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Slip Sliding Away: Further Union Decline in Germany and Britain

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Abstract

This paper presents the first comparative analysis of the decline in collective bargaining in two European countries where that decline has been most pronounced. Using workplace-level data and a common model, we present decompositions of changes in collective bargaining and worker representation in the private sector in Germany and Britain over the period 1998-2004. In both countries within-effects dominate compositional changes as the source of the recent decline in unionism. Overall, the decline in collective bargaining is more pronounced in Britain than in Germany, thus continuing a trend apparent since the 1980s. Although workplace characteristics differ markedly across the two countries, assuming counterfactual values of these characteristics makes little difference to unionization levels. Expressed differently, the German dummy looms large.

JEL Classifications: J50, J51
Keywords: union recognition, union coverage, worker representation in works councils/ joint consultative committees, patterns of erosion, behavioural and composition effects, shift share analysis

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1. Introduction

Recent years have witnessed a decline in unionism in Western Europe (see Blanchflower, 2007; Ebbinghaus and Visser, 1999; Visser, 2003, 2006). The decline has not been uniform but has instead been concentrated in the larger countries, particularly Britain, Germany, and Italy. In the present paper, we take advantage of unique comparable workplace data to examine developments in two of these countries, Germany and Britain.

We contribute to the existing literature which has focused almost entirely on union density using household data, by exploring factors behind the demise of unionization at workplace level. In a further departure from conventional practice, we extend our definition of plant 'representation' to encompass the workplace coverage of works councils in Germany and joint consultative committees in Britain. We deploy a common model of the determinants of collective bargaining/workplace representation and undertake a shift-share analysis of observed changes in the outcome indicators both across time and vertically (i.e. at a single point in time).

The goal is to determine the contribution of compositional factors on the one hand and behavioural or within-group factors on the other to the decline in unionization. Although similar such decompositions based on union density have been undertaken for individual countries, ours is the first such comparative exercise. And apart from one other (single-country) study it is the first to consider union recognition rates at plant level rather than on aggregations based on the union status of individuals. Moreover, unlike that study it covers a larger slice of the labour force, namely workplaces with 10 or more employees rather than 25 or more employees. And, as we have noted, our study is further distinguished by reason of its comparative framework and range, proceeding as it does beyond union recognition to encompass not only collective bargaining coverage but also other forms of workplace representation.

2. Background

The decline in unionism in Britain long preceded our sample period. Writing at the beginning of this decade, and reflecting on the findings of a study tracking employment relations over the previous two decades, Millward, Bryson, and Forth (2000: 234) commented: "The system of collective relations, based on the shared values of the legitimacy of representation by independent trade unions and of joint regulation, crumbled … to such an extent that it no longer represents a dominant model." The facts in aggregate were these: in 1979 some 73

percent of workers were union members and by 1999 this had fallen to 28 percent; in 1980 about 70 percent of establishments recognized unions for collective bargaining purposes, declining to less than 45 percent by the mid-1990s (Machin, 2000). These results were driven by developments in the private sector, and above all in manufacturing.

Commentators were now to refer to unions as "hollow shells" (Hyman, 1997; Brown et al., 1998; Millward, Bryson, and Forth, 2000). Their resulting parlous state severely impacted the ability of British unions to service current members' interests - let alone organize parts of the non-union sector (Willman and Bryson, 2009). The tendency was therefore for new workplaces and new entrants to the labour force to be 'born' non-union (Machin, 2000; Willman, Bryson, and Gomez, 2007), resulting in a rise in the proportion of all employees in the labour force who had never been union members. Intriguingly, the 'never-membership' phenomenon was even apparent in organized workplaces (Bryson and Gomez, 2005). Finally, British unions had focused their organizing activity at workplace or organizational level such that by the start of our sample period sectoral bargaining was already a spent force outside of the public sector (Brown, Bryson, and Forth, 2009: 34).

Historically, sectoral bargaining (strictly, regional industry-wide bargaining) has been the key form of collective bargaining in Germany, covering some 90 percent of all employees. As Schnabel, Zagelmayer, and Kohaut (2006: 168) note, things first began to change in the early 1970s with the emergence of what they term "qualitative bargaining policy," namely sectoral agreements that sought to accommodate improvements in working life and the protection of employees against dislocations caused by rationalization and technical change. Such provisions were to be implemented at local level. Thence, in the 1990s, under the pressures of globalization, high unemployment, and unification, all aspects of the system of collective bargaining are widely characterized in the German literature as having being subject to more or less serious *quantitative* change. The manifestations of this erosion included a rising trend of firm resignations from employers' associations (Silvia and Schroeder, 2007), a rapid decline in union density (Addison, Schnabel, and Wagner, 2007), and shrinking collective bargaining coverage (Kohaut and Schnabel, 2003). Moreover, the coverage of that other pillar of the German dual system – the works council (see below) – was also subject to some erosion (Hassel, 1999). In response to these challenges, German collective bargaining was decentralizing. One aspect of this development was the growth in company agreements as many firms dropped out of the centralized system. Another was the growth of decentralization in sectoral agreements – first through the device of 'opening clauses' that allowed firms more flexibility via locally negotiated adjustments to centrally

agreed working time and wages, and latterly through other contractual innovations including 'pacts for employment and competitiveness' (Addison et al., 2009). Such organized decentralization may have slowed the flight from sectoral collective bargaining to firm-level bargaining and individual bargaining. Be that as it may, the stylized facts were these: from 1990 to 1997 the number of company agreements rose from 2,100 to 3,300 in western Germany (and from 2,700 to 5,000 in the whole of Germany) while the percentage of employees in western Germany who were covered by collective (sectoral) agreements fell from 83.1 (72.2) percent in 1995 to 75 (67.8) percent in 1998 (Hassel, 1999).

The decline in union density has been fairly extensively charted in Britain, somewhat less so in Germany given the longer-standing decline in the former nation. One early hallmark of the British analysis was the attempt to decompose the decline in unionization into its constituent parts. For the decade of the 1980s (strictly 1983-1989) Green (1992) concludes that the combined effect of compositional factors to the observed decline in private-sector union density from 49.6 to 38.6 percent was 30 percent, which is taken by the author to be an upper-bound estimate since compositional changes are not independent of public policy or macroeconomic conditions.

Investigating the 16 percentage point fall in private-sector union density over the period 1983-2001, Bryson and Gomez (2005) find that just one percentage point is explained by an increase in the number of workers who ceased being union members.[1] The remainder is due to the rise in the percentage of employees who never join a trade union ("never-members"). Overall, the authors conclude that 60 percent of the 20 percentage point increase in never-membership over the period was due to compositional factors.

Just one British study considers union recognition rates at plant level rather than union density based on the union status of individuals. In a wide-ranging paper focusing on the effects of union decline on various aspects of workplace performance, Blanchflower and Bryson (2009) set the scene for their analysis by examining the impact of workplace characteristics on union recognition using all five surveys in the WIRS/WERS series, 1980-2004. The share of establishments recognizing one or more unions for collective bargaining (viz. the union recognition rate) fell from 49.5 percent in 1980 to 22.3 percent in 2004 among all private-sector workplaces with 25 or more employee. Applying the predictions of the 1980 model to the 2004 sample, Blanchflower and Bryson conclude that behavioural factors (largely employer choices) dominated any effects arising from changes in the structure of the workplace since no less than 68 percent (18.5 percentage points) of the decline in union recognition was the result of within-group changes.

