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The Extent of Collective Bargaining and Workplace Representation: Transitions between States and their Determinants. A Comparative Analysis of Germany and Great Britain

John T. Addison, Alex Bryson, Paulino Teixeira, André Pahnke and Lutz Bellman

LSE THE LONDON SCHOOL OF ECONOMICS AND POLITICAL SCIENCE

E·S·R·C ECONOMIC & SOCIAL RESEARCH COUNCIL

Abstract

Industrial relations are in flux in many nations, perhaps most notably in Germany and Britain. That said, comparatively little is known in any detail of the changing pattern of the institutions of collective bargaining and worker representation in Germany and still less in both countries about firm transitions between these institutions over time. The present paper maps changes in the importance of the key institutions, 1998-2004, and explores the correlates of two-way transitions, using successive waves of the German IAB Establishment Panel and both cross-sectional and panel components of the British Workplace Employment Relations Survey. We identify the workplace correlates of the demise of collective bargaining in Britain and the erosion of sectoral bargaining in Germany, and identify the respective roles of behavioral and compositional change.

JEL Classifications: J50, J53
Keywords: union recognition, union coverage, sectoral and firm-level collective bargaining, works councils, joint consultative committees, changes in collective bargaining/worker representation states, bargaining transitions and their determinants.

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John T. Addison is Hugh C. Lane Professor of Economic Theory at the Moore School of Business, University of South Carolina, and Professor of Economics, Queen's University Belfast. He is also a research fellow of IZA. Alex Bryson is Visiting Research Fellow at the Centre for Economic Performance, London School of Economics, and Senior Research Fellow at the National Institute of Economic and Social Research (NIESR). Paulino Teixeira is Professor of Economics in the Faculty of Economics at the University of Coimbra/GEMF. André Pahnke is a researcher with the Institut für Arbeitsmarkt- und Berufsforschung, Bundesagentur für Arbeit, in Nuremberg. Lutz Bellmann is Professor of Economics at the Friedrich-Alexander-Universität Erlangen-Nürnberg, leader of the establishments and employment research group at the Institut für Arbeitsmarkt- und Berufsforschung, Bundesagentur für Arbeit, and a research fellow of IZA.

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I. Introduction

In recent years there has been an ongoing process of decentralization in Germany with a decline in sectoral agreements (*Flachentarifverträge*). The formal erosion of these central wage agreements apart, the path toward decentralization is less transparent; for example, many companies still pay above the wages agreed to in regional and industry-level agreements, there is no obvious sign of a sustained growth in firm-level agreements (*Firmentarifverträge*), and many firms though not bound by collective agreements still orient themselves toward sectoral agreements. The German system of industrial relations continues to be characterized by its extensive juridification, framework of binding collective agreements, and encompassing interest organizations on both sides of the labor market. It is moreover a dual system of interest representation, of codetermination and collective bargaining. But although few would claim today that Germany's basic industrial relations system remains intact (e.g. Klikauer, 2002), there is lingering ambiguity concerning the facts of the case – let alone their determinants – allowing for disagreement as to the consequences of the erosion that has been observed.[1]

The British industrial relations system differs in a number of fundamental respects from its German counterpart. First, it remains a system in which employers are largely free to choose how they engage with employees and how they associate with one another.[2] There are few formal requirements placed upon employers to negotiate, consult, or inform employees over employment relations matters. Those rules that do exist tend to originate at European level and have the greatest impact on transnational corporations. Second, certain auxiliary legislation that supported employees' bargaining rights – such as that which extended the terms of bargaining agreements to uncovered workers in the public sector – were removed in the 1980s. As a result, there is very little statutory underpinning to collective bargaining and that which does exist – such as the statutory recognition procedure – is largely a dead-letter. Third, because of this framework, there is little necessity for employers to seek derogations from sectoral bargaining arrangements. And while it is possible under statute for employers to permit collective agreements to be directly legally binding (via the 1992 Trade Unions and Labour Relations Consolidation Act)[3] this does not happen in practice. Instead, collective agreements take legal effect as implied terms in employees' contracts of employment. Fourth, the peak social partners are relatively weak in Britain. Employer association membership is low and declining and employer associations have traditionally been very weak, with a few notable exceptions such as the Chemical Industries Association and the Engineering Employers' Federation. As a consequence, there is little coordination in bargaining arrangements across employers, and bargaining coverage tends to be low. Even a quarter century ago, sectoral agreements were the principal method of pay determination in only one-sixth of private sector workplaces and they declined dramatically through to the late 1990s (Brown, Bryson, and Forth, 2009: 34). *In short, sectoral bargaining was already a spent force in Britain by the time our analysis begins in 1998.* Finally, because the system is highly decentralized, fragmented and uncoordinated, British unions tend to focus their organizing activity at workplace or organization level, rather than sectorally or nationally**.** Nor for that matter do they share responsibility for workplace governance issues with works councils. Rather, Britain has joint consultative committees (JCCs) which are voluntary

[1] For contrasting evaluations of the outcome of the process of decentralization, see Ochel (2003) and Massa-Wirth and Niechoj (2004).

[2] This is not to deny the fact that a process of 'juridification' has occurred which is continually shaping what was once a voluntaristic system (Dickens and Hall, 2009).

[3] See http://www.opsi.gov.uk/ACTS/acts1992/ukpga_19920052_en_11#pt4-ch1-pb2-l1g179

structures usually set up at the behest of management and with little or no authority derived from statutory arrangements.[4] Consequently, British unions seek to address the full range of workplace-related issues as they impinge upon the pay and conditions of employees.

The goal of the present exercise is to update research on the facts of the case in both countries (even though we only cover the interval 1998-2004 because of our cross-country focus), to chart transitions between collective bargaining states, and seek to account for the resulting collective bargaining structure. That is to say, we will first examine the course of collective bargaining (including the erosion of multiemployer bargaining and the expansion of sectors without collective bargaining) *and* worker representation (including works councils and Joint Consultative Committees**)** in greater detail than has previously been undertaken in any comparative study of Germany or Britain before turning to a descriptive examination of transitions between states over our common sample period and thence an analysis of their correlates and the 2004 status quo ante.

II. Backdrop

Historically, centralized bargaining (or, more accurately, 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 – first tackling changes in the organization of work and subsequently in the flexibility of working time – 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 erosion if not actual crisis (e.g. Artus, 2001). Thus, employers were increasingly resigning from employers' associations (Silvia and Schroeder, 2007), trade union strength was declining rapidly (Addison, Schnabel, and Wagner, 2007), and the coverage of collective bargaining was shrinking (Kohaut and Schnabel, 2001). Moreover, the coverage of that other pillar of the German dual system – the works council (see below) – was also subject to erosion (Hassel, 1999).

But in response to these challenges German collective bargaining was decentralizing. In part, this took the form of a rising number of company agreements – which increased from 2,550 in 1990 to 6,415 in 2001 – as many firms dropped out of the centralized system. A more important and sustained tendency, however, has been the growth of decentralization in sectoral agreements through the device of 'opening clauses' (*Öffnungklauseln*) that have allowed firms more flexibility through locally-negotiated adjustments to centrally-agreed working time and wages (Bispinck, 2004). The former adjustments allowed increases or decreases in working time and alterations to work schedules. The latter permitted reductions in wages or a suspension/withdrawal of wage improvements and/or working time adjustments involving wage changes (Hassel, 1999: 496-497). Of the two, agreements on working time

[4] It is notable that when the U.K. government enacted the Information and Consultation of Employees Regulations, which brought into force at EU requirement for employers to consult employees, they did so in such a way that employers were able to fulfill this commitment through direct communication methods – so that representative structures were unnecessary. Health and safety committees and representatives are exceptional in the British case: their status is underpinned by a strong tripartite system of statutory regulation. However, here we follow the traditional approach of excluding single-issue committees such as health and safety committees from our definition of joint consultative committees.

reductions (without compensation) were the more common (Kohaut and Schnabel, 2006). We note parenthetically that a *nonretrospective* question on such opt-out clauses was first asked in the dataset used here (the IAB Establishment Panel) in 2005, just outside the time frame of the present study. But given that opening clauses well preceded 2005 their potential influence will be accommodated using industry dummies, the maintained hypothesis being that they offer a means of stemming the erosion of centralized bargaining by better aligning outcomes to firm-specific needs

To complicate matters, so-called plant-level "pacts for employment and competitiveness" (*betriebliche Bündnisse für Arbeit [und Wettbewerbsfähigkeit]*) have also proliferated in recent years (Berthold et al., 2003; Rehder, 2003). Such agreements have also led to more flexible work rules and working time as well as reductions in total compensation. Although partially guided by opening clauses, they apply to covered and uncovered companies alike. The consensus view appears to be that while opening clauses represent a trend to organized decentralization, pacts though no less a response to the economic condition of the firm, at least represent a different dynamic: a new normal regulatory instrument. At issue is the extent to which such agreements if not in actual contravention of sectoral labor contracts are in fact destabilizing (see Seifert and Massa-Wirth, 2005). The point is that while concession bargaining of this type typically operates within the framework of sectoral agreements it may create pressures leading companies to leave the system altogether – which effects might be long delayed and not yet evident in data on the structure of bargaining (and certainly over the time interval examined here.) As a practical matter, our dataset contains retrospective information on pacts in the 2006, 2008 and 2009 waves, although this information is not used here on grounds of consistency with the earlier question on opt-out clauses. As before, any influence of such institutional innovations is captured via industry dummies.

Recently, employer associations have also responded to the challenge of membership losses via a new form of membership affiliation known as membership "without collective bargaining ties" (*ohne Tarifbindung*) (see Silvia and Schroeder, 2007: 1453-1455). Such affiliations allow members to take advantage of the relevant association's legal, lobbying, and personnel services without having to pay the contractual wage. By the same token, such members are not shielded from union efforts to extract a local agreement and they cannot collect strike insurance benefits as can regular members. This new membership form is common in the metals, plastics, and woodworking industries and is popular among small firms. Silvia and Schroeder note that about one-quarter of member firms in metalworking (employing around 10 percent of workers in that sector) have this form of membership as well as some one-third of all firms in the textile employer associations where losses of membership have been most acute. Further, in eastern Germany the majority of members in many regional employer associations have this status. Such membership developments do of course fall squarely within our sample period but our data contain no information on their incidence. Once again, their effects will be recouped through industry dummies.

Finally, mention might also be made of so-called "quick notice agreements." German law requires any company leaving an employers' association to adhere to all contracts signed by that association when the company was still a member for the duration of those contracts. Employer associations of late have begun to offer quick notice agreements that allow members to leave an association upon demand, even after a provisional agreement with the unions has been reached *but prior to its authorization*. Although quick notice may have alleviated some of the anxiety of nervous managers about being trapped in a bad contract, Silvia and Schroeder (2007: 1453) contend that it has not stopped the slide in sectoral agreements, arguing that those associations with such agreements do not seem to have

declined noticeably slower than those without them; and further caution that the option has rarely been exercised.

In sum, after sharp falls in industry-wide bargaining (by the start of our sample period the number of employees covered by sectoral agreements had fallen to 68 (51) percent in western (eastern) Germany), recent innovations in collective bargaining may well have blunted further erosion in the number of establishments and workers covered by sectoral agreements and/or neutralized any trend toward increasing company bargaining proper. This is not to deny that the process of decentralization is ongoing. Indeed, the direct evidence is to the contrary. Thus, there are very few sectors where opening clauses have not been agreed upon. For example, as of 2005 around 13 percent of establishments in the IAB Establishment Panel covered by collective bargaining stated that their collective agreements contained opening clauses and about one-half of these establishments had made use of them. Furthermore, pacts for employment have provided the basis for yet further decentralization: a 2003 survey of works councils indicated that such pacts were in existence at about 23 percent of German companies with at least 20 employees (the proportion was much greater – at 46 percent – in establishments with over 1,000 employees). The principal issue is whether this decentralization is planned or destabilizing. And even where not destabilizing the ability of the system to meet the needs of decentralization confronts the issue of workplace representation through the agency of the works council, that other pillar of the dual system of interest representation comprising unions and works councils.

