from what it was like when the first WIRS was carried out by Bill Daniel and Neil Millward in 1980 (Daniel and Millward, 1981). Nevertheless, union effects have not totally disappeared.

## **1. The Decline of Private Sector Union Recognition**

If one wishes to divide workplaces into those that are unionised and those that are not, the simplest method is to establish whether the employer recognises one or more unions for pay bargaining. In WERS union recognition relates to whether one or more unions are recognised for purposes of bargaining over pay and/or conditions for one or more groups of workers at that workplace. This coverage may arise from an agreement at workplace, organisation or industry-level.

Table 2 reports union recognition rates in the private sector in 1980 and 2004 by workplace characteristics. The most striking finding is that union recognition has fallen precipitously across every workplace characteristic – no sector or group has been immune. The decline in recognition rates has been greatest in ‘Energy and Water’, the East and West Midlands and the biggest workplaces, all of which experienced declines of over 40 percentage points. Declines were smallest in ‘Other Services’ (-5 percentage points) and East Anglia (-7 percentage points) where unionisation rates have traditionally been very low. In both 1980 and 2004 the workplaces with the lowest union recognition rates were single independent establishments. Workplaces in ‘Energy and Water’ were the most heavily unionised at the beginning and the end of the period, despite experiencing rapid de-unionisation.

Nineteen-eighty appears to have been a watershed in workplace union recognition, as well as union membership density. The recognition rate among workplaces set up prior to 1980 is double that for workplaces set up in the 1980s onwards. Millward *et al* (2000: 101-103), commenting on this cohort effect, speculated that the move away from union recognition may, in fact, have started much earlier, perhaps as early as the early post-War period. But Table 2 points to another interesting phenomenon, namely the decline in union recognition among workplaces set up before 1980. Their union recognition rate fell from 50 percent in 1980 to 32 percent in 2004 – a decline of just over one-third. There has also been a decline in union recognition rates among those set up in the 1990s: in 1998 their recognition rate was 20

percent but this had fallen to 15 percent by 2004.<sup>1</sup> This is surprising. It is often argued that union de-recognition is a rare occurrence in Britain, and that the demise of unions is largely accounted for by new workplaces choosing not to recognise trade unions (Willman et al., 2007). The evidence here suggests that this is not the whole story by any means. Workplace closure rates are largely unaffected by unionisation (Machin, 1995; Bryson, 2004a; Bryson and Dale-Olsen, 2008) so that much of the decline in the unionisation rate among older workplaces may be due to union de-recognition.<sup>2</sup> More important though, is that new workplaces are being born that are primarily non-union.

To establish the independent effect of workplace characteristics on union recognition we run linear probability models of union recognition using Ordinary Least Squares estimation for each of the five years of data pooled together (Table 3, column 1) and then separately for each year in the remaining columns. These equations estimate the probability of a randomly selected workplace being unionised, conditional on its characteristics. The models account for roughly one-fifth of the variance in union recognition in Britain. The results are broadly consistent with those reported above based on the descriptive means. There has been a decline in the probability of union recognition with time, primarily between 1980 and 1998, but since then there has been little change; indeed, the difference in coefficients between 1998 and 2004 is not statistically significant ( $t=1.17$ ),

There are substantial and persistent industry differences: ‘Distribution, Hotels and Catering’ has by far the lowest probability of unionisation, while ‘Energy and Water’ has the highest. There are also sizeable region effects in all years with the probability of unionisation being the lowest in the South East of England. Throughout the period the probability of recognition tends to rise with workplace size, but the effect has weakened a little over time. The negative effect of being a single independent establishment, on the other hand, has remained strong a persistent over time, reducing the probability of recognition by around one-quarter. The table also includes three variables capturing the workforce composition at the workplace, namely the percentage of females, the percentage of part-timers and the percentage of non-manual workers. In the early period the probability of union recognition was lower in workplaces with a high proportion of non-manual workers and those with a high proportion of female employees. However, these effects have disappeared over time, mirroring the disappearance in the union membership gap between males and females and manual and non-manual workers (Bryson and Gomez, 2003),

It is sometimes argued that union decline is largely due to death of old industries and large workplaces which were once bastions of unionism. Table 2 showed that this is far from being the whole story since union recognition declined across all sectors and types of workplace. To establish how much of the decline is accounted for by compositional change we use the models in Table 3 to predict what the recognition rate would have been if the composition of workplaces had remained constant since 1980. The results are presented in Table 4. Roughly one-third of the twenty-eight percentage point decline in private sector union recognition is attributable to changes in workplace characteristics that are contained in the model. The remaining two-thirds of the decline is not related to the structure of

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<sup>1</sup> Substantial declines are also apparent among workplaces set up in the 1980s. The union recognition rate was 47 percent among this group in 1980-84 but this had fallen to 16 percent by 2004.

<sup>2</sup> Bryson (2004a) finds some evidence of a positive union effect on workplace closure, but the effect is sensitive to the closure measure used.

workplaces or their workforce composition, but to ‘within-group change’ which might be interpreted as the choices employers make, conditional on their observable characteristics. This finding is consistent with studies which suggest that a large part of the decline in unionisation is due to employers turning their back on trade unions – preferring to ‘go’ or ‘remain’ non-union (see, for example, Bryson et al., 2004). One possible reason for this might be the damage that employers feel unions might do at the workplace, an issue to which we now turn.

## **2. How Have Union Effects on Workplaces Changed Over Time?**

What are the implications of this massive decline in unionisation for union effects on workplace outcomes such as wages, performance and climate? We need to distinguish between their effects on unionised workplaces, on the one hand, and their effects on the non-union sector on the other.

The effect unions have on unionised workplaces arises from the direct impact they have on pay determination and as a ‘voice’ mechanism (Freeman and Medoff, 1984). A priori it is unclear what the effects of shrinkage in the union sector will be on those workplaces that remain unionised. Are the unions that remain the strongest ones – as would be the case if the weak had ‘gone to the wall’? Alternatively, are the ones that remain the ineffectual unions that have such a minimal impact that employers are happy to let them simply “whither on the vine”? The effects of this decline will depend in large part on the bargaining strength of the unions that remain compared to their strength back in 1980. Although it is often asserted that unions have less influence and bargaining power than they used to, the remark is usually made when discussing aggregate outcomes at the level of the economy.