The early literature on the determinants of union density in Germany indicated that the propensity for union membership had not changed materially over time (see, inter al., the literature review in Fitzenberger, Kohn, and Wang, 2006). However, two more recent contributions challenge the implication that the decline in union density in that country has mainly been driven by composition effects. Using data from three cross sections of the ALLBUS general survey from 1980 to 2004 in western Germany and from 1992 to 2004 in eastern Germany, Schnabel and Wagner (2007) estimate the determinants of an individual's union membership status. In decomposing the differences in union membership over time and between the two halves of Germany, their analysis uses estimates directly from their probit estimation model (see Jann, 2006). Focusing here on differences over time, their findings for western Germany – comparing 1980 and 2004 for example and using the results for 1980 as the reference group – indicate that changes in the composition of the sample of employees explain just 0.16 percentage points (or 1.4 percent) of the 11.49 percentage point decline in the share of employees that were union members over the sample period (although the compositional effects are larger when taking the results for 2004 as the reference group). For their part, the east German results pointed to even smaller compositional effects.

A study by Fitzenberger, Kohn, and Wang (2006) using data from six (four) waves of the German Socio-Economic Panel for western (eastern) Germany estimates individual membership functions via a correlated random effects probit model. As far as the authors' decompositions are concerned, the coefficients' effect dominates throughout. The characteristics' effects explain under one-third of the 6 percentage point decline in union density in western Germany between 1993 and 2003, and under one-fifth of the 19 percentage point decline in eastern Germany over the same interval. The role of characteristics versus coefficients is also evaluated in terms of east-west comparisons at the start and end of the period. In 1993 when union density in the east exceeded that in the west by 11 percentage points, the composition of the west German labour force actually favored higher density (by 5 percentage points). Accordingly, the higher density in the east resulted from a 16 percentage point difference in coefficients; that is, for given characteristics, east Germans were at this time more strongly unionized than their western counterparts. But by 2003 union density in the east had fallen some 2 percentage points below that of the west. Since the composition of the labour force in the west still favored higher density, it follows that the coefficients effect had become more similar in the two halves of the country. On balance, therefore, the emerging consensus of the recent German literature is that changes in the composition of the workforce have played a minor role in the decline in *union density*.

We analyze the decline in private-sector collective bargaining in Britain and Germany. Our unit of analysis throughout is the establishment rather than aggregations based on individual employees that have preoccupied both literatures (with the notable exception of Blanchflower and Bryson, 2009). Drawing on the German Institute for Employment Research Establishment (IAB) Panel and the British Workplace Employment Relations Surveys (WERS), we offer the first unified comparative analysis of the erosion of collective bargaining coverage to complement recent disparate studies of union density in each country.

3. Data

The German data are taken from the IAB Establishment Panel. The Panel is based on a stratified random sample of the plants[2] – the strata are currently defined over 17 industries and 10 employment size categories – from the population of all establishments with at least one employee covered by social insurance (see Fischer et al., 2009). The basis for sampling is the Federal Employment Agency establishment file, containing some 2 million establishments. The panel was set up in 1993 for western Germany so as to provide a representative information system permitting continuous analysis of labour demand. It was applied to eastern Germany in 1996 and is therefore now nationwide in its coverage. From the outset the IAB Establishment panel was intended as a longitudinal survey, so that a large majority of the same plants are interviewed each year. To correct for panel mortality, exits, and newly founded firms, however, the data are augmented regularly. Taken in conjunction with other extension samples (to allow regional analysis at the federal state level), the panel has grown over time and now the number of plants surveyed is around 16,000 units.

The survey is generally carried out in the form of face-to-face interviews, with written postal surveys also being undertaken in some federal states. The overall response rate to the surveys has varied between 63 percent and 73 percent. It is lower for first-time respondents and for the written surveys. But the response rate for the orally-interviewed continuing establishments is stable at between 81 percent and 84 percent. (On the cross-sectional and longitudinal weighting procedures, see Fischer et al., 2009.)

We restrict the German data to the 1998 and 2004 cross-sections of the IAB Establishment Panel to maintain correspondence with the two British workplace surveys. The German raw sample contains a total of some 25,451 observations: 9,762 from the 1998 survey and 15,689 observations from the 2004 survey.

The British data are taken from the 1998 and 2004 WERS. These are cross-sectional surveys based on stratified random samples of workplaces taken from the Inter-Departmental Business Register which contains the population of establishments in Britain which are subject to VAT or maintain tax records for the purpose of paying employees. The survey covers all sectors of the British economy with the exception of mining and quarrying; agriculture, hunting, and forestry; fishing; private households with employed persons; and extraterritorial bodies. However, for the purposes of the present exercise, we confine our attention to private-sector workplaces. The unit of analysis is the workplace, namely a place of employment at a single address or site. For the 1998 WERS the population was all workplaces with at least 10 employees. For the 2004 WERS, however, the employment threshold was lowered to 5 employees. We retain the 10 employee threshold to ensure comparability across the two British surveys. (Filters were applied to the German data to provide a comparable sample, including the public sector and size restrictions.)

All independent variables are collected in face-to-face interviews with the senior manager responsible for employment relations on a day-to-day basis. The response rate was 80 percent in 1998 and 65 percent in 2004. As in the German case, we apply sample weights so that our analyses are nationally representative of private-sector workplaces in Britain with 10 or more employees (For full details of the two surveys, see Chaplin et al., 2005; Airey et al., 1999.)

Most of the variables used in our analysis are self-explanatory, but two of them deserve some additional explanation. First, the definition of a 'leading region' in Britain is London and the South East of England, whereas for Germany it is simply western Germany. Second, the 'proportion of skilled workers' in Britain is based on the proportion of employees in the workplace in skilled occupations, defined as those in managerial, professional, technical, clerical, and skilled craft occupations. For Germany, the definition comprises skilled manual workers together with **e**mployees in jobs requiring a vocational qualification or comparable training on the job or relevant professional experience, and those in jobs requiring a university degree or higher education.

The German establishment panel identifies whether or not the establishment is bound by an industry-wide agreement, a company agreement concluded by the establishment and the trade unions, or no collective agreement at all.[3] The British data contain two measures of collective bargaining. The first is based on whether there is an agreement, be it at workplace, organization or sectoral level, to recognize one or more unions to bargain over terms and conditions for employees at the surveyed workplace.[4] This recognition measure is that which

has traditionally been used in analyses of workplace unionization in Britain, going back to the first workplace survey in 1980 (Blanchflower, Bryson, and Forth, 2007). However, in the 1998 and 2004 surveys new questions were introduced that inquired of the workplace manager how pay was set for each single-digit occupational group in the workplace. Specifically, for each occupation present the manager was now asked: "Which of the following statements most closely characterizes the way that pay is set for [occupational group]?" The first three pre-coded answers are: "collective bargaining for more than one employer (e.g. industry-wide agreement);" "collective bargaining at an organization level;" "collective bargaining at this workplace." From this information we construct variables identifying any collective bargaining, any sectoral-level collective bargaining, and any firm-level (workplace or organization) collective bargaining.

It is notable that the incidence of collective bargaining is higher using the former 'union recognition' measure than the alternative 'any collective agreement' derived from the occupation-specific tranche of questions (see Table 1 below). This may be because the latter is interpreted by respondents as active collective bargaining during the year of the survey, whereas union recognition may also include workplaces where an agreement to negotiate over wages is in place, but where no actual bargaining occurred in the survey year, either because the pay agreement is not due for renewal in that year or because the agreement is dormant (Kersley et al., 2006; Millward, Bryson, and Forth, 2000). To obtain a complete picture, although our focus will be upon the conventional union recognition variable, we shall supplement this discussion with an analysis of collective agreements of any type so as to consider not only the correlates of active bargaining but also how these may differ by bargaining gradient (i.e. industry-level versus establishment/organization-level agreements).

We also report results for another indicator of worker representation at the workplace, namely the presence of a joint consultative committee (JCCs). These committees are akin to works councils in Germany in terms of their responsibilities and operations, although the workplace-level JCCs we consider here do not receive the sort of statutory backing or authority enjoyed by works councils.