As we have seen, unified unions organize entire sectors and industries and negotiate industry-wide collective agreements. For their part, work councils are elected at plant level and represent the interests of all employees in the plant, not just union members. They enjoy relatively extensive powers, extending to codetermination rights, but not covering wage negotiations per se unless the bargaining parties at regional/industry level expressly cede them a role. That said, the wide-ranging influence of councils impart material de facto bargaining authority while over the course of time more conventional bargaining rights have accrued to them under both authorized/regulated and unauthorized decentralization. In other words, issues that were formerly dealt with only under collective bargaining are increasingly being addressed within the domain of works councils. At one level, then, works councils may be likened to Anglo-Saxon workplace unions even though the strike weapon is foreclosed to them. It follows that any discussion of collective bargaining necessitates analysis of the course of works council representation.

Any decline in works councils (and of the union movement as well given their symbiosis)[5] limits the regulative capacity of German industrial relations institutions; in particular, the ability of the German system to decentralize may be threatened while further undermining trade unions. In the present treatment, we will consider the factors underpinning works council presence and works council formation/dissolution noted in the works council literature (see, for example, Addison, Schnabel, and Wagner, 1997; Addison et al., 2003; Addison et al, 2004; Jirjahn, 2009). We will also consider the role of collective bargaining in this regard, although we do not here explore the union-works council nexus in any real detail.

The attitude of the unions is also a constraint since it is hard to conceive of the needs of decentralized bargaining being best served by a situation in which the bargaining parties at sectoral level can exercise a right of veto as is the case with opening clauses. Finally, we have to recognize that the influence of collective bargaining extends well beyond its formal

[5] On this symbiosis, see in particular the recent work of Behrens (2009) who examines on the basis of the fourth WSI survey of works councils the extent to which the entity is actively involved in the recruitment of union members based on such factors as union support, union strategies, works council union density, the presence of workplace union representatives as well as structural establishment and workforce characteristics. A wider discussion of the union-works council nexus is contained in Addison (2009).

competence or reach. This is because a very considerable number of uncovered establishments/employees are influenced by the wages set under sectoral agreements by virtue of the 'orientation' of their employers toward such agreements. Thus, our analysis must seek at least to document this behavior as distinct from the classical uncovered case.

Despite the profound differences in the employment relations context charted earlier, the British private sector faces similar difficulties with respect to worker representation and collective bargaining as does Germany. Writing at the beginning of this decade, Millward, Bryson, and Forth (2000: 234), reflecting on the findings of a study tracking employment relations over the previous two decades, 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." Even where unions retained nominal bargaining rights, they were frequently overlooked in decision-making, and little or no negotiation over terms and conditions occurred. Commentators were to refer to unions as "hollow shells" (Hyman, 1997: 314; Millward, Bryson, and Forth, 2000: chapter 5; Brown et al., 1998). As a consequence, the financial state of British trade unions is parlous (Willman and Bryson, 2009), severely limiting their powers to service current members' interests, let alone organize parts of the non-union sector. The tendency was therefore for new workplaces and new entrants to the labor force to be 'born' non-union (Machin, 2000; Willman et al., 2007), resulting in a rise in the proportion of all employees in the labor force who had never been union members. This trend was even apparent in organized workplaces (Bryson and Gomez, 2005).

Union organizational weakness has manifested itself in a decline in the union wage premium (Blanchflower and Bryson, 2009) and, despite a more benign political climate under 'New Labour,' a widespread perception of union ineffectiveness among union members and non-members alike (Bryson, 2007; Bryson and Forth, 2009). Perhaps somewhat perversely, weaker unions may have been more attractive to employers as partners in organizational change and enhanced workplace performance. Union capacity to organize industrial action seems to have diminished (Dix, Sisson, and Forth, 2009), and with it the last vestiges of fear among employers with which unions were viewed in the aftermath of the 1979 Winter of Discontent and the Miners' Strike of the early 1980s. There is indeed new evidence to suggest that employers do perceive unions as helpful in improving workplace performance (Bryson and Forth, 2009), and there has been a diminution in union negative effects on profitability – such that these effects are no longer statistically significant (Blanchflower and Bryson, 2009). However, employers have supplemented and, in some places, supplanted unions through the creation and widespread adoption of non-union forms of two-way communication offering employees 'voice' through non-union channels (Willman, Gomez, and Bryson, 2009). Unlike the German case, where works councils provide a strong representative form of voice at the workplace for workers, British employers have placed the onus on direct communication mechanisms such as team briefings. Although they are the creation of employers, such mechanisms appear to enhance employee perceptions of managerial responsiveness to their needs and problems at the workplace (Bryson, 2004), potentially undermining the position of representative forms of worker voice such as trade unionism and joint consultative committees. (And, unlike works councils, it will be recalled that JCCs are voluntary rather than mandatory representative institutions, set up at the behest of management and not the workforce.)

Britain differs from Germany in another important respect. Unlike German employers, their British counterparts are able to 'mix and match' pay bargaining strategies, including bargaining coverage at workplace, organization, and sectoral level. However, although employers are at liberty to deploy different levels of bargaining, in practice, if there is any collective bargaining at all, it tends to be at a single-level (Bryson and Wilkinson,

2002). Such single-level bargaining reflects a more general trend towards the simplification of pay determination at workplace level (Kersley et al., 2006: 184).

III. Some Theoretical Reflections on Bargaining Structure

Abstracting from macroeconomic considerations attendant upon the covariation of centralization (latterly, *coordination*) of the bargaining system and macro aggregates, centralized or at least more centralized wage agreements can be rationalized on a number of microeconomic grounds. The standard argument is that centralization creates homogeneous conditions for companies by taking the wage out of competition, providing comparable labor costs for all companies. More formally, transaction costs can be reduced by substituting collective negotiations for the plethora of individual bargains and through standardization of the terms and conditions of the employment relation. These savings in the costs of negotiation and regulation are said to be increasing in the degree of collective bargaining centralization and coverage. Further, as Schnabel, Zagelmeyer, and Kohaut (2006:172) point out, the transaction cost arguments may be stiffened by recourse to power considerations. Thus, they refer to the advantages to the employer side of being able to pool their resources when dealing with organized labor. Most obviously, employer organizations are designed to counter whipsawing – the picking off of employers one at a time.

That said, the attraction of decentralization is that single-employer agreements (or individual contracts) have the obvious advantage of allowing the parties to tailor the agreement to the situation of the company or plant. Establishment-specific problems can then more easily be taken into account. But if unions are organized at a different level or insiders have the power to dictate wages and conditions then more centralized contracting may be beneficial, implying that there may be some optimal level of centralization.

External developments intrude on this scenario. In particular, the heightened competition from globalization challenges existing structures and choices of the regulatory framework. Globalization increases the need for operational flexibility (i.e. differentiated responses) in response to changing conditions in product and factor markets – the notion of increased heterogeneity in production strategies and labor practices. In such circumstances, as Schnabel, Zagelmeyer, and Kohaut note (2006: 173), "… the transaction-cost advantage of centralized arrangements decreases in favor of the informational and flexibility advantages of decentralized regulation." The requirements of flexible and local decision-making confront the relatively rigid rules set by collective bargaining. One aspect of this is the widely observed employer withdrawal from employer associations, as well as the reticence of newly-founded firms to join them (on the facts of the latter, see Kohaut and Ellguth, 2008, who further document the general course of collective bargaining coverage between 1996 and 2007).

Much research has in fact been devoted to the effect of economic change on employer associations. For example, Traxler (2004) has considered the ability of employer associations to weather collective action problems in the face of unfavorable economic conditions. In a cross-country setting he reports that institutional factors (of which the most important is the extension of multiemployer agreements to those employers not affiliated to the signatory employer association) are more important than economic factors (such as foreign trade dependence) as determinants of the level of employer density. This ties in of course with the varieties-of-capitalism model. However, economic change requires adjustment strategies on the part of employer associations, and Traxler observes that the functional adjustments (e.g. political lobbying, mergers, cuts in budgets, services, and dues, reorientation toward product market interests) have weakened them in relation to their constituency – if not labor unions.

Further, weakening of the core function of multiemployer bargaining threatens the withdrawal of government support (based on macroeconomic considerations) and at root the survival of employer associations.

Traxler concludes importantly that supportive labor law has contained this risk by means of *organized* decentralization (see also Ochel, 2003, pp. 20-24). However, he cautions that the adjustment strategies followed by employer associations may exacerbate their problems in the long run while noting that decentralizing tendencies may become so dominant that multiemployer bargaining loses control of the process and ultimately fades away. A not dissimilar conclusion is offered in the very different treatment by Silvia and Schroeder (2009), who argue that the interests of large and small employers have diverged fundamentally since the mid-1980s with the attempt by the latter to shift the burden of adjustment to cost pressures on to the former, leading smaller employers to desert employer associations. The response of employer associations in the form of two-tiered membership and like measures is an attempt to bridge the gap. Not only is this narrative inconsistent with the predictions of the varieties-of-capitalism model but, if a tipping point has already been reached, it may also constitute support for the polar opposite position of the convergence (around an Anglo-Saxon model) thesis.

Finally, we have not mentioned the effect of transnational economic integration on *unions*. Two points are in order here. First, there is broad consensus that unions have been impacted harder by the economic changes detrimental to collective action. Heightened unemployment and growing internationalization, so the argument runs, have exacerbated pre-existing, pre-associational power asymmetries. Second, weakened unionism reduces the incentive to engage in multiemployer bargaining. Alternatively put, union decline strengthens the importance of the supportive role of labor law and provides the basis for Hassel's (2002: 316) conjecture: "If it were not for such political support, the erosion of the German system of industrial relations would be even more rapid and more pronounced.

And what of that other form or worker representation, the works council? Transaction costs may be important here as well since works councils might lower communications costs in larger and likely more complex and hierarchical organizations. But theoretical considerations have mostly focused on the works council-collective bargaining nexus. One idea is that where a works council is embedded in a collective bargaining arrangement, the tendency of the works council agency to engage in rent-seeking behavior will be sharply constrained, leading it to concentrate on production rather than distribution issues. (Freeman and Lazear, 1995; Hübler and Jirjahn, 2003) Thus, employers may be members of an employers association/participate in sectoral bargaining so as to limit rent seeking by the works council and take advantage of the pro-productive voice aspects of the entity. But works councils are elected by workers and not by management even if the latter can influence that decision (see section IV). And there are grounds for expecting a positive association between sectoral bargaining and works councils by reason of employee choice: works councils may need the support of unions to strategically shape outcomes (Wever, 1994). On the other hand, if they are seeking to extract rents, workers may see less value in voting in a works council in situations where there is a collective agreement in place. More generally, since works council rights are a function of employment size, workers should be less inclined to elect a council in smaller establishments.

A very different view of works councils is that they are defensive agencies, so that workers might elect them to protect quasi rents they have created through investing in firm-specific capital/training (Jirjahn, 2009). This time the opportunism is viewed as emanating from the employer side. Attention then shifts to the factors that might make employer opportunism more likely, such as transitory negative shocks and adverse economic situations more generally. On this view, works councils are likely to be introduced when workers

anticipate a financial crisis. Arguments such as a poor sales situation might thus be included alongside other suspects reflecting heightened uncertainties (such as those associated with certain payment systems, research-based market strategies, and ownership forms that encourage employer risk taking).