There are two schools of thought regarding the bargaining power of unions at workplace level. The first is that most of that power has gone, primarily because of increased competition from the growing domestic non-unionised sector and lower labour cost competitors elsewhere in the world. The result is that any union success in bargaining above market wages and conditions will erode the firm’s competitive advantage, unless those additional costs can be recouped with improved productivity. In this narrative, the only reason unions remain in place at all is because employers don’t need to take account of them and may, in some instances, find them useful in effecting workplace changes. They are, to some degree, “hollow shells”.

The second school of thought is that, whilst the first story is often true, there are plenty of instances in which unions continue to monopolise the supply of labour to firms which are less dependent on cost-based comparative advantage for their profits. These firms include those in highly regulated sectors and those facing little or no domestic or foreign competition. Indeed, some argue it is only those unions that are strong who have been able to survive union decline. WIRS data for the period through to 1998 suggested that there was a bifurcation of union strength in British workplaces: some unions continued to show signs of organizational strength in terms of high membership and high collective bargaining coverage, but there was a long tail of weaker unions (Millward et al., 2000, Chapter 5),

When Freeman and Medoff addressed the question ‘what do unions do?’ they concluded that they ‘compressed things’ – not just wages, but other things too. However, union behaviour may spill over into the non-union sector through two counter-veiling forces. First, it may

produce employment spill-over from the union to the non-union sector by setting above-market terms and conditions which lead to union job loss. This results in a queue for jobs in the non-union sector that employers can use to their advantage to keep terms and conditions lower than they might otherwise be. This depresses conditions in the non-union sector. On the other hand, the possibility that workers may unionize in order to obtain union-like conditions means non-union employers pay higher wages than they might otherwise have paid in the absence of unions due to the threat of unionisation (Rosen, 1969). The massive decline in unionization has important implications for employment-related outcomes in the non-union sector because it may affect the size and extent of employment spill-over and threat effects. When unions are prevalent and strong – as they were in the early 1980s – these effects can be expected to be very marked. However, when unions are largely absent, as is now the case in much of the private sector, one would expect these union spill-over and threat effects to be muted, and that is what we see.<sup>3</sup>

How are union effects estimated? Let us take the example of wage effects. Usually union effects are estimated as  $(W_u - W_n)/W_n$  where  $W_u$  is wages in the union sector and  $W_n$  is wages in the non-union sector. However, the overall union effect can only be estimated relative to a scenario in which unions are wholly absent. This scenario – which can be written as  $(W_u - W_a)/W_a$  where  $W_u$  is wages in the union sector and  $W_a$  is wages in the same economy absent unions – is coming closer in Britain, especially when one considers the tail of small firms that are invariably non-union which don't appear in WIRS. Nevertheless a union sector still exists so union activity may still affect the non-union sector. These effects on the non-union sector can be thought of as  $(W_n - W_a)/W_a$  where  $W_n$  is the wage in the non-union sector. As noted above, these effects on the non-union sector may be either positive or negative: it is an empirical question.

This framework can be extended using the same formulation to estimate the impact of unions on other outcomes over and above wages. The literature on this is extensive (Bennett and Kaufman, 2007). With these thoughts in mind, the remainder of the section considers the impacts of unions in Britain on the following; a) wages b) employment growth c) financial performance and d) the climate of employment relations over time. We do not seek to distinguish between unions' direct effects on the union sector and their spill-over and threat effects in the non-union sector. Our estimates can be interpreted as the net impact of these effects combined.

## 2.1. Wages and salaries

Early studies examined the impact of union recognition on wages using the 1980 (Blanchflower, 1984; Blanchflower, 1986; Stewart, 1987) and 1984 WIRS surveys (Blanchflower, Oswald and Garrett, 1990). These studies indicated that the effect of unions on wages differed across types of worker, with manual workers tending to receive a higher union premium, driven in part by the closed shop. Since then, of course, the closed shop has disappeared, workplace-level union density has declined and it has become increasingly

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<sup>3</sup> We can gauge the decline in the union threat effect from the predicted probability of union recognition among non-union workplaces using the models reported in Table 3. Under these models, the mean predicted probability of union recognition among non-union workplaces fell from 37 percent in 1980 to 18 percent in 2004. This halving of the threat effect is of a similar magnitude to the actual fall in workplace union recognition over the period. Another sort of 'spill-over' discussed less frequently is that arising from the extension of collectively bargained terms and conditions to the non-union sector through statutory extensions. These used to take the form of Fair Wages Resolutions and Schedule 11 of the Employment Protection Act.

difficult for unions to monopolise the supply of labour to firms (Millward et al., 2000). The demise of the union sector and attenuation in union bargaining power might have resulted in a lower threat effect on wage setting in the non-union sector. In spite of these developments union threat effects continued to raise the wages of workers in the non-union sector in the 1998 WIRS (Belfield and Heywood, 2001). What is more, union members continue to earn higher wages than non-members controlling for other factors. Although the premium has diminished in recent years (Blanchflower and Bryson, 2007) it seems that the decline is at least, in part, a counter-cyclical rather than a secular decline.<sup>4</sup>

Estimates of the union wage premium in the first three WIRS relied on managers' responses to questions on wages and unionisation relating to 'typical' workers from a variety of skill groups such as semi-skilled and skilled manuals, clerical workers and middle managers. Since 1998 the surveys have provided linked employer/employee data which allows us to estimate the impact of union membership and union recognition on employees' wages at the level of the individual. Table 5 reports estimates of the union membership and union recognition wage premium in the private sector using WIRS 2004. The first three columns estimate union effects on the traditional WIRS population in workplaces with at least 25 employees. The remaining columns run the same estimates for the population in smaller workplaces with 5-24 employees traditionally omitted from WIRS.