4. Modelling

Our study of union decline between, say, t_0 and t_1 is based on the standard Oaxaca-Blinder decomposition (or multivariate shift-share analysis) in which the outcome of interest, Y (here the collective bargaining measure relevant to the workplace), is conditional on a set of

observed characteristics X. Accordingly, for a given country j (in our case, Britain and Germany), we have

$$Y_{t_1} = X_{t_1} B_{t_1} + u\,, \tag{1}$$

and

$$Y_{t_0} = X_{t_0} B_{t_0} + u'. \tag{2}$$

The aggregate change in the outcome variable Δ_t is therefore

$$\Delta_t = y_{t_1} - y_{t_0} = x_{t_1} b_{t_1} - x_{t_0} b_{t_0}\,, \tag{3}$$

where y denotes the mean outcome, x the mean vector of characteristics, and b the corresponding coefficient estimates, obtained from (1) and (2) in separate OLS regressions.

After adding and subtracting $x_{t_1} b_{t_0}$ from (3), we have the two-component decomposition

$$\Delta_t = (x_{t_1} - x_{t_0}) b_{t_0} + x_{t_1} (b_{t_1} - b_{t_0})\,, \tag{4}$$

where the first term on the right-hand-side gives the 'explained' component, that is, the part of the observed change allocated to differences in observable characteristics (the between or compositional effect) while the second gives the 'unexplained' component (the within or behavioural effect), namely the change in the outcome occasioned by differences in the rates of return ('propen sities') from period t_0 to period t_1.[5]

We are also interested in analyzing differences in outcomes across countries at a given point in time. In this case, and now denoting countries by subscripts – 1 for Germany and 0 for Britain – the decomposition is given by

$$\Delta_j = y_1 - y_0 = (x_1 - x_0) b_0 + x_1 (b_1 - b_0)\,, \tag{5}$$

where y and x again denote mean vectors for the dependent and independent variables respectively and b are the coefficient estimates obtained from the separate OLS regressions: $Y_1 = X_1 B_1 + u$ and $Y_0 = X_0 B_0 + u'$.

To keep our implementation as simple as possible, we rely on linear estimates for our decompositions. Given that our outcome measures are binary variables, this procedure estimates (omitting subscripts) the familiar linear probability model: $Y = XB + u$. But note that since we are mainly interested in mean values rather than the individual probability of a given establishment being covered by collective bargaining, our treatment does not entail any risk that the predicted probability of the sampling means falls outside the 0–1 range.

In our analysis we select two main outcome variables: (a) whether or not the establishment is covered by a collective agreement (or a recognized union in the case of Britain); and (b) whether or not it has a representative council (works council in the case of Germany and a workplace joint consultative committee for Britain). For completeness, and as intimated above, we shall also report the case where the dependent variable measures the presence of a firm or a sectoral collective agreement. Our explanatory variables – common to the two countries – comprise industry and establishment size dummies, measures of workforce composition (skill, gender, and working time status), foreign ownership, single versus multi-site firm status, establishment age, and region.

5. Findings

Table 1 presents the means of the variables in 1998 and 2004 and the corresponding percentage point/percentage changes in these values over the period. The first five rows of the table contain the outcome measures, while the workplace characteristics are reported in the remaining rows. Throughout the means are computed using sample weights so as to guarantee their representativeness with respect to the underlying population.

The incidence of collective bargaining has declined markedly in Britain and Germany (row 1), the percentage point decline being twice as large for union recognition in Britain as it is for collective bargaining in Germany (11.4 versus 5.8 percentage points). The rate of decline – measured as a percentage of collective bargaining in the base period – is one-and-a-half times faster in Britain (viz. 30 percent compared with around 20 percent in Germany). Nevertheless, levels of collective bargaining coverage remain considerably higher in Germany than in Britain throughout the period. In the British case, although the incidence of (any) collective bargaining coverage is lower than union recognition, its recorded absolute and relative decline is higher, a finding consistent with a further 'hollowing out' of union bargaining in Britain.

Sectoral bargaining predominates in Germany: multiemployer agreements are ten times more common than firm agreements. In Britain, on the other hand, sectoral bargaining appears to be an endangered species – even before the start of our sample period. Firm-level collective bargaining is considerably more stable over time than sectoral bargaining for both countries and its incidence is higher in Britain than in Germany throughout the period.

There are also substantial differences in worker representation in the two countries, as measured by works councils in Germany and joint consultative committees in Britain. Works councils are more common in Germany than workplace joint consultative committees are in

Britain. Furthermore, the incidence of works councils is stable whereas joint consultative committees are in decline.[6]

Table 1 also reviews the other workplace characteristics for both countries that we use in our shift-share analyses. The distribution of establishment size (as measured by number of employees), establishment age, and workforce composition (skill, gender, and hours of work), seem to be quite similar across countries. Differences are apparent with respect to foreign ownership (twice as high in Britain), and industry composition (e.g. the preponderance of the financial sector and hotels and restaurants in Britain, and the greater importance of construction in Germany). There are also sizeable differences in the importance of 'residual' sectors such as other business and services and community services in the two countries. However, the biggest difference between Britain and Germany relates to single versus multiple establishment firms: in Germany single establishment firms ('independent' companies) constitute four-fifths of the private sector, as compared with only two-fifths in Britain.

Table 2a presents the incidence of collective bargaining and union recognition in Germany and Britain by workplace characteristics. In Germany, collective bargaining incidence is above average in sectors like utilities, construction, hotels and restaurants, transport and communications, and financial services. It is below average in manufacturing, health, education, and other business services. In Britain, utilities, education, health, and transport and communications, education, and health exceed the country mean for recognition. Looking across countries, coverage rates diverge least in utilities, education, and health. For the remaining sectors, coverage is much higher in Germany, often dramatically so. The decline in coverage in Germany is concentrated among establishments with 200 or fewer employees, while in Britain it is concentrated in workplaces with 10-20 and 201-999 employees. In both countries the decline in the incidence of collective bargaining and union recognition is to a large extent across-the board, even if some marked 'individual' differences are apparent. Table 2b in contrast indicates that, although the frequency of works councils and joint consultative committees varies quite substantially across industries and establishment size categories, the presence of these worker representation institutions is (with a few exceptions, mostly for Britain) fairly stable over time.

Table 3 – which forms the basis of the decomposition exercise below – presents our linear probability estimates of an establishment having a collective agreement of any type (Germany) or a recognized union (Britain).[7] The first column of the table pools the German data for 1998 and 2004. It shows that, all else constant, only the other business services,

education, and health sectors evince a statistically significant lower probability of coverage than manufacturing (the reference sector), while the role of establishment size is well-determined (the larger the establishment, the greater the probability of coverage). The fourth column repeats the same pooled analysis for Britain. It indicates that utilities have a higher probability of union recognition than manufacturing, whereas wholesale and retail trade, hotels and restaurants, other business services, and community services all have a lower probability. These results hold, with a few exceptions, for the separate year regressions given in the second/third and fifth/sixth columns for Germany and Britain, respectively. Further, foreign ownership, single establishment status and establishment 'youth' decrease the probability of being covered, especially in Germany. However, no particular pattern emerges from workforce composition.

The coefficient estimate for the time dummy (2004) of –0.124 for Germany in the first column of the table is a little higher than the observed decline of 11.4 percentage points (earlier reported in Table 1), suggesting that the contribution of the compositional effect to change is likely to be low. Put differently, holding characteristics constant, the coefficient estimate for the time dummy implies a 12.4 percentage point decline, implying that the within-effect will tend to dominate.

In the case of Britain, the coefficient of the time dummy (–0.056) also mirrors quite closely the observed raw decline of 5.8 percentage points (see Table 1) in the union recognition measure over the period 1998-2004. As in the case of Germany, therefore, the compositional effect for Britain is expected to be low as well.