IV. Empirical Studies

There have been comparatively few *cet. par.* investigations of the structure of collective bargaining in Germany despite the extended debate on decentralization. We focus here on the set of studies of Schnabel and colleagues since these are among the best known in charting changes in the structure of collective bargaining while using the same data set as do we. Key arguments deployed in this series of studies and the related literature (on which, see the references contained in Schnabel, Zagelmeyer, and Kohaut, 2006) include establishment/organizational size, establishment type, establishment age, workforce characteristics, form of ownership, and (proxies for) the nature of the employer association. The relevance of establishment/organization size is that the transaction costs of concluding individual contracts may be reduced by collective bargaining which may also reduce complexity and improve communications. And if larger plants are more likely to be unionized, there are advantages in collective action that may be underscored by the orientation of the latter or at least by the collective good of wage moderation.[6] For its part, branch plant status likely reflects spillover effects from the parent company favoring collective bargaining (vis-à-vis independent establishments of similar size)

Perhaps the most important reason for the inclusion of establishment age is a mechanical one: the very persistence of bargaining structures. Further, younger plants may need more flexible institutional structures first to survive and then to grow. For its part, homogeneity of the workforce may point to greater benefits from the standardization associated with centralization. Conversely, higher shares of (firm-specific) skilled workers may mean that solutions are best handled in house. That said, expectations might be reversed if the unskilled are less unionized or if lower skill levels limit the scope for opportunistic behavior and thence the need for collective regulation. Ownership of the company may be influential in a number of respects. In the first place, it is less likely that individually-owned businesses need follow a collective agreement on transaction cost grounds. Moreover, foreign-owned establishments may need to follow different institutional settings set from without. Finally, as our preceding discussion has suggested, the type of employers' association may be important. In particular, associations offering opt-out clauses and more flexible forms of membership forms may stem membership losses. As a practical matter, however, lacking such information in regular data sets inferences have to be made on the basis of blunt industry dummies.

With these preliminaries behind us, we next review studies by Schnabel, Zagelmeyer, and Kohaut (2006), and Kohaut and Schnabel (2001, 2003). Schnabel, Zagelmeyer, and Kohaut (2006) provide a comparative study of the determinants of bargaining structure in Britain and Germany in 1998 and 2000, respectively. Since they report that more or less the same set of variables in the two countries are associated with firms' choice of governance structure, we will focus on their results for Germany here. The authors' ordered probit results suggest that the probability of multiemployer bargaining rises with establishment size (especially in eastern Germany, where a doubling in employment size from 100 to 200

[6] Noting, however, that smaller employers may have a greater need to increase their collective bargaining power, Schnabel, Zagelmeyer, and Kohaut (2006) suggest using a quadratic in employment size.).

employees increases the probability of multiemployer bargaining by 6 percentage points), albeit at a decreasing rate. Branch plants are less likely to have no collective agreements and more likely to have multi-plant bargaining than are independent businesses. Newly-founded establishments are less likely to make use of multiemployer bargaining, while plants with larger shares of low-skilled workers are more likely to engage in multiemployer bargaining. Finally, foreign ownership has different effects in western and eastern Germany, increasing the probability of no collective bargaining in the former region and lowering it in the latter.

Again using the IAB Establishment Panel, Kohaut and Schnabel (2001) provide a probit analysis of the determinants of applicability of a sectoral wage agreement, an ordered probit analysis of the applicability of contract type (where the dependent variable is an index taking the value of 4 for a sectoral agreement, 3 for a firm agreement, 2 for no collective bargaining *per se* but where the firm orients itself to a (sectoral) collective agreement, and 0 where there is neither a collective agreement nor a process of orientation), and finally a probit analysis of the abandonment of a sectoral agreement. In each case the outcome year is 2000. The main results of the initial probit analysis is that the application of a sectoral agreement is positively associated with establishment size (although again at a decreasing rate), branch plant status, and (on this occasion) with the share of qualified workers, and negatively associated with the age of the establishment, its legal form (where it is an individually-owned firm), and foreign ownership (though not for eastern Germany). The factors that are associated with of a sectoral or multiemployer agreement presence assume opposite sign when it comes to their abandonment, although the effects are less well determined. In addition, firms are less prone to leave a sectoral agreement where a works council is present and where they already pay higher wages than laid down in that collective agreement. Finally, the authors' ordered probit analysis suggests that formalization is more likely the larger the firm, among older and branch plants, and where the workforce is more qualified. Again as before, individually- and foreign-owned firms are less likely to apply (or refer to) contracts of any sort. In their subsequent analysis of the application/abandonment of sectoral agreements, Kohaut and Schnabel (2003) obtain much the same set of results using data for 2001 and pooled data for 1998-2001.

Two final studies by Schnabel and colleagues might usefully be addressed in conclusion. First, Kohaut and Schnabel (2006) examine the prevalence of opening clauses in sectoral agreements and the extent to which they are utilized by firms. Using data from the 2005 IAB Establishment Panel, the first to contain a question on such opt-out clauses, the authors note that 13 percent of covered establishments stated that their sectoral agreements contained opening clauses. Interestingly, however, a much larger share of these establishments were unaware of whether or not the sectoral agreement contained any such clause(s). Subject to this caveat, approximately, one-half of the establishments used such clauses. In examining the determinants of the use of the two types of opening clauses – adjustments to working time and (less commonly) reductions in wages – Kohaut and Schnabel report that poor profitability of the enterprise is a key initiator.[7] The authors conclude that improved information about existing opening clauses as well as increases in their frequency might improve acceptance of the German system of collective bargaining and reduce the tendency of firms to withdraw from employer associations and hence sectoral bargaining.[8]

[7] For a more detailed discussion focusing on the timing of opening clauses and the impact of the two types on wages in the manufacturing sector of Baden-Württemberg using the German Structure of Earnings Survey, see Heinbach (2007).

[8] For a parallel analysis of the determinants of *pacts for employment and competitiveness* based on the 2003 WIC works council survey, see Ellguth and Kohaut (2008), Massa-Wirth and Niechoj (2004); Siefert and

In a separate study of contractual wage payments in excess of those fixed under sectoral bargaining (*übertarifliche Entlohnung*), Jung and Schnabel (2009) observe that 40 percent of establishments covered by sectoral and firm-level agreements pay higher wages than are stipulated in the relevant agreement. Although their main concern is with the determinants of the wage cushion (and, ultimately for technical reasons, with its presence), our interest is mainly in their more descriptive findings. Jung and Schabel report that establishments covered by firm agreements are significantly less likely to have wage cushions. The argument is of course that wage cushions are necessary to overcome the restrictions imposed by centralized agreements, whereas firm-level agreements are tailored to firm-specific conditions. Next, it is reported that the incidence of wage cushions has declined in recent years, along with the coverage of collective agreements. Finally, the excess of wages over contractual levels has also declined – from 48 percent in 2000 to 43 percent in 2006. The authors' interpretation is interesting: centralized bargaining has become more dominant to the extent that fewer firms deviated from the sectoral contract.

In the light of the above, it seems that there are grounds for anticipating a positive (negative) association between establishment size and age (foreign ownership) and formalization (i.e. collective bargaining, ignoring for the moment the distinction between single-firm and multiemployer agreements). There is some theoretical suggestion that a more homogenized and in particular less skilled labor force should be associated with collective bargaining, although this relation may be undercut/reversed by the insider behavior or unionization of more skilled groups. Single plants (as opposed to branch plants) may also on the basis of practical considerations and past research be expected to have less recourse to formalization and the same may be true of individually-owned enterprises although here there may be a positive association with works council formation on managerial pressure grounds.

We include all such arguments and a range of others. First, we deploy a much wider range of workforce characteristics (shares of female workers, part-timers, and fixed-term contract workers, as well as skilled workers). This is partly because we are also interested in examining the determinants of (changes in) works council status. But the use of atypical workers in particular may give plants an added degree of freedom and other things equal weaken the tendency to leave collective agreements. Similarly, expected increase in sales may give more room for maneuver. By the same token, they may also lessen the attraction of works councils to workers (see below).

Higher shares of exports in output, greater product market competition, R&D and advanced technology might all mirror the expected association between foreign ownership and collective bargaining. Differences in export propensity limit product commonalities and employment standardization needs of employers, heightened competition strengthens the importance of differentiated responses, while technological and structural change may further affect companies (and also occupational groups) differently and elevate the informational and flexibility advantages of decentralized regulation.

The trend toward organizational change at the workplace – as manifested in a decentralization of decision making (delegation of responsibilities, introduction of team-work and profit-centers) – might also be expected to require greater flexibility than permitted by the rules set under centralized (strictly sectoral) bargaining, subject to the opt-out clauses mentioned earlier. Moreover, some or all of such measures may substitute for other forms of workplace representation and in particular the work council.

Studies of the determinants of works council presence (and formation/dissolution) are altogether more numerous than for collective bargaining status (see, for example, the

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Massa-Wirth (2005). On the effects of pacts, see Hübler (2005a, 2005b, 2006); Bellmann, Gerlach, and Meyer (2008); Bellmann and Gerner (2009).

references contained in Jirjahn, 2009), not least since they also form part of the burgeoning literature of the effects of works councils on firm performance (reviewed extensively in Addison, 2009). Perhaps the main relation in the present context is that the entity is more likely to be observed in situations where the firm is covered by a collective agreement, irrespective of the form of the agreement with the growth of decentralized bargaining tendencies noted earlier. That is to say, works councils are not only responsible for the local administration of collective agreements but also have become more involved in their negotiation in recent years. To this largely descriptive association, we can of course add the aforementioned predictions stemming from heightened uncertainty and directly proxied by, say, profit-sharing schemes and inversely proxied by expected improvements in sales. A recent paper by Mohrenweiser, Marginson, and Backes-Gellner (2009) takes the issue further than can we. This is because the authors have information from a unique data set on the extent to which the two sides – the workforce *and* plant management – are involved in the setting up of a works council. They report that although the former alone calls for the election of a works council in around two-thirds of the 60 companies that set up a works council between 2001 and 2005, in the remaining one-third of cases management was actively involved in the process (e.g. by motivating workers to call for an election). Consistent with Jirjahn (2009), they report that the establishment of a works council is basically triggered by uncertainty on the part of the workforce as to the security of employment caused by organizational shocks and reflecting informational problems/asymmetries that can be tackled by the information and consultation rights of the works council. The motive is defensive: risk protection (or what Jirjahn terms 'rent protection'). Where management is the triggering agent, it is argued that expected productivity improvement dominates potential rent distribution. At issue of course is whether the authors' methodology establishes the primacy of rent protection over rent creation and the unexplored issue of works council *dissolution*.

Finally, we note that any study of changes in the structure of German collective bargaining and worker representation should, for the reasons given earlier, control for industry affiliation. Similarly, it should also control for region, given the different trends in eastern and western Germany (namely, the more pronounced erosion of sectoral bargaining in the former region).

Turning to Great Britain, the fragmented nature of the British industrial relations system means that the focus of empirical investigation has been workplace-level employment relations, facilitated by the publication of the Workplace Employment Relations Surveys where the unit of analysis is the workplace. The standard measure used to identify formal union bargaining rights has been union recognition, rather than collective bargaining coverage. Union recognition indicates whether a union is "recognized by management for negotiating pay and conditions for any sections of the workforce in the establishment" – at workplace, organizational, or sectoral level. Although the two measures are conceptually very similar and highly correlated in practice, there has been some divergence in recent years and a growing proportion of workplaces with union recognition appear to have no active collective bargaining. For many observers, this gap in the two measures, which we will return to below, is at least partly explained by the increasing inability of unions to get the employer to bargain over terms and conditions, even when a framework for such negotiation is in place (Brown et al., 1998). In the absence of clear legal rules governing the enforcement of bargaining rights in Britain, unions have tended to rely on their bargaining power, traditionally proxied by the proportion of workers who are union members at the workplace (i.e. union density). The latter magnitude continues to decline in the private sector, even if the pace of decline is not as rapid as it was in the 1980s and early 1990s. Measures of union strength used in the past – such as separate bargaining arrangements in the face of multi-unionism – have become so uncommon that they today are no longer the focus of attention,

while others (such as closed shop arrangements) are no longer permitted under British law. Nevertheless, it would be quite misleading to assume that all unions are weak in British workplaces. Indeed, Millward, Bryson, and Forth (2000: chapter 5) show a bifurcation in union strength using measures of density, on-site lay representation, and collective bargaining coverage. Unions continue to influence outcomes such as wage setting, but only where the workplace has a high percentage of employees whose pay is set by collective bargaining (Millward and Forth, 2004).

Although there are potentially important theoretical implications for firm performance having to do with the level at which bargaining occurs, their effects have rarely been tested in Britain of late due to the rapid decline of sectoral bargaining.[9] The empirical literature on the determinants of different bargaining levels is also very sparse. Rather, the focus has been upon whether a workplace is unionized or not and, if so, how strong the union is at workplace level.