In the traditional WIRS population of employees in workplaces with at least twenty-five employees the union membership premium is around 8 per cent, dropping to 5-6 per cent with the inclusion of detailed individual job and workplace controls. However, there appears to be no premium associated with union recognition. This finding is robust to the exclusion of the union membership variable. If one compares the wages of union members with non-members in the same workplaces (by replacing the workplace controls with workplace fixed effects) the premium attached to membership is 4 per cent.<sup>5</sup> These findings suggest that the union wage premium attached to workplace union recognition identified in analyses of early WIRS surveys has disappeared. However, there remains a small but statistically significant premium associated with union membership. The picture is rather different among the smallest workplaces with 5-24 employees. Here the raw union membership premium is 20 percent but falls by half when controls are added. It remains 8 percent when union recognition is added. Although there is no premium attached to union recognition in models incorporating union membership, if union membership is removed much of the premium attached to it transfers to the union recognition variable.<sup>6</sup> If one replaces the workplace-level variables with workplace fixed effects the membership premium in workplaces with 5-24 employees is 8 percent. There are three striking conclusions. First, the exclusion of the smallest workplaces from the traditional WIRS sample results in an underestimate of union effects on wages. Second, the union recognition wage premium is confined to the smallest workplaces. Third, union membership continues to generate a wage premium.<sup>7</sup>

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<sup>4</sup> Blanchflower and Bryson (2003) find evidence for a counter-cyclical union wage premium in Britain and the United States in the last three decades of the Twentieth Century.

<sup>5</sup> The membership coefficient is 0.040 ( $t=4.13$ ),

<sup>6</sup> In the small workplace model with controls, but excluding membership, the union recognition coefficient is 0.061 ( $t=2.45$ ),

<sup>7</sup> To establish whether there was any union threat effect we ran estimates for workers in non-unionised workplaces incorporating the predicted probability of workplace union recognition as an explanatory variable. It was not statistically significant.



Table 6 produces equivalent evidence from the Autumn Labour Force Surveys (LFS) which provide information on both wages and union membership status since 1993. The premium has fallen a little from around 6 percent in 1993-99 to 3 percent in 2000-2006. Among the traditional WIRS population of employees in workplaces with 25 or more employees the premium has fallen from 4-5 percent to a mere 1 percent. As in the case of the WIRS 2004 analysis, the premium is bigger among those in smaller workplaces. In the LFS the membership premium among those in workplaces with fewer than 25 employees is 11% in 1993-99 and 9% in 2000-2006. Thus the decline in the premium since the early 1990s is largely confined to those in the WIRS workplace population. It is unclear why the membership wage premium should be much larger in smaller workplaces throughout the period.

## 2.2. Employment growth

The WIRS literature on unions' employment effects has focused on changes in workplace employment levels in the private sector. Early studies used retrospective data from managers on employment levels in earlier years to estimate union effects on employment change. More recent studies have begun to use the WIRS panel data to obtain more accurate information. A priori, union effects on employment growth are ambiguous. The higher wage costs associated with trade unions might induce employers to substitute capital for labour, such that employment levels are lower in the union and the non-union sector. On the other hand, if unions' ability to capture rents discourages capital investment this may limit capital substitution. If unions improve productivity, thus enhancing firms' competitiveness, it is conceivable that employment levels and growth will be higher in the union than the non-union sector. In spite of these conflicting theoretical propositions studies tend to find that the average effect of union recognition is to lower employment growth by 2.5-4 per cent per annum relative to non-union workplaces, *ceteris paribus* (Blanchflower, Millward and Oswald, 1991; Machin and Wadhwani, 1991; Bryson, 2004b; Addison and Belfield, 2004). This has led some analysts to refer to the employment effect of unions as the 'one constant' in studies of unions' economic effects (Addison and Belfield, 2004),

In all years except 1980, mean workplace-level employment growth was positive (Table 7, row 1). In every year employment growth was faster in non-union than union workplaces (rows 2 and 3). Following the WIRS tradition, Table 7 presents unweighted estimates of union effects on employment levels at the time of the survey. The raw unadjusted gap is statistically significant in three of the five years (row 4). The regression analysis in row 5 conditions on the same workplace features as those used in the analyses of financial performance, but replaces establishment size dummy variables with continuous lagged employment one year previously (see the table footnote for details). This regression-adjusted gap (which controls for other workplace characteristics) is only significant in 1984. This is a surprising result since it runs counter to the general view that there is a robust negative association between unions and employment growth. However, we formally tested for a trend in union effects over time by interacting union recognition with year dummies in the pooled analysis. They were not jointly significant. Nor were the interactions significantly different from the 1980 base year. Thus we are unable to reject the hypothesis that there has been no significant change in the underlying negative union effect apparent in the pooled regression. The conclusion we draw from this is that there is evidence from the whole period 1980-2004 that unions have lowered employment growth, driven primarily by changes in the

early 1980s. The evidence from the later period suggests that there are no effects but we do not find significant year\*union interactions, mostly because of the large standard errors of the estimates from the later years.<sup>8</sup> The final column pools the three later years, and even though there is a significant raw union gap this disappears when controls are included. It appears that there are no union employment effects in the data since 1990. The result was the same when we experimented using union density rather than recognition.

### **2.3. Financial performance**

Unions enhance productivity where management are supportive of the union (Freeman and Medoff, 1984; Bryson et al., 2006) and where they are associated with high-performance management practices (Bryson et al., 2005). Unions also appear to have closed the productivity gap with the non-union sector in the 1980s (Bryson et al., 2005). Nevertheless, the broad consensus is that British unions have either a negative or benign effect on labour productivity (Metcalf, 2003; Pencavel, 2003). If unions are generally unable to pay for the union wage premium with better productivity than the non-union sector, this implies that unions may hit company profits. Their actions may adversely affect profits in other ways too. For instance, their ability to capture rents might reduce firms' incentives to invest, while industrial action can damage the reputation of a firm with customers or directly affect its ability to sell goods or services (for a review see Metcalf, 2003). For these reasons one might expect unions to have an adverse impact on firms' financial performance.

Since 1980 WIRS has asked managers: 'Compared with other establishments in the same industry how would you assess your workplace's financial performance?' Respondents choose an answer on a five-point ordinal scale from 'a lot above' to 'a lot below' average. This subjective measure given by employment relations' managers is not ideal. However, it is a reasonable measure of performance in that it is predictive of subsequent closure probabilities and does not appear to be systematically biased with respect to union measures (Machin and Stewart, 1996). It is this measure that has been exhaustively analysed over the last quarter century (for reviews see Metcalf, 2003; Bryson, Forth and Kirby, 2005). Early studies found unions were negatively associated with workplace financial performance in the 1980s (Blanchflower and Oswald, 1988). By WIRS 1990, the relationship between unions and financial performance was highly contingent on unions' interaction with other factors such as market conditions, workplace practices, firm size and union strength (McNabb and Whitfield, 1997; Bryson, 1999; Addison et al., 2000; Machin and Stewart, 1996). By 1998, most studies were finding no significant relationship (Bryson and Wilkinson, 2002; Addison and Belfield, 2001), leading to speculation that unions' ability to extract rents from firms has diminished.