Results for pooled country data are provided in the last three columns of Table 3. The coefficient estimate for the *German establishment* variable gives the increased probability of an establishment in that country being covered by a collective agreement of any type relative to Britain, having controlled for observable workplace characteristics. In the regression for 1998, for example, this coefficient is equal to 0.453 which is slightly higher than the observed 1998 gap between the two countries of 0.422 (again see Table 1). For 2004, as can be seen from the final column of the table, the disparity is larger: 0.422 rather than 0.366 (Table 1). (Note that the coefficient estimate for the *German establishment* variable in the seventh column of the table is roughly the average of the 1998 and 2004 coefficients reported in the separate regressions.) The implication is that there is something about being in Germany, rather than Britain, and not accounted for by characteristics at workplace-level that markedly elevate the probability of collective bargaining coverage. This latter result will of course come as no surprise to proponents of the varieties-of-capitalism school who tend to

emphasize the role of macro-institutional features and political economy considerations. Finally, the time dummy of –8.1 percent very roughly approximates the observed decline in the German-British union representation gap of 5.6 percentage points earlier shown in Table 1.

Our multivariate shift-share analysis is summarized in panels (a) through (e) of Table 4a. The estimates are derived from the decomposition exercise described in equation (4) by type of institution: collective bargaining coverage and worker representation. Rows (4) and (5) of each panel give the proportions of the observed change in outcome that are due to the compositional effect and the within-effect, respectively. The compositional effect is computed assuming base-year (1998) propensities as the reference category, while the within-effect is, by definition, simply the difference between the actual change and the compositional effect. These effects are computed for Germany and Britain from separate regressions.

The most striking feature of the table is the magnitude of the within-effect throughout. In the case of Germany, for example, had the propensities (coefficients) assumed the same level in 1998 and 2004, collective bargaining coverage would have been virtually unchanged over the sample period (63.7 percent rather than 62.5 percent). Given that the observed coverage rate in 2004 is 51.1 percent, it follows that the decline in collective bargaining coverage in Germany is due in its entirety to a change in behaviour. (Changes in the characteristics of workplaces over the period were actually favorable toward collective bargaining.) As shown in panels (c) and (d), these results also hold for the cases of sectoral bargaining and firm-level agreements.

In Britain, the within-effect is also the major driving force in explaining the change in union recognition over time, accounting for about 80 percent of the observed decline. In the case of panels (b) through (d), that now refer to union coverage – our secondary measure of collective bargaining in Britain – the small magnitudes involved (just 10.6 percent of plants were covered by any type of collective bargaining in 2004 compared with 16.9 percent in 1998) probably mean that the precision of the estimates should be regarded with caution. Nevertheless, for this measure the within-effect plays an even larger role than for union recognition.

Panel (e) of Table 4a presents the decomposition with respect to works councils and JCCs. In the light of the strong stability of the former institution over the period (the observed percentage point change is only 0.6 percentage points over the six years), there is not much to be said about the distinct roles of compositional versus behavioural effects given the

magnitudes involved. But as far as British joint consultative committees are concerned, the observed 4.4 percentage point decline in coverage is again mostly due to the within-effect.

We note parenthetically that these results are robust to model specification. In Appendix Table 1, we show the results of a decomposition exercise in which a 'full' model is specified for each country and are again able to point to the dominance of the within-effect, albeit with a fairly pronounced tendency for the contribution of compositional change to be higher in the case of Britain in the first and second columns.[8]

Neither do our results seem to be sensitive to weighting. In Appendix Table 2 we replicate Table 4a with unweighted data. Despite the fact that the unweighted figures on collective agreement coverage and union recognition are obviously higher – large establishments are over-represented in both surveys and size and coverage are positively correlated – the share of the within-effect is pretty much the same: 108.6 percent for Germany and 78.2 percent for Britain in the unweighted case, and 110.9 percent and 78.2 percent in the weighted case (see Table 4a), respectively. Accordingly the primacy of the within-effect is undisturbed if we work with unweighted data.

We have noted that the gap between collective bargaining coverage between Germany and Britain is roughly 40 percentage points and that this gap does not change very much over the period. We can use our estimates to answer the question: had British workplaces been endowed with the German characteristics would they have had the (high) German collective bargaining coverage? Table 4b shows the results of this exercise. We find that differences in the distribution of observable workplace characteristics across Germany and Britain account for around one-tenth of the disparity in collective bargaining across countries, so that roughly 90 percent is due to differences in the betas for each characteristic in the two countries. This 'unexplained' component (which is often attributed to discrimination in the gender wage gap literature) may, in this case, be attributable to employer tastes for union wage setting which are due, in part, to very different historical, political and industrial relations institutions in Germany relative to Britain.[9]

These results also hold up rather well in the case of any type of collective agreement (shown in panel (b)) or sectoral agreements (panel (c)). Interestingly, the small German-British gap in firm-level bargaining (panel (d)) shows an opposite pattern: the compositional effect is dominant in both 1998 and 2004. Thus, holding workplace characteristics constant, the two countries have roughly the same propensities to engage in firm-level agreements.

Finally, Table 5 presents a counterfactual exercise in which the German (British) coefficients or propensities are applied to British (German) characteristics in each of the two

sample years, 1998 and 2004. The exercise is carried out for all selected outcome variables, and the most interesting finding, as shown in the first two columns of the table, is that Britain would very much resemble Germany if the British establishments recorded the same 'behaviour' as their German counterparts. In 1998**,** for example: the gap between the observed collective bargaining coverage in Germany and the counterfactual coverage rate would be a striking 3.3 percentage points (or 62.5–59.2); whereas in 2004 it would be 4.2 percentage points (51.1 – 46.9). Over time, the percentage point change of –12.3 would, in turn, broadly mimic the observed percentage point change of –11.4 (in Table 4a, panel (a)).

Applying the British propensities to Germany workplaces produces a British-like situation, although with less 'precision' than in the previous exercise. In fact, as the last two columns of the table demonstrate, the figures in panels (a) through (e) tend to be lower than the corresponding values observed for Britain in either 1998 or 2004 (again refer to Table 4a). We can mostly attribute this larger gap to differences in the mean of the *single establishment* variable. As a practical matter, replication of the last two columns purged of this variable yields a much smaller difference between observed and counterfactual coverage rates of roughly 3 percentage points. (Counterfactual results without the single-establishment dummy are available from the authors upon request.) In any event, note that the 1998-2004 percentage point changes reported in Table 5 are very much in line with the observed changes reported in Table 4a. Consequently, the main results are as follows: first, in both countries workplace behaviour changes very little though time; and, second, the two countries differ substantially in their behaviour for a given set of workplace characteristics. *Vulgo*: propensities by country mean everything in terms of cross-country differences in collective bargaining and worker representation.

6. Conclusions

In this paper we have charted the incidence of and changes in collective bargaining/workplace representation, 1998-2004, estimating a common model of the determinants of coverage for Germany and Britain, both severally and jointly. Ours is the first comparative study seeking to understand the factors behind the recent, substantial decline in private sector collective bargaining in Germany and Britain. Our treatment does five things. First, it quantifies the extent of that decline at the level of the workplace. Second, it establishes the role of compositional change in workplace characteristics in contributing to this decline. Interestingly, the only other study to use this workplace-based approach and

which covers a 24-year period of decline recovers much the same percentage change attributable to compositional change as do we for the single country – Britain – it examines. Third, it considers the extent to which differences in workplace characteristics across Germany and Britain can account for the gap in the frequency of collective bargaining between the two countries. Fourth, it undertakes similar analyses in respect of works councils and joint consultative committees, those other main institutional pillars of worker representation in the two countries. Finally, the results are supported in sensitivity analyses.