The analysis of Schnabel, Zagelmayer, and Kohaut (2006), mentioned earlier, provides the only study of the correlates of collective bargaining arrangements in Britain and Germany, using workplace-level data. Based on empirical analyses of the 1998 Workplace Employment Relations Survey and the 2000 IAB Establishment Panel, the authors argue that the correlates of bargaining arrangements are similar for both countries. They point to the significant role played by factors such as establishment size, single versus multi-plant organizations, foreign ownership, and establishment age. However, their analysis differs in a number of important respects from our own. First, their study covers the whole economy (public and private sectors together) whereas we focus on the private sector. Second, they provide ordered probit estimates on a 2000 cross-section for three states: absence of bargaining, single-employer bargaining, and multi-employer or sectoral bargaining. In contrast, we focus on probit and multinomial logistic estimates for the presence or otherwise of particular bargaining regimes and switching across regimes using panel data. Third, our model specifications differ in a number of respects from theirs. For example, we incorporate lagged regime status in our panel models, JCC status, and variables capturing market competition. Finally, these authors' models are unweighted whereas we use survey-weighted data.

The most recent cet. par. investigation of the correlates of union recognition in the private sector is by Blanchflower and Bryson (2009). In addition to sizeable differences in the probability of unionization by region and industry, factors independently correlated with higher union recognition probabilities in this study are firm and establishment size, domestic ownership, establishment age, and some features of workforce composition such as the manual/non-manual split (although this effect has diminished over time). Pooled analyses for the period 1980-2004 also show a strong independent time trend, with the probability of union recognition declining since the early 1980s. Others have shown that this cohort effect may date back to the early post-war period (Millward, Bryson, and Forth (2009: 55-56) go on to calculate that two-thirds of the decline in private sector union recognition is within-group and thus is more akin to a preference on the part of employers (conditional on their observable characteristics) rather than being accounted for by compositional change in the population of British workplaces.

Brown, Bryson, and Forth (2009: 26-31) undertake a similar analysis, but this time focusing on the incidence of (any workers being covered by) collective bargaining at the workplace. But their results are similar: the probability of collective bargaining is higher among larger and older establishments and in multi-plant and larger firms. They uncover

[9] For discussion of these theoretical effects, particularly the effects of industry-level bargaining, see Bryson and Wilkinson (2002: Chapter 2, endnote 6). And for a rare empirical study exploring the effect of industry-level bargaining on firm performance in Britain, see Menezes-Filho (1997).

similar time trends as well. They also present clear evidence of workforce composition effects, collective bargaining coverage being less likely in workplaces with a higher share of female workers and a greater proportion of non-manual workers. However, the main thrust of their analysis relates to the pervasive influence of product market competition. They show that increasing product market competition has played a critical role in undermining collective bargaining arrangements, with employers increasingly resorting to unilateral pay setting at the organization or workplace level.

V. Data

The German data used in this inquiry are taken from the IAB Establishment Panel. The Panel is based on a stratified random sample of the plants[10] – 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 labor 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 panel questionnaire consists of a set of questions that are asked in identical form each year. Such questions cover employment development, business policy, vocational training, personnel structure/movements, investment, wages and salaries, and adherence to collective agreements. Since 2007 these basic subject 'blocs' have been augmented by questions on further training, innovation, and working time. And at regular three-year (now two-year) intervals, the basic indicators are regularly supplemented by additional questions on such things as public funding. In addition to these fixed and quasi-fixed elements, other varying 'current focus' subjects are included every year. These have included questions on the demand for qualified employees and the employment of older workers and the cooperativeness or otherwise of the works council. Finally, the survey is conducted in mid year and as a result some questions – on annual sales, investment, and the profit situations – are asked retrospectively in the following year's survey.

In the present study we restrict the German data to the period from 1998 to 2004 to maintain correspondence with the British WERS98. Over this entire period the German raw sample contains a total of some 95,375 observations. The following filters were applied to provide a sample of seven cross sections that are comparable to the final estimation samples. The filters were as follows (with the number of observations lost in applying each being given in parenthesis): selection of industries (15,560); selection of plants employing at least 5 employees (13,688), excision of public corporations (1,133); excision of plants where information on sales is not provided (6,967); and excision of plants where information on either collective agreement status or works council status is missing (4,892). Most of our descriptive results for Germany, therefore, are based on a total number of 53,135 observations, or approximately 7,600 observations a year on average.[11]

[10] Large plants are oversampled but the sampling within each cell is random.
[11] A detailed overview of the sample sizes and the filters applied are available from the authors upon request.

In a second step, this sample is reduced to establishments that are observed in 1998 *and* 2004 (but not necessarily in any or all intermediate years) to provide a final estimation sample similar to the WERS98. This estimation sample will be referred to as the *incomplete panel case*, and contains 1,747 establishments or 3,494 observations. We will also deploy a smaller sample made up of 1,060 establishments comprising those plants for which we have information in every single year of the sample period 1998 to 2004. This will be referred to as the *complete panel case*.

Prior to presenting the descriptive statistics, some additional comments on the data set should be noted. First, we also used the 1993 and 2005 waves to check responses to the collective bargaining (and works council) status questions. Given inertia, plants that responded to the status question(s) as either yes-no-yes or no-yes-no in the three years 1997/99 and 2003/05 were treated as yes-yes-yes and no-no-no, respectively, involving some recoding of the beginning and end-of-period responses. Second, changes in industrial classification in 1999 do not cause any problems for us because of the design of the present study. Thus, for the descriptive analyses, the cross sections are reduced to the same set of industries using the corresponding classification provided each year, whereas our estimations are in most cases based on data for 1998 and hence are unaffected by changes in industrial classification. Moreover, our estimations are based on the plants being observed in both 1998 and 2004, so that the classification for 1998 can be used, assuming establishments do not change industry. Third, we use weighted data throughout. The inverse of the selection probability is used for cross-section weighting. Due to the nature of the weighting process, it is generally the case that an establishment is allocated different weighting factors in any two subsequent waves.[12] Definition of the variables used and descriptive statistics are provided in Appendix Table 1**.**

Our British analysis deploys three data sets. These are the Workplace Employment Relations Surveys (WERS) of 1998 and 2004, which are cross-sectional surveys of workplaces and their employees, and the 1998-2004 Panel. The latter is based on a stratified random subsample of the 1998 WERS cross-section that was followed up in 2004. That follow-up consisted of a dedicated panel survey which was considerably shorter than the 1998 survey interview. This asymmetry in data collection means that pooled analyses of the 1998 and 2004 Panel data draw on a more restricted set of data items than those analyses which seek to predict 2004 outcomes with 1998 covariates.

Our empirical analysis is confined to private sector workplaces with 10 or more employees, since this was the lower employment threshold for inclusion in the 1998 survey. The unweighted sample is 587 workplaces, though some cases are dropped in the analysis because they have missing information on one or more key data items. Throughout our analyses are weighted with survey sampling weights that account for the probability of sample selection (which in WERS is a function of establishment size and industry). The population sampling frame from which the surveys are drawn is the Inter-Departmental Business Register (IDBR).[13]

Unlike the IAB Establishment Data, in the British case we only observe workplaces at two points in time, namely, 1998 and 2004. Thus the data offer 'snapshots' of those workplaces at two points in time, although there is a small amount of retrospective questioning about what has happened in the intervening years. Our data structure allows us to identify three types of workplace. First, there are those that survived throughout the period 1998-2004 and had at least 10 employees at the beginning and the end of the period, since

[12] Either because the target structure (the number of establishments or employees in the target structure of the respective weighting cell) changes, or because the number of surveyed establishments in the weighting cell changes, and/or because an establishment changes, size, industry or federal state between two waves.

[13] For full information on the surveys, see Kersley et al. (2006); Cully et al. (1999); and Chaplin et al. (2005).

this is the sampling threshold for inclusion in the 1998 survey. We call these units 'stayers.' All the Panel workplaces are, by definition, stayers but we can also use information on age of establishment and establishment size to identify stayers in both cross-sections. Second, we can identify 'joiners,' that is, those new workplaces born since 1998 together with those that grew above the 10 employee threshold since 1998. The third group is 'leavers,' consisting of workplaces that were present in 1998 but had either died by 2004 or else had shrunk below the 10 employee threshold. We use these data in combination to establish the role played by behavioral change among stayers on the one hand and compositional change arising from the differential incidence of bargaining practices among leavers and joiners on the other. In order to accomplish this we must rely on definitions of union recognition, collective bargaining and joint consultative committees (JCCs) that are consistently measured in both the two cross-sections and the Panel. This is relatively unproblematic in the case of union recognition and JCCs. However, WERS collects bargaining coverage data in a number of ways. We use measures available for the two cross-sections and the Panel. The collective bargaining measure identifies whether a workplace determines pay for any of its occupational groups using collective bargaining, either through multiemployer, organization-level, or workplace-level bargaining. The manager responsible for human resources is asked to identify which of eight methods are used to determine pay for the single-digit occupations at the workplace. The first three codes relate to sectoral, organizational and workplace-level bargaining, respectively. The reasons for relying on this measure are two-fold. First, it is the only consistent measure of collective bargaining across the two cross-sections and the Panel. Second, it is the only measure which permits us to distinguish between coverage at workplace, organization, and sectoral level. However, the downside is that it understates the level of collective bargaining relative to measures that also incorporate other WERS data items.[14] Definition of the variables used and descriptive statistics for the British case are provided in Appendix Table 2**.**

VI. Findings

(a) Germany

Weighted data on the evolution of collective bargaining and worker representation – sectoral agreements, firm agreements, no agreements, and works councils – are provided in Appendix Table 3. Figures 1 and 2 present the material in a more digestible form for establishment and worker coverage, respectively. Beginning with collective agreements, it is clear from Figure 1 that employer coverage by sectoral agreements declined materially over the sample period: from 48.9 percent to 40.4 percent coverage. On the other hand, the coverage of firm agreements among employers was more stable, declining from 4.8 percent in 1998 to 2.8 percent in 2004, with most of that decline occurring after the first year. Corresponding to the decline in sectoral bargaining was a marked increase in the number of firms without any collective agreements. These rose from 46.2 percent in 1998 to 56.8 percent in 2004. For their part, the share of firms with works councils showed considerable inertia, generally exceeding 9 percent over the sample period.

Figure 2 looks at corresponding changes in the shares of covered and uncovered employees. Beginning again with sectoral bargaining, the recorded fall in the share of covered workers was from 62 percent to 53.8 percent, somewhat less than in the case of establishment coverage. Imperceptible falls were recorded for firm agreements (8.6 percent to 8.0 percent). Correspondingly, the number of workers uncovered by either type of collective

[14] For a full discussion of this issue see Kersley et al. (2006), pp. 181-188 and footnotes 1 and 3 in Chapter 7.

agreement duly rose from 29.3 to 38.2 percent. Again, works councils coverage displayed considerable stability, although a small overall decline from 45.3 to 43.7 percent was observed.

Two further points are in order. First, as regards the collective bargaining-works council nexus, declines in sectoral agreement coverage among establishments with works councils were no less pronounced than among establishments without works councils. For example, sectoral agreement coverage of employees was 77.3 percent in 1998 in works council establishments and 49.4 percent in their works council free counterparts; by 2004 these figures had fallen to 69.2 and 41.9 percent**,** respectively. Similar declines were observed in the sectoral agreement coverage of establishments in the two regimes. Accordingly, there is nothing really to suggest that coverage in either case held up better in the presence of workplace representation.