Differences in methodologies across studies make it difficult to be sure about trends in the association between unionisation and workplace financial performance. We overcome this problem in Table 8 which compares union/non-union differences in financial performance for each WIRS survey using an identical approach (see footnotes to the table for details). Row 1 shows the score for all workplaces in each WIRS survey: every year, on average, workplaces score themselves above average. Rows 2 and 3 present the means for union and non-union workplaces. Managers in unionised workplaces tend to score their workplaces more poorly than managers in non-union workplaces, but the raw gap is not significant after 1984 (row 4). This gap may be due to differences between union and non-union workplaces rather than to

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<sup>8</sup> The 95 percent confidence intervals for the union recognition point estimates were as follows: 1990 -.03 to +.02; 1998 -.04 to +.01; 2004 -.04 to +.02.

unionisation itself, so in the final row we present regression-adjusted estimates of the gap. The pooled analysis for all years shows a strong negative union effect having controlled for the observable features of workplaces detailed in the footnote to the table. However, there has been considerable change over time in the relative performance of union and non-union workplaces. The final column, which pools the last three years, confirms the view that there is no union effect on financial performance once controls are included and only weak evidence of any effect when they are not. This story tends to reflect the one emerging from the literature to date. Unions were associated with poorer financial performance in the early 1980s, but this difference has since disappeared due to an improvement in the relative position of unionised workplaces (rather than deterioration among non-unionised workplaces),<sup>9</sup>

#### **2.4. Employment relations climate**

Unions may have an adverse effect on managerial perceptions of climate where the bargaining process creates a ‘them and us’ mentality. On the other hand, some employers value the role performed by unions and view it as a means of achieving more harmonious employment relations. At the beginning of the WIRS series unions were notorious for industrial action. WIRS played an important role in furnishing policy makers and academics with a range of climate-type measures to aid understanding of what engendered better employment relations in the workplace. Among these measures was a question asked of managers which has been asked in every WIRS: ‘how would you rate the relationship between management and employees generally at this workplace?’ Respondents are asked to rate relations on a 5-point scale from ‘very good’ to ‘very poor’. This measure is associated with other climate measures (industrial action, the number of employment tribunal cases, sanctions against employees, days lost through sickness and absence) in the way one would imagine (Bryson, 2005; Kersley et al., 2006),

Management perceptions of climate indicate an improvement in employment relations since 1990 but relations appear poorer than they were in the early 1980s. In both the union and non-union sectors the percentage of managers characterising employment relations as ‘very good’ fell by 16 percentage points between 1980 and 2004 (Table 9). Of course, it is possible that the norms and expectations governing what constitutes a ‘good’ climate have shifted, in which case it would not be possible to infer change in the real world based on these perceptions. The table also shows that, whereas managerial perceptions of climate were poorer in union workplaces than in non-union workplaces in 1980-1990, the gap disappeared in 1998, only to open once again in 2004.

Table 10 takes this descriptive analysis a stage further by isolating the independent effect of union recognition having controlled for other workplace characteristics. The 5-point scale is collapsed into a 3-point scale where higher scores indicate better relations (see the footnotes to the table for details),<sup>10</sup> The descriptive means in row 3 show that in the non-union sector managerial perceptions of climate deteriorated markedly between 1980 and 1990 levelling

<sup>9</sup> We formally test for a trend in union effects over time by interacting union recognition with year dummies in the pooled analysis. The interaction effects for later years are statistically significant relative to 1984 (for 1990, .396,  $z=2.08$ ; for 1998 .500,  $z=2.67$ ; and for 2004 .366,  $z=1.91$ ). This is confirmed in analyses for the period 1984-2004 which use the 5-point financial performance scale available only in those years.

<sup>10</sup> The results reported here are replicated when we use of a four-way climate variable that distinguishes between ‘poor’, ‘average’, ‘good’ and ‘very good’.

out thereafter. The means in row 2 show that, in the union sector, perceptions of climate fell between 1980 and 1990, but then improved somewhat in 1998 before deteriorating once again by 2004. The raw gaps in perceived climate are sizeable and statistically significant in all five years. However, some of the union-non-union difference is accounted for by differences in the characteristics of workplaces in the two sectors. When these differences are taken into account the regression-adjusted gap was only statistically significant at conventional levels for the three years 1980, 1984 and 1990. The gap was not statistically significant in 1998 and 2004. This suggests that unions may not be as detrimental to the climate of employment relations as is often portrayed. However, one has to be cautious when drawing such a conclusion. We formally tested for a trend in union effects over time by interacting union recognition with year dummies in the pooled analysis. They were not jointly significant at conventional levels. Nor were the interactions significantly different from the 1980 base year.<sup>11</sup> Thus we are unable to reject the hypothesis that there has been no significant change in the underlying negative union effect apparent in the pooled regression. Indeed, even in the final column that pools the last three years there is statistically weak evidence ( $t=1.76$ ), of a negative, although smaller, union effect than was observed pre-1990. What is clear is that if managers thought that union decline would bring about a general improvement in the climate of employment relations they were wrong. Indeed, *managerial perceptions of climate have deteriorated considerably since the early 1980s across the whole private sector, whether the workplace is unionised or not.* As noted above, this deterioration seems to have occurred in the 1980s, with perceptions recovering a little since then, but remaining well below the perceptions of good climate in the early 1980s.

To establish whether this finding was peculiar to the managerial perceptions of WIRS respondents we ran regressions using the British Social Attitudes Surveys for all employees in employment working 10 or more hours over the period 1983-2005. The means in the first row of Table 11 show employees' perceptions of the climate of worker/employee relations deteriorated over the period in the 1980s and 1990s but have since recovered.<sup>12</sup> This pattern is apparent in both unionised and non-unionised workplaces though, in the case of non-unionised workplaces perceptions remain less positive than they were in the early 1980s. Throughout the period perceptions of climate were poorer among employees in unionised workplaces than they were among those in non-unionised workplaces. The raw gap (row 4) is partly explained by observable differences in the characteristics of workers, their jobs and their workplaces, but the regression-adjusted difference remains significant (row 5). Thus, contrary to the WIRS analysis, these findings point to a persistent negative union effect on climate perceptions although, as suggested in the WIRS analysis, the gap between unionised and non-unionised workplaces appears to be closing.