We find evidence of a strong and persistent decline in collective bargaining in Germany and Britain since the late 1990s. By 2004, just over 50 percent of German establishments were covered by a collective agreement, down 11 percentage points on six years earlier. At around 15 percent, the union recognition rate in Britain was less than one-third that of Germany, having fallen by over one-quarter in the previous six years. Projecting this 6-year rate of decline forward another six years to 2010 implies only 40 percent of German private-sector establishments will be covered by any type of collective agreement while the rate in Britain will be around 10 percent.

We have found that the decline in collective bargaining incidence in both countries is mostly due to changes in behaviour rather than to compositional effects. This outcome is not particularly surprising since workplace characteristics have not changed that much over this relatively short time frame. Nevertheless, it is striking that the decline is apparent in virtually every type of workplace, albeit to different degrees. There are few, if any, impregnable bastions of unionism left in these two nations.

A comparison of workplace characteristics across Germany and Britain revealed a number of substantial differences, perhaps the most important of which was the much greater incidence of single independent establishments in the former country. The lower propensity of single-establishment firms to embrace collective bargaining compared with their multi-site counterparts suggests that the gap in collective bargaining between Germany and Britain might get even bigger if such differences were accounted for. Yet, compositional differences in workplace characteristics accounted for about one-tenth of the 40 percentage point gap in collective bargaining incidence between Germany and Britain. The rest, manifested in pooled country equations as a large coefficient estimate for the 'Germany' dummy, remains unexplained. But the British deficit is likely to capture country-level differences in history, culture and institutions, as well as some residual unobserved workplace-level factors. Interestingly, the size of the 'Germany' effect remained relatively stable over the period under investigation.

The cross-country pattern of decline in worker representation differs in one main aspect. Although works councils seemingly remain strong in Germany over the sample period, their British counterpart – the joint consultative committee – is emphatically in decline. This trend has occurred despite moves in Britain to institutionalize forms of worker representation other than union recognition, some of them inspired by European legislation on information and consultation.

Endnotes

[1] For a moment-in-time analysis of the determinants of 'never membership' in German trade unions, see Schnabel and Wagner (2006).

[2] Large plants are oversampled but the sampling within each cell is random.

[3] Interestingly, the German survey goes on to ask of those establishments *not* bound by a collective agreement whether or not they nevertheless oriented themselves toward an industry-wide collective agreement.

[4] Once the survey interviewer has established that there is a union at the workplace the manager is asked: "Is the [NAME OF UNION] recognized by management for negotiating pay and conditions for any sections of the workforce in this establishment? (INTERVIEWER: If agreements are negotiated with the union at a higher level in the organisation or by an employers association, but apply to union/staff association members here, count as recognized)."

[5] We do not implement a three-component decomposition which can be derived similarly to yield $\Delta_t = (x_{t_1} - x_{t_0})b_{t_0} + x_{t_0}(b_{t_1} - b_{t_0}) + (x_{t_1} - x_{t_0})(b_{t_1} - b_{t_0})$, where the third term is the interaction of the composition and within-group effects. Consistent with the literature, our assumption is that the third term is neglible.

[6] Had we defined our sample more restrictively, very modest declines in works councils would be evident at the establishment level. For details, see Addison et al. (2009); see also Hassel (1999).

[7] Similar regressions for the other outcome variables – any collective agreement for Britain, sectoral- and firm-level agreements for both countries, and works councils and JCCs for Germany and Britain, respectively – are available on request.

[8] Although the extended set of regressors in Appendix Table 1 is limited to the addition of industry and regional controls in the case of Germany and regional and detailed workforce composition controls in the case of Britain, there is a good reason for this: we sought to keep the specifications for the two countries as close as possible to facilitate comparisons between them.

[9] We note that by following the procedures suggested by Jann (2008) we get virtually the same results. As a further robustness check, we also examined the sensitivity of the results to whether we take the British or German coefficients as the reference category. Our procedure followed again Jann (2008), who suggested a weighting method based on Oaxaca and Ransom (1994). The results from this exercise indicate that despite differences in magnitude the within-effect continues to dominate.

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TABLE 1

Workplace Mean Characteristics in Germany and Britain, Survey-Weighted Data, 1998 and 2004

Variables	*Germany*				*Britain*			
	1998	2004	p.p.c.	p.c.	1998	2004	p.p.c.	p.c.
Any collective agreement/union recognition	62.5	51.1	-11.4	-18.2	20.3	14.5	-5.8	-28.7
Any collective agreement	62.5	51.1	-11.4	-18.2	16.9	10.6	-6.3	-37.2
Sectoral-level agreement	56.9	47.1	-9.8	-17.2	4.2	1.8	-2.4	-57.2
Firm-level agreement	5.6	4.0	-1.6	-28.5	8.3	7.7	-0.6	-7.4
Works councils/JCCs	17.0	17.6	0.6	3.5	14.5	10.1	-4.4	-30.3
Manufacturing	25.8	21.4	-4.4	-17.1	17.6	14.4	-3.2	-18.2
Utilities	0.4	0.7	0.3	72.1	0.2	0.2	-0.1	-26.2
Construction	15.4	10.6	-4.8	-30.9	6.5	5.0	-1.5	-23.0
Wholesale and retail trade	26.3	25.6	-0.7	-2.5	25.5	25.8	0.3	1.1
Hotels and restaurants	6.6	6.7	0.1	1.2	10.6	11.0	0.4	4.2
Transport and communications	5.6	6.7	1.1	20.2	5.3	5.3	0.0	0.8
Financial services	0.9	1.8	0.9	91.4	12.9	13.5	0.6	4.6
Other business services	11.3	16.1	4.8	42.0	5.7	7.3	1.5	26.7
Education	0.9	0.9	0.0	1.5	2.9	1.3	-1.6	-54.9
Health	4.8	6.5	1.7	36.4	3.8	4.2	0.4	10.4
Community services	2.0	3.0	1.0	50.0	9.0	12.0	3.0	33.7
Leading region	74.2	81.7	7.6	10.2	29.2	25.8	-3.4	-11.7
Size 10-20	58.8	56.3	-2.5	-4.3	52.8	51.5	-1.3	-2.5
Size 21-100	34.6	36.5	1.9	5.5	38.6	40.6	2.0	5.1
Size 101-200	3.8	4.2	0.4	11.9	5.1	4.5	-0.6	-11.7
Size 201-499	2.1	2.3	0.2	11.7	2.7	2.6	-0.1	-4.4
Size 500-999	0.4	0.5	0.1	13.6	0.6	0.6	0.0	3.4
Size ≥1, 000	0.3	0.2	0.0	-4.0	0.2	0.2	0.0	-9.1
Foreign owned	3.1	4.2	1.1	35.5	7.7	11.3	3.7	47.6
Single establishment	81.3	77.9	-3.3	-4.1	40.2	38.1	-2.1	-5.2
Establishment older than 10 years	69.7	77.6	7.8	11.2	66.9	72.9	6.0	8.9
Proportion female workers	39.7	41.5	1.8	4.5	47.9	48.4	0.5	1.1
Proportion part-time workers	21.8	20.3	-1.5	-6.7	28.6	30.4	1.8	6.4
Proportion skilled workers	57.0	62.8	5.8	10.1	54.6	46.9	-7.7	-14.0

*Source*s: IAB Establishment Panel; WERS 1998 and 2004.

Notes: p.p.c. and p.c. denote percentage point change and percentage change in the mean values, respectively. All variables are 1, 0 dummies, with mean values given in percentages.