Second, there are those German plants that although they do not have collective bargaining nonetheless orient themselves towards a collective agreement (The following question is asked of those not bound by a collective agreement: "Are you [nonetheless] acting upon an industry-wide agreement?") This raises the possibility that a decline in collective bargaining might have been counteracted by an increase in the number of firms orienting themselves towards such framework agreements. As a practical matter, we discover that the share of all employers (employees in establishments) that did not orient themselves towards a collective agreement rose between 1999 (the first year for which data were available) and 2004 from 25.4 (15.2) to 29.2 (18.7) percent. Over the same interval, the share of all employees (establishments) that did orient rose more slowly from 21.9 (15.5) percent to 25.1 (17.8) percent. In other words, there was some *relative* fall in orientation among the steadily increasing numbers of plants and employees not covered by collectively bargaining (see Appendix Table 4)

The next question that arises is whether the decline in collective bargaining is observed throughout or is instead a compositional phenomenon, with different behavior being recorded by stayers, joiners, and leavers. To examine this question we first examine changes in the status of those establishments that remained in the panel throughout, the 'stayers.' Figure 3 presents weighted data for these stayers, based on the information supplied in Appendix Table 5. As can be seen, the broad trends evident in Figure 1 are replicated in Figure 3. Beginning with sectoral agreements, establishment coverage rates declined from 55.2 percent to 47.1 percent, while establishments without collective agreements grew from 40.4 percent to 47.7 percent of the total. There were even modest increases in the share of establishments with works councils (from 9.8 percent to 13.2 percent) and with firm-level collective agreements (from 4.5 percent in 1998 to 5.2 percent on 2004, albeit with several reversals). Figure 4 which describes the situation from the perspective of employment shares reveals a more muted picture of sectoral bargaining decline and uncovered sector growth, but more marked works council growth.

At the same time, based on the data supplied in Appendix Table 6, it can be seen that, among entrants to the panel, which may be recently-founded establishments or plants sampled for the first time, establishment (employment) coverage by sectoral agreement fell from 50.4 (61.9) percent in 1998 to 31.6 (53.4) percent while the share of uncovered plants (employment) rose from 45.5 (29.3) percent to 64.9 (38.6) percent. Among 'exits,' comprising plants that had closed and nonrespondents, the corresponding values were (from 1999; see Notes to Appendix Table 7) 50.7 (56.5) to 38.2 (51.0) percent and 46.1 (31.5) to 59.8 (40.0) percent. In short, while the basic trends in respect of sectoral agreements and the zero collective bargaining zone point to a *general* decline in the importance of framework agreements the tendencies are much stronger among entrants and exits than stayers. Finally,

as far as works councils are concerned inertia is the order of the day with little to choose between stayers, leavers, and entrants.

Let us next consider transitions into and out of collective bargaining and workplace representation as between 1998 and 2004. Table 1 summarizes such movements with separate results for the complete and incomplete panels. It will be recalled that for the former or balanced panel one has information on each and every year of the eight years whereas in the case of the latter panel information on one or more of the intermediate years is missing. Beginning with works councils, we observe that just 3.7 percent of all firms changed their works council affiliation among the incomplete panel. (These comprised the 1.83 percent of firms that had no councils in 1998 and 23.04 percent of the much smaller number of firms with councils in 1998.) Similar magnitudes are reported for the balanced panel.

Somewhat less evidence of persistence is reported in the case of collective agreements of any type. Now almost 20 percent of firms in the incomplete panel and slightly less than that in the balanced panel changed their collective bargaining status. This reflects changes in industry-level agreements shown in the next two columns of the table. In the case of the incomplete panel a little over 20 percent changed their sectoral agreement status (made up of the more than one in ten firms without collective agreements in 1998 that had entered framework agreements by 2004 and the more than one-quarter that had left such arrangements). Although the latter percentage was much the same as observed for works councils, note the very much larger sample of firms in both categories. Again there are minor differences between the balanced and incomplete panels.

Transitions into and out of *firm level* collective agreements tell a very different story. Overall, there were fewer transitions than in the case of works councils. Less than 4 percent of firms introduced or exited such arrangements, but of those firms with firm-level agreements in 1998 more than one-half had abandoned them by 2004. Not surprisingly in view of the numbers the huge majority of firms did not change their status. Again, more firms exited collective agreements than entered them.

The results of trying to explain collective bargaining of any type using pooled data for the two years 1998 and 2004 are given in the first column of Table 2, again using weighted data. Our probit estimates suggest that larger and older plants, plants with works councils, plants that have recently delegated decision making authority, and plants located in Western Germany are all more likely to have collective agreements. Conversely, establishments having a greater export share and a higher proportion of workers on fixed-term contracts are less likely to be covered by collective bargaining.[15]

The second and third columns of the table disaggregate by sectoral and firm-level collective bargaining, respectively. With one exception – the foreign property variable – the findings reported for sectoral bargaining mirror those presented for any collective bargaining, although there are of course differences in the precision of the estimates. But only the works council result carries over in the case of firm-level collective bargaining shown in the last column of the table. Note the oppositely signed coefficient estimate for export share, foreign ownership, and region observed in the case of firm-level collective agreements. Evidently, the determinants of sectoral and firm-level collective bargaining differ materially.

Attention shifts in our second set of regressions, contained in Table 3, to the prediction of end-period collective bargaining status based on beginning-period values of the covariates. All regressions include a lagged dependent variable to capture the persistence indicated in our transitions analysis, and partly for this reason the good fit obtained is not unexpected. The results for collective bargaining of all types, reported in the first column, of

[15] Rather fewer coefficient estimates were well defined than when using unweighted data, including the establishment size argument. Weighted data are used in the interests of facilitating comparisons between Britain and Germany.

the table show that there are five statistically significant positive coefficient estimates in addition to the lagged dependent variable. Thus, greater establishment size, usage of advanced technology, delegation of authority to lower levels in the organization, a larger share of female workers and location in western Germany are all associated with an increased likelihood of observing a collective agreement in 2004. On the other hand, introduction of profit centers and the share of part-time workers detract (marginally) from collective bargaining.

As before, the findings for the two types of collective bargaining are sharply differentiated. From the second column of the table it can be seen that, apart from the persistence argument, establishment size, high-tech usage, single establishments, the proportions of skilled and female workers, and west German location are all associated with observing sectoral bargaining in 2004. For their part, the R&D and part-time worker variables are negatively correlated with sectoral bargaining. Finally, for firm-level agreements, the results given in the last column of the table suggest that expected increases in sales, advanced technology, single plant status, and location in western Germany are all less likely to promote such agreements. But export orientation, R&D activity, delegation of authority, works council presence, and greater competition are now associated with an increased probability of observing such agreements.

This leads us to the most interesting material of all dealing with the explanation of *transitions*. The results given in the first column of Table 4 consider collective bargaining status of any type in 2004 conditional on an *absence* of collective bargaining in 1998. We see that 'joining' is more likely the larger is the plant, the more advanced its technology, the higher the skills of its workforce (and the share of female workers), and also where the establishment is foreign owned, a single plant, has delegated decision-making authority, and is located in Western Germany. It is less likely when sales are expected to increase, when competition is acute, and where the plant was set up before 1990. The second column of the table considers the likelihood of leaving a collective agreement of any type. As can be seen, while the large majority of the coefficient estimates are indeed negative just three – increased sales, advanced technology, and location in western Germany – are statistically significant at conventional levels. The share of part-time workers is the sole statistically significant positive coefficient. Clearly, the specific characteristics identified in this equation other than the industry dummies are providing few insights into the special circumstances of leavers.

The findings in the third column of Table 4 pertain to the determinants of sectoral bargaining status in 2004 conditional on there being no such agreement in place in 1998. Joining a sectoral collective agreement is more likely for larger establishments, high-tech firms, single plants, firms with greater shares of female and fixed-term contract workers, foreign-owned enterprises, among those located in western Germany, and in situations where some delegation of decision making has been initiated. Joining a sectoral agreement is less likely among the firmament of older firms and those with greater export orientation, and also in circumstances where sales are expected to increase. As before, we gain few insights into the process of leaving sectoral agreements from this set of correlates.

The last two columns of the table consider joining and leaving firm-level collective agreements. Joiners are more likely to be those plants with a higher export share, having a works council, confronting greater product market competition, and engaging in a delegation of tasks. On the other hand, joining is less likely where sales are expected to increase, among high-tech and single-establishment firms, and where the plant is located in western Germany. And from the last column of the table, abandoning firm-level bargaining is more likely when sales are expected to increase, and where there is a higher proportion of fixed-term contract and female workers. Further, leaving is also more common among both high-tech and older

firms. It is less likely for larger firms, for firms practicing R&D, and for those with a higher share of part-time workers, practicing profit sharing, and confronting greater competition.

Finally, Table 5 focuses on changes in works council status, namely, on works council joiners and leavers. First, consider the class of joiners. It can be seen that larger and foreign-owned plants, plus those with advanced technology, registering R&D activity, and having higher shares of female workers are all more likely to introduce works councils, as indeed are those with firm-level agreements. But note that establishments that have introduced team-work, those expecting increased sales, and those individually owned are all less likely to set up works councils. These results provide very mixed support for the literature.

And what of the leavers? We find that plants covered by sectoral collective bargaining evince a lower tendency to abandon works councils as do larger firms, firms expecting increased sales, older firms, foreign-owned firms, as well as firms registering R&D activity, a higher proportion of skilled workers, foreign owned and confronting higher competition in the market. But high-tech establishments, single plants, individually-owned plants, and those with devolved decision-making, recently introduced profit centers, and a higher proportion of fixed-term contract workers are all associated with a higher probability of abandoning works councils which evidence is perhaps more consistent with past research (e.g. Addison, Bellmann, Schnabel, and Wagner, 2003).

(b) Great Britain

Table 6 compares the incidence of our five measures of worker representation and collective bargaining in the 1998 and 2004 WERS cross-sections. A number of things are immediately apparent. First, unionization – whether measured in terms of union recognition or the incidence of collective bargaining – is considerably lower in Britain than in Germany throughout the period. Even at the beginning of the period, only one-in-five private sector workplaces recognized unions for pay bargaining. Second, in contrast to Germany, where pay bargaining does occur, it is more likely to occur at firm-level than at sectoral level: it was twice as likely to do so in 1998, and three-and-a-half times more likely to do so at the end of the period. (Although, as noted earlier, employers are free to combine sectoral and firm-level bargaining, fewer than 1 percent of workplaces do so.) Third, as in Germany, the chief indicators of collective bargaining are in decline. The percentage of workplaces with a recognized union fell by one-quarter over the period, while collective bargaining coverage fell by over one-third so that, at the end of the period, only one-in-ten private sector workplaces used collective bargaining to set pay for at least some of their employees. This decline was particularly evident in workplaces with sectoral agreements. Fourth, the incidence of collective bargaining coverage is well below the incidence of union recognition throughout the period, a finding consistent with earlier studies showing an absence of active collective bargaining among many establishments even when they have a formal negotiating framework in place.

In the last column of Table 6 we turn to the incidence of JCCs, the closest analog to works councils in Germany. As noted earlier, our JCC definition is confined to committees which tackle multiple issues. We present figures for two definitions of JCC presence. The first definition includes JCCs at both workplace level and those at the level of an organization in multi-site firms. Over a third of private sector establishments had such a JCC in 1998, but their incidence fell by one-fifth over the sample period. The figures in parentheses are confined to workplace-level JCCs. Around 15 percent of private sector workplaces had a JCC in 1998, but this figure fell by one-third by 2004 to just below 10 percent – a figure which is similar to the incidence of *Betriebsräte* in the German data.

Table 7 presents similar data but this time using employee weights to obtain the employee coverage of these institutions. In all cases the percentages are substantially higher

than in Table 6 because these institutions of worker representation and collective bargaining are concentrated in the larger workplaces that account for a higher share of all employees. For example, in 1998 one-fifth of workplaces recognised a union for pay bargaining but these accounted for almost two-fifths of employees. Similarly, almost half of all employees work in a firm with a JCC, though closer to a third have one at their own workplace.

The collective bargaining figures are constructed in a slightly different fashion to those presented in Table 6. Rather than simply reweighting the workplace incidence of collective bargaining by the proportion of employees in those workplaces, the figures shown in Table 7 ensure that uncovered employees in workplaces with a collective agreement are not counted among the covered employees.[16] That is they represent the actual coverage of collective bargaining We see that this magnitude falls from around one-quarter to one-fifth over the period, with the vast majority of those workers covered by firm-level agreements. However, the percentage covered by firm level agreements has fallen quite dramatically.