### 3. Conclusion

This paper has investigated the demise of unionisation in Britain over the last quarter century and the impact this has had on workplace industrial relations and performance. We have shown that union decline is only partly due to compositional change among workplaces. Indeed, most of the decline is 'within-group' change and can be observed among all segments of the British workplace population. This is the first attempt to investigate workplace union

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<sup>11</sup> The 95 percent confidence intervals for the union recognition point estimates were as follows: 1998 -.27 to +.26; 2004 -.45 to +.14.

<sup>12</sup> Drinkwater and Ingram (2005) found a U-shaped trend in perceptions of climate using BSA through to 2000.

effects using a standard estimation approach to look at identical outcomes over the last quarter century. Theoretically the effects of union decline on workplace outcomes are ambiguous. The empirical evidence is also somewhat ambiguous.

Union effects that are often taken as given – such as negative impacts on employment growth, financial performance and industrial relations climate – are not as evident in the more recent data as we might have imagined. Although this may be because stronger unions with the power to disrupt business operations have died away, there is no evidence for this. Indeed it seems that, if anything, the association between workplace closure and unionisation in the 1990s was most evident where unions were weaker. The alternative possibility is that unions have generally adopted a more collaborative approach to employers. When we formally test for time trends they are statistically significant in the case of financial performance, showing a relative improvement of unionised workplaces relative to non-unionised workplaces since 1984, but they are not significant in the case of employment growth or climate. Thus, in the case of growth and climate we can not reject the hypothesis that there has been no significant change in the underlying negative union effects apparent in the pooled regressions. This might seem surprising if one considers the point estimates each year. But sample sizes are not large enough to precisely determine whether these estimates are significantly different from one another: confidence intervals for the point estimates are simply too large. Union wage effects persist, although the size of those effects is small compared to earlier periods.

A final word of caution is merited. We are unable to establish whether any diminution in union effects is a secular or cyclical phenomenon. We would expect smaller union effects when economic conditions are good because employers are often in a better position to concede union demands when they are profitable. It is in economic downturns, when unionised labour proves better able than non-unionised labour to hold onto the gains it has made during good times that one expects union effects to come to the fore.

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**Table 1: Union decline in Great Britain**

**a) Union membership**

	Private	Public
1993	24.0	64.4
1994	22.8	63.6
1995	21.5	61.4
1996	20.7	60.9
1997	19.8	60.8
1998	19.5	61.0
1999	19.3	59.9
2000	18.7	60.0
2001	18.5	59.0
2002	18.1	59.3
2003	18.1	58.8
2004	17.1	58.4
2005	17.1	58.2
2006	16.5	58.5

**b) Union recognition**

	Private	Public
1980	50	94
1984	48	99
1990	38	87
1998	24	87
2004	22	87

**c) Union density – employee weighted**

	Private	Public
1980	57	84
1984	45	81
1990	36	72
1998	25	58
2004	20	58

Source: part a) Grainger and Crowther (2006) using individual data from the Autumn Labour Force Surveys, 1993-2006 (quarter 4 in 2006) and parts b) and c) Blanchflower and Bryson (2008) using establishment level data from the Workplace Industrial Relations Surveys, 1980-2004.

**Table 2: Private sector union recognition rates by workplace characteristics, 1980 and 2004**

	% with recognition		% point fall
	1980	2004	1980-2004
<i>Industry:</i>			
Energy/water	99	58	41
Mineral/chemicals	67	55	12
Metal/engineering	65	27	38
Other manufacturing	65	27	38
Construction	52	19	33
Distribution/Hotels & Catering	36	12	24
Transport/Communications	59	39	20
Banking etc	54	26	28
Other services	26	19	7
<i>Region:</i>			
East Anglia	42	37	5
East Midlands	59	18	41
North	55	16	39
North West	60	19	41
Scotland	62	41	21
South West	54	21	33
Wales	71	36	35
West Midlands	65	21	44
Yorkshire and Humber	54	37	17
South East	38	15	23
<i>Establishment size:</i>			
25-49	41	20	21
50-99	50	13	37
100-199	65	36	29
200-499	75	48	27
500+	92	48	44
<i>Single independent</i>	30	6	24
<i>Belongs to multi-site firm</i>	58	29	29
<i>Foreign owned</i>	49	27	22
<i>Domestically owned</i>	50	22	28
<i>Establishment age:</i>			
<5 years old	38	18	20
5-9 years old	46	13	33
≥10 years old	51	25	26
<i>Decade workplace was born:</i>			
Birth <1980	50	32	18
Birth 1980s	-	16	-
Birth 1990s	-	15	-
Birth 2000s	-	18	-