TABLE 2a

Incidence of Collective Bargaining of Any Type/Union Recognition in Germany and Britain by Workplace Characteristics, Weighted Data, 1998 and 2004

Variables	*Germany (Collective agreement)*			*Britain (Union recognition)*		
	1998	2004	p.p c.	1998	2004	p.p c.
Manufacturing	56.7	44.9	-11.8	16.8	8.9	-7.9
Utilities	96.8	73.3	-23.5	97.9	94.9	-3.0
Construction	76.1	73.8	-2.3	24.2	9.4	-14.8
Wholesale and retail trade	70.9	59.7	-11.2	14.7	9.8	-4.9
Hotels and restaurants	85.4	66.3	-19.1	2.6	0.3	-2.3
Transport and communications	77.1	55.4	-21.7	33.5	19.6	-13.9
Financial services	81.2	79.4	-1.8	24.8	33.1	8.3
Other business services	23.8	24.0	0.2	6.3	1.7	-4.6
Education	30.7	33.3	2.6	43.8	26.1	-17.7
Health	41.1	33.5	-7.6	31.2	11.7	-19.5
Community services	78.5	34.0	-44.5	9.9	14.5	4.6
Leading region	68.2	54.7	-13.5	12.7	11.0	-1.7
Size 10-20	56.2	49.2	-7.0	33.1	21.3	-11.8
Size 21-100	68.4	56.5	-11.9	19.4	16.3	-3.1
Size 101-200	81.3	65.2	-16.1	38.8	36.8	-2
Size 201-499	78.8	78.0	-0.8	54.8	48.3	-6.5
Size 500-999	94.8	88.5	-6.3	61.4	43.8	-17.6
Size ≥1000	98.5	95.0	-3.5	66.6	61.1	-5.5
Foreign owned	61.8	53.3	-8.5	15.8	14.2	-1.6
Single establishment	59.9	46.9	-13	12.4	4.8	-7.6
Establishment older than 10 years	67.9	54.2	-13.7	19.8	16.7	-3.1

Sources: IAB Establishment Panel; WERS 1998 and 2004.
Note: See notes to Table 1.

TABLE 2b
Incidence of Works Councils/Joint Consultative Committees in Germany and Britain by Workplace Characteristics, Weighted Data, 1998 and 2004

Variables	*Germany (Works councils)*			*United Kingdom (Joint consultative committees)*		
	1998	2004	p.p c.	1998	2004	p.p c.
Manufacturing	24.6	24.1	-0.5	20.7	19.2	-1.5
Utilities	57.6	56.7	-0.9	55.3	54.8	-0.5
Construction	10.7	11.2	0.5	5.3	3.9	-1.4
Wholesale and retail trade	13.7	17.7	4.0	12.5	10.7	-1.8
Hotels and restaurants	3.6	3.9	0.3	6.5	3.0	-3.5
Transport and communications	31.3	24.7	-6.6	12.5	13.0	0.5
Financial services	52.4	52.6	0.2	13.7	9.5	-4.2
Other business services	13.2	13.6	0.4	19.8	6.5	-13.3
Education	25.9	30.2	4.3	19.9	11.6	-8.3
Health	14.7	11.0	-3.7	13.7	5.7	-8.0
Community services	16.1	10.2	-5.9	20.4	9.5	-10.9
Leading region	17.8	17.4	-0.4	15.1	9.3	-5.8
Size 10-20	4.3	5.3	1.0	9.0	2.8	-6.2
Size 21-100	26.7	25.7	-1.0	16.0	12.1	-3.9
Size 101-200	76.5	64.5	-12.0	35.8	41.2	5.4
Size 201-499	84.4	80.8	-3.6	49.6	53.5	3.9
Size 500-999	88.3	93.5	5.2	48.4	67.5	19.1
Size 1000+	98.7	97.8	-0.9	63.1	65.4	2.3
Foreign owned	49.5	50.7	1.2	20.5	14.0	-6.5
Single establishment	11.7	10.7	-1.0	16.1	4.5	-11.6
Establishment older than 10 years	19.2	18.8	-0.4	13.8	10.1	-3.7

Sources: IAB Establishment Panel; WERS 1998 and 2004.
Note: See notes to Tables 1 and 2a.

TABLE 3
Linear Probability Estimates of an Establishment Having a Collective Agreement of Any Type/Union Recognition in Germany and Britain, Weighted Data, 1998 and 2004

Variables	*Germany*						*Britain*						*Pooled data*					
	1998 and 2004		1998		2004		1998 and 2004		1998		2004		1998 and 2004		1998		2004	
Utilities	0.230	***	0.317	***	0.182	***	0.566	***	0.500	***	0.634	***	0.288	***	0.376	***	0.242	***
	(0.046)		(0.061)		(0.053)		(0.048)		(0.073)		(0.062)		(0.042)		(0.057)		(0.053)	
Construction	0.294	***	0.276	***	0.312	***	-0.540		-0.073		-0.051		0.162	***	0.149	***	0.174	***
	(0.031)		(0.047)		(0.035)		(0.064)		(0.116)		(0.049)		(0.033)		(0.057)		(0.031)	
Wholesale and retail trade	0.114	***	0.147	***	0.082	**	-0.197	***	-0.220	***	-0.171	***	-0.012		-0.001		-0.020	
	(0.032)		(0.051)		(0.035)		(0.425)		(0.073)		(0.412)		(0.027)		(0.046)		(0.027)	
Hotels and restaurants	0.275	***	0.320	***	0.226	***	-0.296	***	-0.379	***	-0.234	***	-0.028		-0.018		-0.032	
	(0.049)		(0.075)		(0.059)		(0.047)		(0.086)		(0.043)		(0.036)		(0.062)		(0.036)	
Transport and communications	0.127	***	0.214	***	0.061		-0.159		-0.003		-0.033		0.065	*	0.012	*	0.027	
	(0.041)		(0.059)		(0.049)		(0.065)		(0.117)		(0.056)		(0.037)		(0.067)		(0.036)	
Financial services	0.192	***	0.181		0.186	***	0.225		-0.076		0.114	**	0.095	**	0.024		0.148	***
	(0.060)		(0.110)		(0.062)		(0.051)		(0.083)		(0.056)		(0.040)		(0.065)		(0.045)	
Other business services	-0.257	***	-0.314	***	-0.232	***	-0.216	***	-0.268	***	-0.162	***	-0.263	***	-0.311	***	-0.230	***
	(0.033)		(0.061)		(0.032)		(0.044)		(0.080)		(0.040)		(0.029)		(0.053)		(0.027)	
Education	-0.167	*	0.160		-0.185	**	0.087		0.121		0.025		0.015		0.072		-0.058	
	(0.097)		(0.187)		(0.086)		(0.105)		(0.152)		(0.095)		(0.087)		(0.145)		(0.064)	
Health	-0.140	**	-0.142		-0.151	**	-0.045		0.031		-0.096		-0.104	**	-0.055		-0.137	***
	(0.067)		(0.129)		(0.063)		(0.073)		(0.134)		(0.062)		(0.052)		(0.102)		(0.046)	
Community services	0.000		0.261	***	-0.137	**	-0.127	**	-0.202	**	-0.069		-0.045		-0.052		-0.040	
	(0.066)		(0.090)		(0.060)		(0.050)		(0.080)		(0.056)		(0.036)		(0.059)		(0.040)	
Leading region	0.211	***	0.231	***	0.197	***	-0.072	***	-0.101	***	-0.061	***	0.050	***	0.056	**	0.045	***