Table 8 considers change in workplace representation and bargaining structures among 'stayers,' 'leavers' and 'joiners,' respectively, offering insights as to how much of the net change described above is driven by behavioral change among stayers, and how much of it arises from compositional change in workplaces as some of them shrink or die ('leavers') while others grow or are new-born ('joiners'). In each case, we show the incidence of arrangements in 1998 and 2004 and the percentage point difference over the period. Beginning with union recognition, its decline over the period appears to be driven by compositional change: the rate of union recognition was two-and-a-half times greater among leavers in 1998 than it was among the joiners in 2004 (19 percent versus 8 percent). In contrast, there was relative stability in the rate of union recognition among stayers, although it is notable that the recognition rate in the panel rises a little whereas it falls a little among the stayers in the cross-section. A very similar picture emerges regarding change in the incidence of collective bargaining. Compared with joiners, leavers are roughly twice as likely to have pay set by collective bargaining. Among stayers, change is less pronounced.

The situation is more mixed in the case of JCCs. There is little difference in the use of JCCs among joiners and leavers, whereas there has been a substantial decline in their use among stayers in the cross-sectional data. However, the picture of decline is not replicated in the panel. If we turn our attention to workplace-level JCCs, clearer indications of decline emerge when comparing joiners and leavers (and among stayers), in the cross-sectional data. Once again, however, there is greater stability in the Panel. Taken together, these findings suggest that compositional change in the population of workplaces is playing a greater role than behavioral change among stayers in the decline of collective bargaining and in those institutions which represent workers. Nevertheless, in quantifying the overall effects of these changes induced by the behavior of stayers, joiners, and leavers, one needs to bear in mind that stayers constitute around two-thirds of all workplaces in the cross-sectional data so that their contribution to change is correspondingly large.[17]

Table 9 focuses on regime switching among panel workplaces by focusing on their union, collective bargaining, and JCC status at the time of the surveys in 1998 and 2004. The amount of net change shown gives only a partial understanding of behavioral change among these workplaces because it fails to capture the degree to which workplaces either introduce or abolish mechanisms for worker representation and collective bargaining. Union

[16] However, there is evidence of a spillover effect of collective bargaining on the wages of uncovered employees in the same workplace (Millward and Forth, 2004).

[17] In the 1998 cross-section, 69 percent of private sector workplaces were 'stayers.' The remainder were 'leavers,' consisting of workplaces that closed down (19 percent) and workplaces that shrank below the 10 employee threshold (12 percent). In the 2004 cross-section, 69 percent were stayers while 31 percent were joiners.

recognition is the most stable of the measures: only 6.5 percent of panel workplaces switch union status with new recognitions being a little more common than union de-recognitions. This finding is corroborated by retrospective questions asked in the 2004 panel survey indicating that 2.8 percent of workplaces claimed to have recognized unions since 1998, whereas fewer than 1 percent said they had derecognised a union.[18]

Collective bargaining status is much less stable than union recognition status: around one-fifth of panel workplaces switch in or out of collective bargaining. This may reflect the fact that respondents only identify collective bargaining coverage when there is active collective bargaining going on, whereas union recognition indicates the framework within which negotiation may take place. Alternatively, there could be more measurement error in collective bargaining status if employer respondents find it a more difficult concept to comprehend. The amount of switching that occurs corresponds roughly with that in the German panel, perhaps lending credence to the idea that the figures are not driven by measurement error. However, in the German case, abolitions far outway introductions of collective bargaining, largely due to movement out of sectoral agreements. In the British case, movements into sectoral collective bargaining marginally outweigh exits but the key difference resides in the *levels* of bargaining incidence. Compared with Germany, coverage by sectoral bargaining agreements is uncommon in Britain's panel workplaces.

The least stable of our measures is JCC status: one-third of panel workplaces belonged to a firm that had either introduced or abolished a JCC over the course of our study. However, this percentage falls to one-fifth in the case of workplace-level JCCs, a rate of switching which is similar to that for 'any collective bargaining' coverage. These figures are markedly different from those presented for German works councils in two respects. First, JCCs are much more common than works councils. Second, switchers outnumber those who retain workplace JCCs by a ratio to 3:2. In Germany by contrast, works council switchers are outnumbered by those who retain a council throughout, perhaps reflecting the greater transaction costs involved in changing arrangements when they are underpinned by statute.

We now turn to the determinants of collective bargaining and workplace representation. We begin in Table 10 with parsimonious probit estimation of the correlates of union recognition and collective bargaining status in models that pool the workplace observations in 1998 and 2004. The outcomes of interest are union recognition, any collective bargaining, sectoral bargaining, and firm-level bargaining. The models perform reasonably well, accounting for between one-fifth and one-third of the variance in the unionization outcomes, although few effects are significant across all four measures. Union recognition and collective bargaining are more likely in larger establishments, the latter association being driven by an association with firm-level collective bargaining. Domestic ownership is also positively associated with collective bargaining. Product markets also matter: those operating in a local market (as opposed to a regional, national or international market) are significantly more likely to have recognized unions and collective bargaining, as one might expect if local markets are an indicator of lower competitive pressures. Although the gender composition of

[18] These figures do not match the estimates of switching behavior taken from the establishment's status at the two survey cross-section time points. This may arise for three reasons. First, the retrospective questions may have captured new recognitions and derecognitions of unions in multiple union settings, whereupon such changes may not necessarily have affected their status as having at least one recognised union or not. For example, a workplace with three recognized unions in 1998 may report a derecognition in response to the retrospective question covering the period 1998-2004. However, it may still have two recognized unions remaining, in which case they will still be classified as unionized in 2004. Second, the retrospective questions may capture switches in the intervening period between 1998 and 2004 which, if reversed subsequently, will not be captured in comparisons of union status at the beginning and the end of the period. Third, responses to retrospective questions may be subject to more measurement error than responses about status at a single point in time.

the workforce is not associated with unionization and collective bargaining, the presence of temporary employees and those on fixed-term contracts is positively associated with sectoral bargaining. The presence of a joint consultative committee (either at workplace or organization level) is positively associated with union recognition and collective bargaining, a finding that perhaps reflects complementarity as opposed to substitutability, and is reminiscent of the link between works councils and collective bargaining in Germany. Team working and the use of contingent pay schemes are negatively associated with collective bargaining, the former association being driven by firm-level bargaining and the latter association by a sectoral bargaining connection. The year dummy indicates an absence of significant time trends.

Next in Table 11 we model unionization and collective bargaining status in 2004 as a function of covariates measured in the base period, 1998. These models differ a little from the previous specifications in Table 10 reflecting the greater range of covariates available in the 1998 cross-section.[19] There is strong persistence in recognition and collective bargaining status, as indicated by positive, significant coefficients on the lagged dependent variables. This is particularly so in the case of union recognition, which helps explain the high percentage of variance accounted for by this model. The exception is sectoral bargaining where the lagged dependent variable is not significant, either because it was in a state of flux or because these results suffer from measurement error, as one might expect if workplace managers are being asked to identify practices occurring above workplace level.

Being a single-establishment organization in 1998 is not associated with unionization in 2004. However, larger establishments in 1998 were more likely to recognize unions and more likely to have firm-level collective bargaining in 2004 than smaller establishments. Domestic ownership is positively associated with union recognition. Family ownership, on the other hand, is negatively associated with all four union measures. Workforce composition effects (percent female, percent part-time, and the incidence of fixed-term or temporary employees) are generally not significant, apart from the case of sectoral collective bargaining where the percent female and the percent part-time coefficients have opposite signs. The probability of sectoral bargaining coverage in 2004 rises with the percent female in 1998, whereas it lowers the probability of firm-level bargaining. Occupational composition, as indicated by the largest non-managerial occupation at the workplace, is statistically significant. Craft and skilled manual employees are least likely to work in workplaces recognising trade unions by 2004, whereas those in operative and assembly occupations are the most likely to be doing so. Active collective bargaining in 2004 is least likely in workplaces where the largest occupational group in 1998 was personal service employees. Workplaces where professionals made up the largest group in 1998 had the greatest likelihood of coverage under sectoral-level bargaining in 2004. The occupational pattern of firm-level bargaining is quite different: it is least likely in 2004 in those workplaces where the largest occupational group in 1998 was personal services or science/technical employees. A positive association with local product markets was only apparent in case of sectoral bargaining. There is a strong negative association between being located in London and collective bargaining, both sectoral and firm-level. The presence of a JCC in 1998 was positively associated with union recognition in 2004, but not with collective bargaining coverage. Finally, the use of contingent pay in 1998 was negatively associated with union recognition and sectoral bargaining in 2004, but not with firm-level bargaining. There are two broad points emerging from Table 11 that are worthy of note. First, much of the variance in unionization and collective bargaining status can be captured with workplace-level covariates

[19] Reflecting the fact that the 2004 follow-up survey was much shorter than the 1998 survey due to budgetary constraints.

obtained some 6 to 7 years previously. Second, the correlates of these alternative measures of union engagement in pay bargaining differ in a number of dimensions. The only statistically significant effect that is common to all four models is the negative association with family ownership.

The next logical step in our exploration of factors affecting collective bargaining and worker representation is to identify workplace characteristics which predispose workplaces to switch bargaining regime, as opposed to sticking with their original arrangements. To investigate this we distinguish between four outcomes. The first, which is the default position in Britain, is to remain without union representation or collective bargaining coverage throughout the period (0 in 1998 and 0 in 2004). The second outcome is being covered in 1998 but uncovered by the time of the 2004 survey (1 in 1998 and 0 in 2004). The third outcome is entering into bargaining coverage over the period (0 in 1998 and 1 in 2004). The final outcome is remaining covered throughout the period (1 in 1998 and 1 in 2004). We seek to establish which 1998 workplace characteristics are independently associated with these four states by running multinomial logits and using the same set of covariates as in Table 11.

Table 12 presents this analysis for union recognition status. Three-quarters (74 percent) of panel establishments did not recognize unions in either 1998 or 2004; one-fifth (20 percent) recognized unions in both periods; the remaining 6 percent had switched status with 2 percent no longer recognizing unions and 4 percent recognizing them for the first time over the period. The probability of recognizing unions throughout the period, or recognizing them for the first time, was higher among larger workplaces. Domestically-owned workplaces were more likely to stick with union recognition, or become unionized, than workplaces that were foreign-owned in 1998. Family ownership was strongly associated with remaining non-union throughout the period, as was being located in London.

It is a commonly-held belief that 1980 was a turning point in the unionization of British workplaces: evidence has consistently indicated that workplaces set up prior to 1980 have higher union recognition rates than younger workplaces, with some pointing to the early post-war period as the 'golden era' for unionization (Millward et al., 2000: 101-103). However, Blanchflower and Bryson (2009: 51-53) found this had started to change observing a decline in the unionization rate among older workplaces. We find more such evidence here, since workplaces born before 1980 are more likely to cease to recognize a union and less likely to initiate recognition than their younger counterparts.

Relative to those operating in wider product markets, those with local markets emerge as not only more likely to be unionized throughout the period but also more likely to cease to recognise unions. The presence of a JCC in 1998 is conducive to remaining unionized throughout, whereas the increased use of contingent pay schemes appears to have reduced the probability of workplaces becoming unionized.

As noted earlier, the incidence of collective bargaining was less stable in the panel than the presence of recognized unions. Although seven-in-ten (71 percent) workplaces remained uncovered by any collective bargaining throughout, only 8 percent were covered in both 1998 and 2004. The remaining one-fifth (21 percent) were 'switchers,' with 9 percent moving from covered to uncovered status and 11 percent moving back the other way. Table 13 adopts the same estimation approach to that adopted for Table 12 to identify workplace correlates of these changes. The model explains less of the variance in collective bargaining status than it did union recognition (the pseudo-R^2 being 0.37 as opposed to 0.45).

The correlates of changing bargaining coverage status differ in a number of respects from the correlates of changing union recognition status. Larger establishments are more likely to remain covered throughout, as in the case of union recognition in Table 12 but, in contrast to the union recognition model, larger establishments are also more likely to quit the covered sector than smaller establishments. Domestic ownership in 1998 is associated with

becoming covered by 2004, but not with persistence in coverage. Family ownership is associated with a lower probability of becoming covered by 2004 but it is not associated with leaving coverage or with persistent coverage. Workplace age plays no significant role. Workforce composition does play a significant role in coverage change: a higher percentage of female employees reduces the probability of persistent coverage relative to never being covered, whereas a higher percentage of part-time workers does the opposite. Compared with workplaces operating in regional, national, and international product markets, those operating in local product markets are less likely to be uncovered throughout and have a higher probability of switching in and out of collective bargaining. JCCs are associated with persistent collective bargaining coverage but also with leaving coverage. Greater use of contingent pay schemes and location in London are both associated with a lower likelihood of having any contact with collective bargaining over the period.