Source: Workplace Industrial Relations Surveys, 1980-2004

**Table 3: Union recognition, private sector, 1980-2004**

	(1)	(2)	(3)	(4)	(5)	(6)
	Pooled	1980	1984	1990	1998	2004
<b>Industry (ref: other services)</b>						
Energy and water	0.395	0.387	0.237	0.490	0.592	0.206
	(6.21)**	(3.93)**	(1.54)	(4.32)**	(9.77)**	(0.94)
Minerals, chemicals	0.108	0.079	0.030	0.181	0.005	0.308
	(1.99)*	(0.78)	(0.28)	(1.59)	(0.06)	(2.07)*
Metal, engineering	0.034	0.147	0.030	-0.017	0.006	0.026
	(0.91)	(1.67)	(0.31)	(0.18)	(0.09)	(0.31)
Other manufacturing	0.108	0.148	0.138	0.069	0.146	0.106
	(3.07)**	(1.69)	(1.49)	(0.79)	(2.25)*	(1.27)
Construction	0.041	0.020	0.006	0.075	0.115	-0.009
	(0.87)	(0.20)	(0.05)	(0.59)	(1.11)	(0.11)
Distribution and hotels	-0.093	-0.061	0.038	-0.098	-0.136	-0.131
	(3.28)**	(0.85)	(0.49)	(1.41)	(2.58)**	(2.68)**
Transport and communication	0.167	0.115	0.312	0.206	0.142	0.161
	(3.59)**	(1.05)	(2.46)*	(1.93)	(1.88)	(1.87)
Banking and finance	0.063	0.051	0.220	0.072	0.034	0.004
	(1.87)	(0.52)	(2.24)*	(0.85)	(0.62)	(0.06)
<b>Region (ref: south east)</b>						
East anglia	0.033	0.046	-0.113	-0.041	0.009	0.141
	(0.75)	(0.55)	(1.27)	(0.46)	(0.13)	(1.53)
East Midlands	0.083	0.159	-0.003	0.100	0.091	0.055
	(2.80)**	(2.33)*	(0.04)	(1.27)	(1.79)	(1.02)
North	0.110	0.180	0.188	0.083	0.061	0.009
	(2.90)**	(1.98)*	(1.73)	(0.92)	(1.23)	(0.16)
North West	0.158	0.157	0.219	0.103	0.198	0.102
	(5.58)**	(2.65)**	(3.11)**	(1.49)	(3.19)**	(2.25)*
Scotland	0.154	0.232	0.032	0.079	0.098	0.280
	(4.72)**	(3.49)**	(0.39)	(1.28)	(1.71)	(3.80)**
South West	0.078	-0.104	0.162	-0.006	0.110	0.114
	(2.24)*	(1.58)	(1.96)	(0.08)	(1.66)	(2.10)*
Wales	0.192	0.241	0.294	0.091	0.106	0.204
	(4.11)**	(2.04)*	(2.23)*	(0.81)	(1.32)	(2.35)*
West Midlands	0.123	0.236	0.153	0.013	0.098	0.096
	(4.04)**	(3.40)**	(2.05)*	(0.16)	(1.45)	(1.84)
Yorkshire and Humberside	0.112	0.165	0.245	0.027	-0.042	0.205
	(3.26)**	(2.58)**	(3.33)**	(0.40)	(0.89)	(2.75)**
<b>Establishment size (ref: 25-49 employees)</b>						
50-99	0.034	0.082	0.099	0.041	0.039	-0.088
	(1.79)	(1.85)	(2.04)*	(0.91)	(1.11)	(2.51)*
100-199	0.144	0.132	0.240	0.069	0.195	0.096
	(6.56)**	(2.96)**	(4.58)**	(1.45)	(4.73)**	(2.02)*
200-499	0.253	0.209	0.246	0.262	0.330	0.198

	(10.91)**	(4.32)**	(4.50)**	(4.87)**	(7.63)**	(4.09)**
500+	0.325	0.298	0.399	0.303	0.410	0.200
	(13.79)**	(6.75)**	(7.73)**	(5.71)**	(7.98)**	(3.72)**
<b>Foreign</b>	-0.093	-0.154	0.005	-0.024	-0.204	-0.068
	(3.57)**	(2.23)*	(0.07)	(0.37)	(5.34)**	(1.60)
<b>Single</b>	-0.230	-0.301	-0.167	-0.227	-0.186	-0.259
	(12.51)**	(8.01)**	(3.38)**	(5.41)**	(5.54)**	(7.52)**
<b>Workplace age (ref: 10+ years)</b>						
<5 years	-0.049	-0.118	-0.021	-0.106	-0.048	-0.011
	(1.87)	(1.80)	(0.25)	(1.98)*	(1.14)	(0.21)
5-9 years	-0.105	-0.063	-0.089	-0.243	-0.055	-0.095
	(4.56)**	(1.25)	(1.42)	(5.39)**	(1.14)	(2.70)**
<b>Proportion female</b>	-0.078	-0.122	-0.225	-0.083	0.011	-0.035
	(1.85)	(1.47)	(2.00)*	(0.93)	(0.12)	(0.39)
<b>Proportion part-time</b>	0.020	-0.170	-0.022	-0.043	0.125	0.016
	(0.45)	(1.53)	(0.15)	(0.39)	(1.35)	(0.23)
<b>Proportion non-manual</b>	-0.070	-0.202	-0.234	-0.069	0.006	0.024
	(2.54)*	(2.79)**	(3.04)**	(1.03)	(0.13)	(0.56)
<b>Survey year (ref: 1980)</b>						
wirs1984	-0.012					
	(0.44)					
wirs1990	-0.116					
	(4.41)**					
wirs1998	-0.213					
	(8.35)**					
wirs2004	-0.241					
	(9.30)**					
Constant	0.496	0.572	0.490	0.472	0.188	0.239
	(11.73)**	(5.86)**	(5.14)**	(4.87)**	(2.79)**	(3.06)**
Observations	5840	1273	1081	1189	1241	1056
R-squared	0.22	0.27	0.19	0.19	0.21	0.23

Source: Workplace Industrial Relations Surveys, 1980-2004

**Table 4: Effects of Compositional and Within-group Change on Union Recognition, Private Sector 1980-2004**

<b>Year</b>	<b>Actual union recognition rate</b>	<b>Percentage point decline</b>	<b>Rate with compositional change only</b>	<b>Percentage point decline due to compositional change</b>	<b>Percentage point decline due to within-group change</b>
1980	49.5	-	-	-	-
2004	22.3	-27.2	40.8	-8.7 (32%)	-18.5 (68%)

Note: to obtain these figures we generate the predicted probability of union recognition using the 1980 and 2004 models in Table 3. The change in union recognition due solely to compositional change is obtained by applying the predictions under the 1980 model to the 2004 sample. The resulting union recognition rate is the rate that would have obtained in 1980 with 2004 workplace characteristics, that is, with compositional change alone. The difference between this rate and the overall change in union recognition is due to within-group change.

Source: Workplace Industrial Relations Surveys, 1980-2004

**Table 5: Union Membership Hourly Wage Premium, WERS 2004, private sector workplaces**

	<b>25+ employee workplaces</b>			<b>5-24 employee workplaces</b>		
	<b>Member ship dummy only</b>	<b>Member ship + controls</b>	<b>Member ship + controls + union recogniti on</b>	<b>Member ship dummy only</b>	<b>Member ship + controls</b>	<b>Member ship + controls + union recogniti on</b>
Union member	0.082	0.058	0.064	0.198	0.090	0.079
	(7.83)**	(6.84)**	(6.94)**	(7.13)**	(3.66)**	(2.95)**
Union recognition			-0.011			0.031
			(1.24)			(1.13)
DK if union recognition			0.032			-0.168
			(1.93)*			(3.96)**
Observations	11,894	11,838	11,838	2,746	2,742	2,742

Notes:

(1) Interval regression for hourly wages, unweighted, robust estimator. T-stats in parentheses

(2) Controls are: male, age (10 dummies), academic qualifications (9 dummies), vocational qualifications (4 dummies), health problem, non-white, full-time employment, occupation (10 dummies), firm size (3 dummies), single establishment organization, industry (10 dummies), workplace aged 25+ years, foreign owned, largest occupational group (8 dummies).