	(0.019)		(0.033)		(0.020)		(0.019)		(0.034)		(0.022)		(0.015)		(0.026)		(0.016)	
Size 21-100	0.102	***	0.098	***	0.101	***	0.030		0.005		0.061	**	0.069	***	0.062	**	0.078	***
	(0.019)		(0.031)		(0.022)		(0.024)		(0.042)		(0.024)		(0.016)		(0.029)		(0.017)	
Size101-200	0.206	***	0.219	***	0.186	***	0.183	***	0.165	***	0.208	***	0.202	***	0.217	***	0.195	***
	(0.025)		(0.038)		(0.030)		(0.034)		(0.533)		(0.044)		(0.022)		(0.035)		(0.028)	
Size 201-499	0.271	***	0.217	***	0.303	***	0.302	***	0.294	***	0.321	***	0.306	***	0.295	***	0.321	***
	(0.028)		(0.048)		(0.029)		(0.034)		(0.055)		(0.043)		(0.023)		(0.039)		(0.027)	
Size 500-999	0.406	***	0.343	***	0.421	***	0.296	***	0.355	***	0.265	***	0.364	***	0.400	***	0.343	***
	(0.028)		(0.041)		(0.035)		(0.043)		(0.069)		(0.054)		(0.028)		(0.044)		(0.035)	
Size ≥1000	0.386	***	0.321	***	0.424	***	0.402	***	0.399	***	0.414	***	0.400	***	0.384	***	0.419	***
	(0.027)		(0.043)		(0.031)		(0.049)		(0.081)		(0.063)		(0.030)		(0.051)		(0.035)	
Foreign owned	-0.113	***	-0.134		-0.104	**	-0.104	***	-0.149	***	-0.067	**	-0.110	***	-0.155	***	-0.086	***
	(0.041)		(0.082)		(0.041)		(0.027)		(0.046)		(0.032)		(0.024)		(0.041)		(0.027)	
Single establishment	-0.120	***	-0.084	**	-0.148	***	-0.162	***	-0.174	***	-0.139	***	-0.135	***	-0.127	***	-0.137	***
	(0.041)		(0.035)		(0.025)		(0.024)		(0.043)		(0.023)		(0.018)		(0.033)		(0.018)	
Establishment older than 10 years	0.085	***	0.093	**	0.076	***	0.023		-0.016		0.069	***	0.065	***	0.056	*	0.077	***
	(0.025)		(0.042)		(0.029)		(0.027)		(0.048)		(0.022)		(0.019)		(0.033)		(0.018)	
Proportion female workers	0.027		0.045		0.023		-0.016		-0.072		0.026		0.050		0.056		0.053	
	(0.048)		(0.084)		(0.052)		(0.052)		(0.095)		(0.050)		(0.036)		(0.068)		(0.036)	
Proportion part-time workers	0.012		-0.091		0.069		0.084	*	0.122		0.053		0.000		-0.044		0.031	
	(0.057)		(0.097)		(0.063)		(0.051)		(0.095)		(0.050)		(0.039)		(0.073)		(0.040)	
Proportion skilled workers	0.103	***	0.073		0.110	**	-0.046		-0.002		-0.080	*	0.000		0.004		0.000	
	(0.037)		(0.057)		(0.044)		(0.041)		(0.069)		(0.044)		(0.029)		(0.049)		(0.032)	
Time dummy (2004)	-0.124	***					-0.056	**					-0.081	***				
	(0.019)						(0.022)						(0.015)					
German establishment													0.435	***	0.453	***	0.422	***
													(0.018)		(0.032)		(0.018)	

Constant	0.320	***	0.293	***	0.238	***	0.363	***	0.443	***	0.216	***	0.153	***	0.154	*	0.059	
	(0.049)		(0.075)		(0.056)		(0.074)		(0.120)		(0.057)		(0.048)		(0.084)		0.0398	
No. of observations	10,686		3,552		7,134		2,991		1,502		1,489		13,677		7,134		8,623	
R^2	0.20		0.22		0.18		0.17		0.18		0.19		0.27		0.18		0.26	

*Source*s: IAB Establishment Panel; WERS 1998 and 2004.
Notes: 'Manufacturing' and 'Size 10-20' are the reference industry and employment size categories, respectively.

TABLE 4a
Within Versus Compositional Change in Germany and Britain by Type of Institution, Weighted Data, 1998 and 2004

	Germany		*Britain*	
(a) Collective agreement of any type/union recognition	1998	2004	1998	2004
(1) Observed coverage rate (%)	62.5	51.1	20.3	14.5
(2) Percentage point change, 1998-2004		-11.4		-5.8
(3) 2004 (predicted) coverage based on 1998 coefficients		63.7		19.0
(4) Percentage point change due to changes in characteristics		1.2 (-10.9%)		-1.3 (21.8%)
(5) Percentage point change due to changes in behaviour		-12.6 (110.9%)		-4.6 (78.2%)
(b) Collective agreement of any type				
(1) Observed coverage rate (%)	62.5	51.1	16.9	10.6
(2) Percentage point change, 1998-2004		-11.4		-6.3
(3) 2004 (predicted) coverage based on 1998 coefficients		63.7		17.0
(4) Percentage point change due to changes in characteristics		1.2 (-10.9%)		0.1 (-1.6%)
(5) Percentage point change due to changes in behaviour		-12.6 (110.9%)		-6.4 (101.6%)
(c) Sectoral-level agreement				
(1) Observed coverage rate (%)	56.9	47.1	4.2	1.8
(2) Percentage point change, 1998-2004		-9.8		-2.4
(3) 2004 (predicted) coverage based on 1998 coefficients		58.0		3.5
(4) Percentage point change due to changes in characteristics		1.0 (-10.5%)		-0.7 (29.7%)
(5) Percentage point change due to changes in behaviour		-10.8 (110.5%)		-1.7 (70.3%)
(d) Firm-level agreement				
(1) Observed coverage rate (%)	5.6	4.0	8.3	7.7
(2) Percentage point change, 1998-2004		-1.6		-0.6
(3) 2004 (predicted) coverage based on 1998 coefficients		5.8		8.3
(4) Percentage point change due to changes in characteristics		0.2 (-13.3%)		0.0 (0.0%)
(5) Percentage point change due to changes in behaviour		-1.8 (113.3%)		-0.6 (100.0%)
(e)Works councils/Joint consultative committees				
(1) Observed coverage rate (%)	17.0	17.6	14.5	10.1
(2) Percentage point change, 1998-2004		0.6		-4.4
(3) 2004 (predicted) coverage based on 1998 coefficients		19.7		13.3
(4) Percentage point change due to changes in characteristics		2.7 (452.5%)		-1.2 (26.4%)
(5) Percentage point change due to changes in behaviour		-2.1 (-352.5%)		-3.2 (73.6%)

Source: IAB Establishment Panel; WERS, 1998 and 2004.
Notes: For each panel, row (3) is given by [x_04*b_98]; row (4), the between-effect, is given by [($x\_04 - x\_98)*b\_98$], or row (3) minus row (1) in 1998; row (5), the within-effect, is given by [$x\_04*(b\_04 - b\_98)$], or row (2) minus row (4). x denotes the observed mean characteristics and b the estimated coefficients in the corresponding year. See equation (4) in the text.