Sectoral collective bargaining is relatively uncommon in Britain compared with Germany. In the WERS Panel almost nine-tenths (86 percent) of workplaces had not used sectoral collective bargaining in either 1998 or 2004. A mere 1 percent used it in both years. Eight percent appear to have joined a sectoral agreement by 2004, while 4 percent had sectoral bargaining coverage in 1998 but were no longer covered by a sectoral agreement in 2004. This distribution of responses makes it relatively difficult to estimate changes in sectoral collective bargaining status over the period. The model in Table 14 accounts for 44 percent of the variance in sectoral bargaining status, but much of this is soaked up by industry dummy variables, which is why we include them here.

Compared with the reference category (Education, Health and Other Community Services) workplaces in other industries were less likely to be persistently covered by a sectoral agreement, with the exception of Construction where continued sectoral coverage was most likely. Larger establishments in 1998 had a higher probability of continued sectoral coverage compared with smaller establishments. Domestic and family ownership were not significant. Four service sector industries – Hotels and Restaurants, Transport and Communication, Financial Services and Business Services – all had a higher probability of entering into a sectoral agreement than did Education, Health and Other Community Services. Workforce composition also played a role: in addition to a number of significant occupational effects, the probability of persistent sectoral coverage and the probability of joining a sectoral agreement fell in those workplaces with higher percentages of female employees in 1998. Links to firm-level human resource practices are also apparent. Use of contingent pay was negatively associated with any contact with sectoral agreements over the period; having a JCC in 1998 lowered the probability of persistent sectoral bargaining coverage relative to no coverage; and a high incidence of team-working in 1998 led to an increased likelihood of leaving a sectoral agreement. Those in local product markets in 1998 were more likely than those in larger markets to have joined a sectoral agreement. Finally, location in London was associated with a lower propensity to resort to sectoral bargaining.

Four-fifths (81 percent) of workplaces had no firm-level (either workplace-level or organization-level) collective bargaining agreement in 1998 and 2004; 4 percent had one in both years; and the remaining 14 percent were split evenly between those dropping their firm agreement and those who had adopted one. The correlates of firm-level bargaining status, shown in Table 15, differ in many ways from those for sectoral-level bargaining. For instance, there is no significant association with the use of contingent pay in 1998. Nevertheless, there are some points of similarity such as the negative association between location in London and bargaining coverage. Once again, establishment size plays a prominent role. The probability of retaining a firm-level agreement, and the probability of leaving one, both rise with establishment size relative to the probability of having no firm agreement throughout. Single-establishment organizations are less likely than multiple-

establishment organizations to maintain a firm-level agreement throughout, while family ownership in 1998 reduces the probability of adopting a firm-level bargaining agreement by 2004. Workforce composition also seems to play a role, with occupational composition, part-time and fixed-term employment all recording statistically significant influences. So, too, does the location of the product market, with local product markets being more likely to abandon firm-level bargaining than other workplaces with wider markets. A high incidence of team working in 1998 is associated with a lower probability of firm-level bargaining in both years, whereas JCC presence is associated with both a higher probability of persistence in firm-level agreements and a higher propensity to cease to bargain at firm-level.

Finally, we consider the correlates of Joint Consultative Committee (JCC) status. Table 16 presents results for JCCs at either workplace or firm level, while Table 17 presents identical multinomial logit models but restricts the definition of the entity to workplace level alone. There is much more switching in JCC status than in bargaining arrangements. For JCCs at establishment or firm level, two-fifths (43 percent) had no JCC in either year; one-quarter (23 percent) had one in both years; 16 percent abolished an existing JCC; and one-sixth (18 percent) introduced one. The corresponding values for workplace-level JCCs are 74, 7, 9, and 10 percent, respectively. Given these markedly different distributions it is hardly surprising that the workplace correlates of JCC status in the panel differ according to whether one uses the 'any JCC' variable in Table 16 or the 'workplace-level JCC' in Table 17.

The size and nature of the organization play an important role in determining JCC status in Britain. The probability of having a JCC in both years is significantly higher among larger establishments and JCCs are less in evidence in single-site firms. The impact of establishment size is even greater in the case of workplace JCCs, but the single establishment effect disappears. Domestically-owned establishments are less likely to be adopters of JCCs than their foreign counterparts, but this effect is not apparent for workplace-level JCCs. Family ownership is associated with a lower incidence of JCCs, but the effect is confined to the persistence of JCCs when one focuses on workplace-level institutions.

Whereas the presence of a recognised union in 1998 is associated with a higher probability of JCC presence throughout the period, this association is totally absent in the case of workplace JCCs. Another big difference is the London effect, which is associated with a significantly higher probability of having a workplace JCC throughout the period, despite having no significant association with JCCs in general. Finally, those establishments operating in a local product market in 1998 had a lower probability than other workplaces of switching in and out of workplace-JCC status, a finding that only holds for all JCCs in relation to the abolition option. Taken together, it is clear that one needs to be cautious when generalizing about the correlates of JCC status since the factors influencing the presence of workplace JCCs appear to differ in a number of respects from those factors influencing JCCs that exist at either workplace or organization-level.

VII. Conclusions

The decline in collective bargaining coverage in Germany in the sample period is material but less dramatic than might have been expected. After some pronounced decline in the 1980s and early 1990s, arguably a degree of normalcy has returned. But only later years will tell whether this is sustainable and the outcome of organized deregulation. The decline in collective bargaining coverage cannot be due simply to industry dynamics as trends across the subgroups examined here are very broadly comparable. Moreover, it has not been offset by any opposite shift in 'orientation.' That is to say, orientation toward collective agreements on the part of uncovered employers has remained fairly constant over the sample period. But

this result again qualifies the notion of there having been a continued erosion in the influence of collective bargaining.

Despite substantive institutional inertia, we do observe fairly active switching in and out of collective bargaining. Establishment size, branch plant status, skill composition of the workforce and, in some specifications, plant age and works council presence *tend* to favor sectoral collective bargaining status and conversely in the case of market competition and export propensity. However, the evidence is weaker than in simple cross-section studies, while the correlates of firm-level bargaining emerge as quite distinct. Changes in collective bargaining status are intriguing in the sense of offering very mixed support for our priors both as regards joining sectoral and firm-level agreements and leaving firm-level agreements. Little support is adduced for any of our regressors (other than the industry dummies) in the case of establishments abandoning sectoral agreements.

Works council introduction and abandonment appears both better determined and more symmetric, even if the associations uncovered here are again not always consistent with those reported in the literature. A final issue is the collective bargaining-works council nexus. Works councils are positively associated with collective bargaining presence but in terms of switching only with the introduction of firm-level agreements. And the presence of collective agreements tends to favor the introduction of works councils and detract from their abandonment. Overall, the suggestion is that the two entities play a supportive role

The British and German systems are fundamentally different. In particular, sectoral-level bargaining is the 'default' in Germany whereas, by the start of our period of investigation, it had all but disappeared in the British private sector. Instead, in the vast majority of British firms it is management that sets pay unilaterally rather than resorting to collective bargaining.

In contrast to Germany, British firms can combine sectoral and firm-level bargaining. In practice, however, we do not observe mix and match. Nearly all the firms setting some pay with collective bargaining used either sectoral or firm-level bargaining. Among those using collective bargaining, firm-level bargaining is more common than sectoral-level bargaining.

As in Germany, collective bargaining was in decline over the period 1998-2004. In Britain this was most evident in sectoral-level bargaining. But, unlike the situation in Germany, Joint Consultative Committees (JCCs) were also in conspicuous decline over this period. Much of the decline in collective bargaining is accounted for by compositional change in workplaces: those workplaces leaving the population, either because they died or had shrunk below the size threshold for inclusion in the survey, had higher rates of collective bargaining than new workplaces that had either been born since 1998 or had grown above the lower size threshold. Change among continuing establishments was much less pronounced.

The amount of switching in and out of collective bargaining among British panel establishments is considerable. Nevertheless, there is substantial persistence in collective bargaining status, as indicated by the large positive effects of lagged bargaining status in the regression analysis. Switching is less common when one uses the measure of union recognition to proxy union involvement in pay bargaining. And the proportion of establishments introducing and abolishing JCCs is much higher than the switching in collective bargaining status.

Finally, much of the variance in collective bargaining status can be captured with workplace-level covariates obtained some six to seven years previously but the bottom line is that the correlates of sectoral and firm-level bargaining differ quite markedly.

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Table 1
Transitions in the Collective Bargaining and Works Council Status of German Establishments between 1998 and 2004, Weighted Data

	Works council		Collective bargaining of any type		Sectoral collective bargaining		Firm-level collective bargaining	
	Incomplete panel	Complete panel	Incomplete panel	Complete panel	Incomplete panel	Complete panel	Incomplete panel	Complete panel
Always existing	6.7%	7.3%	42.6%	44.4%	39.3%	40.5%	1.3%	2.0%
Introduced	1.7%	2.5%	4.2%	2.8%	4.9%	3.1%	1.2%	1.7%
Abolished	2.0%	2.5%	15.6%	15.2%	15.2%	14.7%	2.4%	2.5%
Never existing	89.7%	87.7%	37.6%	37.5%	40.6%	41.8%	95.0%	93.8%
Net change	-0.3%	0.0%	-11.4%	-12..4%	-10.3%	-11.7%	-1.2%	-0.7%
Number of observations	318,561	184,021	318,561	184,021	318,561	184,021	318,561	184,021

Source: IAB Establishment Panel 1998 to 2004, own calculations.

Table 2
Probit Pooled Estimates of the Determinants of Collective Bargaining (Any Type, Sectoral, and Firm-Level), Germany, 1998 and 2004, Weighted Data

	Collective bargaining of any type	Sectoral collective bargaining	Firm-level collective bargaining
Year (2004)	-0.301***	-0.259***	-0.170*
	(0.089)	(0.088)	(0.099)
Log establishment size	0.160**	0.148**	0.057
	(0.076)	(0.070)	(0.089)
Increasing sales expected	0.046	0.083	-0.185
	(0.137)	(0.132)	(0.143)
High-tech	0.066	0.047	0.106
	(0.124)	(0.122)	(0.106)
Age of establishment	0.345**	0.309**	0.118
	(0.150)	(0.146)	(0.172)
Exports	-0.009*	-0.013**	0.0137***
	(0.006)	(0.006)	(0.005)
Single plant	-0.225	-0.166	-0.098
	(0.214)	(0.196)	(0.129)
R&D	-0.327	-0.238	-0.227
	(0.219)	(0.211)	(0.183)
Delegation	0.383**	0.379**	-0.125
	(0.183)	(0.173)	(0.179)
Team-work	0.200	0.246	-0.208
	(0.196)	(0.184)	(0.190)
Profit-center	-0.119	-0.103	-0.022
	(0.215)	(0.197)	(0.163)
Skilled workers	0.0020	0.00244	0.001
	(0.002)	(0.002)	(0.003)
Female workers	0.002	0.0003	0.004
	(0.003)	(0.003)	(0.004)
Fixed-term workers	-0.014**	-0.013**	-0.003
	(0.006)	(0.006)	(0.006)
Part-time workers	-0.0007	0.0002	-0.003
	(0.003)	(0.003)	(0.003)
Works council present	1.281***	0.759***	0.674***
	(0.159)	(0.169)	(0.180)
Individually-owned firm	0.106	0.101	0.041
	(0.140)	(0.138)	(0.116)
Foreign property	-0.386	-0.695**	0.773**
	(0.285)	(0.279)	(0.319)
Western Germany	0.607***	0.733***	-0.651***
	(0.132)	(0.129)	(0.114)
Constant	-0.154	0.106	-3.177***
	(0.497)	(0.504)	(0.588)
Pseudo R^2	0.27	0.25	0.19
n	3,067	3,084	3,066

Notes: Robust standard errors are in parentheses. ***, **, * denote statistical significance at the 0.01, 0.05, and 0.10 levels.
Source: IAB Establishment Panel, 1998 and 2004.