**Table 6: Private sector union/non-union hourly wage differentials, 1993-2006**

	(1) <b>1993-1999</b>	(2) <b>1993-1999</b>	(3) <b>1993-1999</b>	(4) <b>2000-2006</b>	(5) <b>2000-2006</b>	(6) <b>2000-2006</b>
	All	<25 employees	≥25 employees	All	<25 employees	≥25 employees
Union	.0566 (11.67)	.1144 (9.86)	.0452 (8.62)	.0277 (6.23)	.0933 (9.29)	.0121 (2.45)
Age	.0656 (75.72)	.0592 (43.89)	.0706 (62.06)	.0635 (82.77)	.0561 (48.39)	.0697 (67.79)
Age <sup>2</sup>	-.0007 (65.65)	-.0006 (38.35)	-.0008 (53.70)	-.0007 (73.05)	-.0006 (43.00)	-.0008 (59.74)
Male	.2011 (47.87)	.1852 (25.29)	.2096 (41.21)	.1718 (46.38)	.1576 (25.07)	.1817 (39.82)
Black	-.1538 (8.28)	-.1003 (2.94)	-.1746 (8.02)	-.1649 (11.13)	-.1396 (5.28)	-.1727 (9.76)
Asian	-.1682 (12.41)	-.1698 (6.93)	-.1670 (10.41)	-.1315 (12.54)	-.1432 (7.72)	-.1206 (9.58)
Chinese	-.0202 (0.49)	-.0602 (1.07)	.0620 (0.96)	-.1459 (4.43)	-.1534 (3.16)	-.1161 (2.58)
Other races	-.0312 (1.55)	-.0133 (0.38)	-.0388 (1.58)	-.1105 (7.23)	-.1115 (4.24)	-.1040 (5.59)
Constant	.3263	.3057	.3457	.8946	.8941	.8633
Size dummies	6	3	3	6	3	3
Schooling dummies	40	40	40	47	47	47
Adjusted R <sup>2</sup>	.4549	.3487	.4722	.4624	.3686	.4867
N	63,295	23,942	39,353	74,323	28,626	45,697

Source: LFS 1993-2006 Autumn quarters. Notes: all equations also include 6 year dummies, 21 region of work dummies and 61 industry dummies. Excluded category is white. Employees only. T-statistics in parentheses.

**Table 7: Union effects on employment growth among private sector workplaces with 25+ employees**

	<i>Pooled</i>	<i>1980</i>	<i>1984</i>	<i>1990</i>	<i>1998</i>	<i>2004</i>	<i>1990-2004</i>
All	.032	-.003	.013	.024	.075	.043	.049
Union	.003	-.016	-.007	.014	.022	.024	.003
Non-union	.048	.001	.033	.029	.092	.048	.048
Raw gap	-.029 (5.24)**	-.030 (2.64)**	-.033 (2.44)**	-.015 (1.15)	-.029 (2.38)**	-.014 (1.05)	-.020 (2.63)**
Regression- adjusted gap	-.018 (2.88)**	-.018 (1.41)	-.037 (2.59)**	-.006 (0.41)	-.014 (1.05)	-.008 (0.53)	-.009 (1.07)

Notes:

(1) Rows 1, 2 and 3 are unconditional weighted means for log employment growth which is  $\log((\text{employment in } t \text{ minus employment in previous year}) / \text{employment in previous year})$  having removed 12 outliers.

(2) Row 4's 'raw gap' is the union recognition coefficient (t-statistics in parentheses) for unweighted OLS estimates of log employment in time  $t$ . Log employment in  $t-1$  is one of the explanatory variables. \*=significant at a 90% confidence level; \*\*=significant at a 95% confidence level or above

(3) Row 5's regression adjusted gap in log employment controls log employment in  $t-1$ ; single-digit SIC; region; single; foreign, % female; % part-time; % non-manual; workplace age.



**Table 8: Union effects on workplace financial performance relative to industry average among private sector workplaces with 25+ employees**

	<i>Pooled</i>	<i>1980</i>	<i>1984</i>	<i>1990</i>	<i>1998</i>	<i>2004</i>	<i>1990-2004</i>
All	2.45	2.41	2.40	2.48	2.53	2.49	2.51
Union	2.40	2.37	2.32	2.50	2.51	2.37	2.47
Non-union	2.50	2.46	2.48	2.47	2.53	2.52	2.52
Raw gap	-.319 (5.71)**	-.425 (3.27)**	-.580 (4.23)**	-.161 (1.25)	-.001 (0.01)	-.155 (1.19)	-.122 (1.68)*
Regression- adjusted gap	-.219 (3.23)**	-.474 (2.94)**	-.630 (3.83)**	.050 (0.31)	-.073 (0.49)	-.148 (0.96)	-.055 (0.63)

Notes:

- (1) Rows 1 and 2 are unconditional survey-weighted means for financial performance relative to industry average where 1=below/a lot below average 2=average 3=above/a lot above average.
- (2) Row 3's 'raw gap' is the coefficient with z-statistics in parentheses for unweighted ordered logit estimates of the (1, 3) financial performance measure. \*=significant at a 90% confidence level; \*\*=significant at a 95% confidence level or above
- (3) Row 4's regression adjusted gap controls for single-digit SIC; region; establishment size; single; foreign, % female; % part-time; % non-manual; workplace age.

**Table 9: Managerial Perceptions of the employment relations climate among private sector workplaces with 25+ employees**

	1980			1984			1990			1998			2004		
	All	U	NU	All	U	NU	All	U	NU	All	U	NU	All	U	NU
Average	3	3	3	4	4	4	7	12	4	9	8	9	7	10	6
Good	45	49	41	54	61	46	59	60	59	52	53	52	55	58	54
Very good	52	48	56	42	35	50	34	28	37	39	39	39	38	32	40

Notes:

- (1) U = workplace with recognised union(s), NU = workplace without recognised union(s), Table shows column percentages, survey weighted data.
- (2) Unweighted N for whole series is 5,805. Union workplaces N=3,146. Non-union workplaces N=2,659.
- (3) 5-point climate scale collapsed into three points: average/poor; good; and very good.