TABLE 4b
Within- Versus Compositional Change by Type of Institution and by Year, Weighted Data, 1998 and 2004

	1998		2004	
(a) Collective agreement of any type/union recognition	Germany	UK	Germany	UK
(1) Observed coverage rate (%)	62.5	20.3	51.1	14.5
(2) Percentage point gap (Germany-Britain)		-42.2		-36.6
(3) Predicted coverage based on German propensities		59.2		46.8
(4) Percentage point gap due to differences in characteristics		-3.3 (7.8%)		-4.3 (11.8%)
(5) Percentage point gap due to changes in behaviour		-38.9 (92.2%)		-32.3 (88.2%)
(b) Collective agreement of any type				
(1) Observed coverage rate (%)	62.5	16.9	51.1	10.6
(2) Percentage point gap (Germany-Britain)		-45.6		-40.5
(3) Predicted coverage based on German propensities		59.2		47.0
(4) Percentage point gap due to differences in characteristics		-3.3 (7.1%)		-4.1 (10.2%)
(5) Percentage point gap due to changes in behaviour		-42.3 (92.9%)		-36.4 (89.8%)
(c) Sectoral-level agreement				
(1) Observed coverage rate (%)	56.9	4.2	47.1	1.8
(2) Percentage point gap (Germany-Britain)		-52.8		-45.4
(3) Predicted coverage based on German propensities		51.0		40.3
(4) Percentage point gap due to differences in characteristics		-5.9 (11.3%)		-6.8 (15.1%)
(5) Percentage point gap due to changes in behaviour		-46.8 (88.7%)		-38.5 (84.9%)
(d)Firm -level agreement				
(1) Observed coverage rate (%)	5.6	8.3	4.0	7.7
(2) Percentage point gap (Germany-Britain)		2.8		3.7
(3) Predicted coverage based on German propensities		8.2		6.7
(4) Percentage point gap due to differences in characteristics		2.7 (96.8%)		2.7 (72.5%)
(5) Percentage point gap due to changes in behaviour		0.1 (3.2%)		1.0 (27.5%)
(e)Works councils/Joint consultative committees				
(1) Observed coverage rate (%)	17.0	14.5	17.6	10.1
(2) Percentage point gap (Germany-Britain)		-2.6		-7.5
(3) Predicted coverage based on German propensities		25.4		26.2
(4) Percentage point gap due to differences in characteristics		8.3 (-325.0%)		8.5 (-113.3%)
(5) Percentage point gap due to changes in behaviour		-10.9 (425.0%)		-16.1 (213.3%)

Notes: For each panel, row (3) is given by *x_B*b_G*, while rows (4) and (5) are given by (*x_G – x_B)*b_G* (the between-effect) and *x_B*(b_G –- b_B*) (the within-effect), respectively; *B* and *G* denote Britain and Germany; *x* denotes the observed mean characteristics; and *b* gives the estimated coefficients in the corresponding year. See equation (5) in the text.

TABLE 5
Counterfactual Coverage Rates in Germany and Britain

	German propensities with British characteristics		British propensities with German characteristics	
	1998	2004	1998	2004
(a)Collective agreement of any type/union recognition				
(1) Counterfactual coverage rate (%)	59.2	46.9	9.9	2.6
(2) Percentage point decline (2004-1998)		-12.3		-7.3
(b) Collective agreement of any type				
(1) Counterfactual coverage rate (%)	59.2	46.9	7.6	3.0
(2) Percentage point decline (2004-1998)		-12.3		-4.6
(c) Sectoral-level agreement				
(1) Counterfactual coverage rate (%)	51.0	40.3	1.5	0.7
(2) Percentage point decline (2004-1998)		-10.7		-0.8
(d) Firm-level agreement				
(1) Counterfactual coverage rate (%)	8.2	6.7	1.6	1.8
(2) Percentage point decline (2004-1998)		-1.6		0.2
(e) Works councils/Joint consultative committees				
(1) Counterfactual coverage rate (%)	25.4	26.2	14.4	7.5
(2) Percentage point decline (2004-1998)		0.8		-6.9

Notes: In each panel, the counterfactual coverage rate in the first and second columns is given by x_B*b_G and x_G*b_B, respectively; *B* and *G* denote Britain and Germany; *x* denotes the observed mean characteristics; and *b* gives the estimated coefficients in the corresponding year.

APPENDIX TABLE 1
Within Versus Compositional Change in Germany and Britain, Weighted Data, 1998 and 2004, Full Specification

	Collective agreement of any type /union recognition			*Sectoral agreement*			*Firm-level agreement*			*Works councils/JCCs*		
Germany	1998	2004		1998	2004		1998	2004		1998	2004	
(1) Observed coverage rate (%)	62.5	51.8		56.9	47.8		5.6	4.0		17.0	17.7	
(2) Percentage point change, 1998-2004		-10.7			-9.1			-1.6			0.7	
(3) 2004 (predicted) coverage based on 1998 coefficients		65.0			59.5			5.5			19.5	
(4) Percentage point change due to changes in characteristics		2.5	(-23.6%)		2.6	(-28.6%)		-0.1	(4.4%)		2.4	(369.7%)
(5) Percentage point change due to changes in behaviour		-13.3	(123.6%)		-11.8	(128.6%)		-1.5	(95.6%)		-1.8	(-269.7%)
Britain												
(1) Observed coverage rate (%)	19.7	14.6		4.2	1.8		8.2	7.7		14.7	10.1	
(2) Percentage point change, 1998-2004		-5.1			-2.4			-0.5			-4.8	
(3) 2004 (predicted) coverage based on 1998 coefficients		17.6			3.2			8.4			14.3	
(4) Percentage point change due to changes in characteristics		-2.2	(41.9%)		-1.0	(39.3%)		0.2	(-34.7%)		-0.4	(9.6%)
(5) Percentage point change due to changes in behaviour		-2.98	(58.1%)		-1.5	(60.7%)		-0.7	(134.7%)		-4.3	(90.4%)

Sources: IAB Establishment Panel; WERS, 1998 and 2004.
Notes: See notes to Table 4a. The model includes an extended set of industry and regional dummies for Germany and in the case of Britain detailed regional and workforce composition dummies.

APPENDIX TABLE 2
Within- Versus Compositional Change in Germany and Britain by Type of Institution, Unweighted Data, 1998-2004

	Germany		*Britain*	
(a) Collective agreement of any type/union recognition	1998	2004	1998	2004
(1) Observed coverage rate (%)	69.3	57.7	39.1	33.6
(2) Percentage point change, 1998-2004		-11.6		-5.5
(3) 2004 (predicted) coverage based on 1998 coefficients		70.3		37.9
(4) Percentage point change due to changes in characteristics		1.0 (-8.6%)		-1.2 (21.8%)
(5) Percentage point change due to changes in behaviour		-12.6 (108.6%)		-4.3 (78.2%)
(b) Collective agreement of any type				
(1) Observed coverage rate (%)	69.3	57.7	35.0	28.0
(2) Percentage point change, 1998-2004		-11.6		-7.0
(3) 2004 (predicted) coverage based on 1998 coefficients		70.3		33.9
(4) Percentage point change due to changes in characteristics		1.0 (-8.6%)		-1.1 (15.7%)
(5) Percentage point change due to changes in behaviour		-12.6 (108.6%)		-5.9 (84.3%)
(c) Sectoral-level agreement				
(1) Observed coverage rate (%)	58.3	48.8	5.4	4.9
(2) Percentage point change, 1998-2004		-9.5		-0.5
(3) 2004 (predicted) coverage based on 1998 coefficients		61.5		4.8
(4) Percentage point change due to changes in characteristics		3.2 (-33.7%)		-0.6 (120.0%)
(5) Percentage point change due to changes in behaviour		-12.7 (133.7%)		0.1 (-20.0%)
(d) Firm-level agreement				
(1) Observed coverage rate (%)	11.0	9.0	26.3	22.1
(2) Percentage point change, 1998-2004		-2.0		-4.2
(3) 2004 (predicted) coverage based on 1998 coefficients		8.8		25.4
(4) Percentage point change due to changes in characteristics		-2.2 (110.0%)		-0.9 (21.4%)
(5) Percentage point change due to changes in behaviour		0,2 (-10.0%)		-3.3 (78.6%)
(e) Works-council/Joint consultative committee				
(1) Observed coverage rate (%)	48.2	43.6	34.3	31.1
(2) Percentage point change, 1998-2004		-4.6		-3.2
(3) 2004 (predicted) coverage based on 1998 coefficients		48.9		31.8
(4) Percentage point change due to changes in characteristics		0.7 (-15.2)		-2.5 (78.1)
(5) Percentage point change due to changes in behaviour		-5.3 (115.2)		-0.7 (21.9)

Notes: See notes to Table 4a.

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