**Table 10: Union effects on employment relations climate among private sector workplaces with 25+ employees**

	<i>Pooled</i>	<i>1980</i>	<i>1984</i>	<i>1990</i>	<i>1998</i>	<i>2004</i>	<i>1990-2004</i>
All	2.35	2.49	2.38	2.26	2.30	2.31	2.29
Union	2.31	2.46	2.31	2.16	2.31	2.22	2.23
Non-union	2.37	2.53	2.46	2.32	2.29	2.34	2.32
Raw gap	-.371 (7.11)**	-.556 (4.63)**	-.815 (6.32)**	-.525 (4.39)**	-.233 (2.06)**	-.585 (4.58)**	-.442 (6.46)**
Regression-adjusted gap	-.259 (4.08)**	-.398 (2.70)**	-.582 (3.87)**	-.271 (1.87)*	-.005 (0.04)	-.157 (1.05)	-.142 (1.76)*

Notes:

- (1) Rows 1, 2 and 3 are unconditional means for employment relations climate where 1=poor/average 2=good 3=very good.
- (2) Row 4's 'raw gap' is the union coefficient with z-statistics in parentheses for unweighted ordered logit estimates of the (1,3) climate measure. \*=significant at a 90% confidence level; \*\*=significant at a 95% confidence level or above
- (3) Row 5's regression adjusted gap controls for single-digit SIC; region; establishment size; single; foreign, % female; % part-time; % non-manual; workplace age.

**Table 11: Union effects on employment relations climate among private sector employees in British Social Attitudes Surveys, 1983-2005**

	<i>Pooled, 1983-2005</i>	<i>1983-1989</i>	<i>1990-1995</i>	<i>1996-2000</i>	<i>2001-2005</i>
All	3.12	3.17	3.06	3.10	3.17
Union	2.96	3.02	2.91	2.91	3.02
Non-union	3.23	3.32	3.20	3.19	3.24
Raw gap	-.724 (25.40)**	-.855 (14.94)**	-.727 (13.78)**	-.700 (11.55)**	-.604 (10.36)**
Regression-adjusted gap	-.396 (10.94)**	-.483 (6.36)**	-.509 (7.05)**	-.309 (4.11)**	-.288 (4.19)**

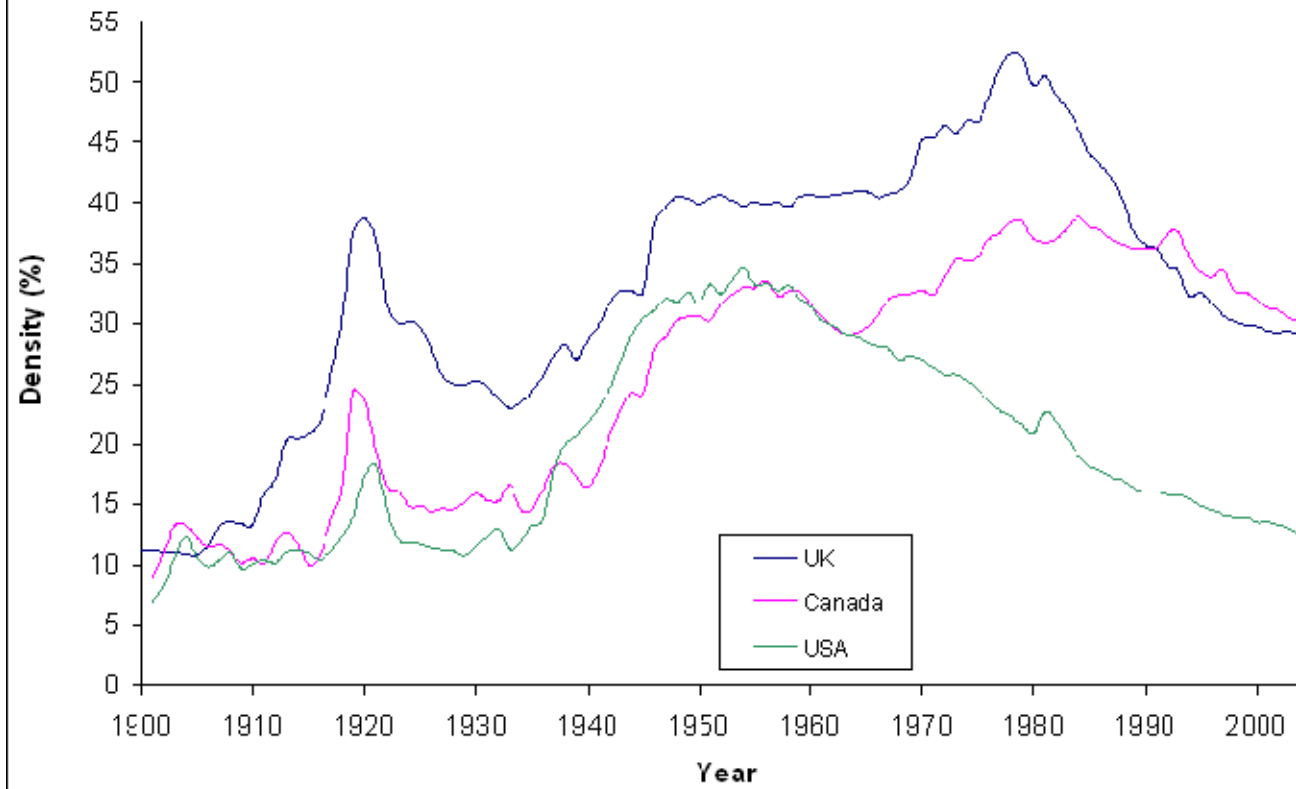
Notes:

(1) Rows 1, 2 and 3 are unconditional means for employment relations climate where 1=not at all good 2=not very good 3=good 4=very good. Unweighted N for pooled regressions is 19,190

(2) Row 4's 'raw gap' is the union coefficient with z-statistics in parentheses for unweighted ordered logit estimates of the (1,4) climate measure. \*=significant at a 90% confidence level; \*\*=significant at a 95% confidence level or above

(3) Row 5's regression adjusted gap controls for union membership; female; age (6 dummies); ethnic dummy; region (6 dummies); sector (4 dummies); part-time dummy; social class (8 dummies); years

**Figure 1. Union density, Canada, the US and the UK, 1900-2004**



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