Table 3
Probit Estimates of End-Period (i.e. 2004) Collective Bargaining Status, Germany, Weighted Data (the determinants are beginning-period (i.e. 1998) establishment characteristics)

	Collective bargaining of any type	Sectoral collective bargaining	Firm-level collective bargaining
Collective bargaining of any type	1.757***		
	(0.179)		
Sectoral collective bargaining		1.701***	
		(0.174)	
Firm-level collective bargaining			2.232***
			(0.377)
Log establishment size	0.198**	0.217**	0.037
	(0.090)	(0.088)	(0.108)
Increasing sales expected	-0.014	0.087	-0.728***
	(0.161)	(0.162)	(0.192)
High-tech	0.454***	0.551***	-0.379**
	(0.174)	(0.173)	(0.188)
Age of establishment	-0.143	-0.142	-0.0004
	(0.186)	(0.183)	(0.211)
Exports	0.007	-0.0008	0.0142**
	(0.006)	(0.006)	(0.006)
Single plant	0.260	0.379*	-0.459**
	(0.228)	(0.224)	(0.226)
R&D	-0.392	-0.544**	0.577**
	(0.279)	(0.272)	(0.281)
Delegation	0.534**	0.414	0.443*
	(0.258)	(0.269)	(0.230)
Team-work	0.060	0.137	-0.257
	(0.269)	(0.272)	(0.245)
Profit-center	-0.374*	-0.283	-0.284
	(0.222)	(0.222)	(0.250)
Skilled workers	0.004	0.005*	-0.004
	(0.003)	(0.003)	(0.004)
Female workers	0.009**	0.010**	-0.001
	(0.004)	(0.004)	(0.005)
Fixed-term workers	0.003	0.004	0.003
	(0.007)	(0.007)	(0.001)
Part-time workers	-0.007*	-0.009**	0.004
	(0.004)	(0.004)	(0.005)
Works council present	0.244	0.079	0.841***
	(0.232)	(0.234)	(0.314)
Individually-owned firm	0.085	0.156	-0.415
	(0.190)	(0.192)	(0.256)
Foreign property	0.505	0.276	0.436
	(0.397)	(0.272)	(0.427)
Profit sharing	0.147	0.185	-0.302
	(0.225)	(0.226)	(0.283)
High competition	-0.260	-0.338**	0.432**
	(0.167)	(0.169)	(0.170)
Western Germany	0.679***	0.788***	-0.895***
	(0.169)	(0.170)	(0.192)
Constant	-3.317***	-3.326***	-2.440*
	(0.777)	(0.746)	(0.754)
Pseudo R^2	0.44	0.45	0.51
n	1,624	1,624	1,494

Note: See notes to Table 2.

Table 4
Probit Estimates of the Determinants of Transitions into and out of the Various Collective Bargaining Regimes, Germany, Weighted Data

	Collective bargaining of any type		Sectoral collective bargaining		Firm-level collective bargaining	
	Introduced	Abolished	Introduced	Abolished	Introduced	Abolished
Log establishment size	0.345**	-0.195	0.387***	-0.156	-0.005	-0.321*
	(0.158)	(0.121)	(0.141)	(0.125)	(0.116)	(0.179)
Increasing sales expected	-0.869***	-0.199	-0.502*	-0.276	-0.537***	1.126***
	(0.303)	(0.190)	(0.264)	(0.201)	(0.194)	(0.372)
High-tech	1.093***	-0.394*	1.311***	-0.455**	-0.456**	0.845*
	(0.334)	(0.212)	(0.311)	(0.217)	(0.193)	(0.461)
Age of establishment	-1.013***	-0.122	-0.750***	-0.080	-0.153	1.917***
	(0.304)	(0.215)	(0.273)	(0.228)	(0.196)	(0.581)
Exports	0.005	-0.013	-0.028**	-0.012	0.013**	0.002
	(0.010)	(0.009)	(0.012)	(0.008)	(0.006)	(0.012)
Single plant	1.074**	-0.099	0.837*	-0.184	-0.492**	0.215
	(0.523)	(0.270)	(0.440)	(0.274)	(0.250)	(0.482)
R&D	-0.050	0.527	-0.894**	0.488	0.384	-1.504**
	(0.360)	(0.334)	(0.405)	(0.343)	(0.270)	(0.631)
Delegation	1.209***	-0.374	1.107**	-0.276	0.504**	0.038
	(0.447)	(0.236)	(0.466)	(0.244)	(0.239)	(0.599)
Team-work	0.323	-0.0224	-0.013	-0.226	-0.077	0.697
	(0.426)	(0.279)	(0.445)	(0.301)	(0.229)	(0.494)
Profit-center	-0.441	0.250	-0.406	0.251	-0.139	-0.120
	(0.427)	(0.283)	(0.419)	(0.288)	(0.288)	(0.515)
Skilled workers	0.013***	-0.003	0.006	-0.005	-0.001	-0.013
	(0.005)	(0.003)	(0.004)	(0.004	(0.004)	(0.008)
Female workers	0.017**	-0.007	0.021***	-0.007	0.002	0.020*
	(0.008)	(0.005)	(0.005)	(0.005)	(0.005)	(0.010)
Fixed-term workers	-0.016	-0.0109	-0.011	-0.016	0.006	0.036*
	(0.022)	(0.0113)	(0.018)	(0.013)	(0.008)	(0.019)
Part-time workers	0.006	0.009**	-0.006	0.020**	0.0009	-0.023**
	(0.007)	(0.004)	(0.006)	(0.005)	(0.006)	(0.012)
Works council	0.114	-0.172	0.286	0.074	0.998***	-0.587
	(0.652)	(0.260)	(0.538)	(0.263)	(0.326)	(0.531)
Individually-owned firm	0.168	-0.152	0.209	-0.207	-0.466	0.027
	(0.340)	(0.221)	(0.309)	(0.235)	(0.292)	(0.575)
Foreign property	1.575***	-0.105	1.337***	-0.697	0.669	0.101
	(0.586)	(0.455)	(0.495)	(0.501)	(0.466)	(0.601)
Profit sharing	-0.442	-0.385	-0.858**	-0.398	-0.581*	-1.134*
	(0.446)	(0.275)	(0.432)	(0.289)	(0.347)	(0.604)
High competition	-0.937***	0.142	-0.593**	0.207	0.359**	-0.721*
	(0.291)	(0.197)	(0.272)	(0.208)	(0.177)	(0.389)
Western Germany	0.571**	-0.575***	1.207***	-0.671***	-1.176***	-0.340
	(0.287)	(0.196)	(0.304)	(0.204)	(0.198)	(0.596)
Constant	-5.128***	1.603*	-4.509***	1.886**	-2.411***	2.572
	(1.637)	(0.893)	(1.278)	(0.861)	(0.884)	(1.915)
Pseudo R^2	0.45	0.20	0.41	0.23	0.43	0.72
n	418	1,088	613	919	1,234	153

Note: See notes to Table 2.

Table 5
Probit Estimates of the Determinants of Transitions into and out of Works Council Status, Germany, Weighted Data

	Introduced (1)	Abolished (2)
Log establishment size	0.657***	-2.445***
	(0.143)	(0.391)
Increasing sales expected	-0.734**	-1.307**
	(0.303)	(0.566)
High-tech	0.837**	1.659***
	(0.368)	(0.477)
Age of establishment	0.0509	-1.074**
	(0.355)	(0.499)
Exports	0.007	0.011
	(0.009)	(0.011)
Single plant	-0.024	1.302***
	(0.342)	(0.404)
R&D	0.853**	-1.947***
	(0.394)	(0.686)
Delegation	0.437	0.793*
	(0.483)	(0.410)
Team-work	-1.031**	0.365
	(0.523)	(0.434)
Profit-center	-0.113	0.846*
	(0.494)	(0.462)
Skilled workers	0.003	-0.0103*
	(0.005)	(0.006)
Female workers	0.027***	-0.008
	(0.009)	(0.010)
Fixed-term workers	0.005	0.103***
	(0.016)	(0.027)
Part-time workers	-0.030***	-0.016
	(0.012)	(0.013)
Individually-owned firm	-2.933***	2.277***
	(0.672)	(0.763)
Foreign property	1.408**	-2.547**
	(0.578)	(1.226)
Profit sharing	0.259	-0.382
	(0.391)	(0.501)
High competition	-0.232	-0.974**
	(0.358)	(0.470)
Western Germany	0.174	0.251
	(0.392)	(0.489)
Sectoral agreements	0.555	-1.731***
	(0.367)	(0.524)
Firm-level agreements	1.208***	-0.798
	(0.432)	(0.589)
Constant	-13.360***	13.864***
	(1.058)	(2.793)
Pseudo R^2	0.57	0.77
n	487	586

Note: See notes to Table 2.

Table 6
Workplace Incidence of Collective Bargaining, Great Britain, 1998-2004

	Union recognition	Any collective bargaining	Sectoral agreement	Firm-level agreement	Joint Consultative Committee
1998 (%)	20.4	16.6	5.6	11.0	36.3 (14.3)
2004 (%)	14.8	10.6	2.3	8.4	29.4 (9.5)
Δ	-5.6	-6.0	-3.3	-2.6	-6.9 (-4.8)

Notes: (1) Δ denotes percentage point change. (2) Firm agreements include those at workplace and at organization level. (3) JCC figures are for all JCCs whether at workplace or organization level; figures in parentheses are workplace-level JCCs. (4) All figures are workplace-weighted. (5) Unweighted workplace sample sizes in 1998 are 1469 for collective bargaining, 1,460 for union recognition, and 1,494 for JCC. (6) Unweighted workplace sample sizes in 2004 are 1,458 for collective bargaining, 1,428 for union recognition, and 1,489 for JCC.

Table 7
Employee Coverage by Worker Representation and Collective Bargaining, Great Britain, 1998-2004

	Union recognition	Any collective bargaining	Sectoral agreement	Firm-level agreement	Joint Consultative Committee
1998 (%)	38.7	26.9	4.6	22.3	50.8 (33.2)
2004 (%)	32.2	21.3	4.1	17.2	48.6 (32.7)
Δ	-6.5	-5.6	-0.5	-4.1	-2.2 (-0.5)

Notes: (1) All figures are employee weighted. See also notes to Table 6.

Table 8
Behavioral Versus Compositional Change, Great Britain, 1998-2004

	Union recognition	Any collective bargaining	Sectoral agreement	Firm-level agreement	Joint consultative committee
Stayers					
Cross-section:					
1998	21.0	16.0	5.5	10.5	39.7 (15.5)
2004	18.1	12.1	2.0	10.0	30.2 (11.0)
Δ	-2.9	-3.9	-3.5	-0.5	-9.5 (-4.5*)*
Panel:					
1998	22.2	17.3	5.7	11.5	38.5 (15.8)
2004	24.2	20.0	9.4	11.4	41.4 (17.0)
Δ	+2.0	+2.7	+3.7	-0.1	+2.6 (1.2)
Changers					
Leavers 1998	19.1	17.9	6.0	12.1	28.7 (11.6)
Joiners 2004	7.5	7.1	2.9	4.8	27.4 (6.3)
Δ	-11.6	-10.8	-3.1	-7.3	-1.3 (-5.3)

Notes: (1) Δ denotes percentage point change. (2) Cross-section stayers are defined using survey data on workplace age and size. 1998 stayers are those workplaces surveyed in 1998 that were still in existence in 2004 with 10 or more employees. 2004 stayers are those workplaces surveyed in 2004 that had been in existence with 10 or more employees in 1998. (3) All panel cases are 'stayers' since they had 10 or more employees in both 1998 and 2004. (4) Leavers are workplaces with 10 or more employees surveyed in 1998 that subsequently closed before 2004, or whose employment size had shrunk below 10 by 2004. Joiners are workplaces with 10 or more employees surveyed in 2004 that were either born after 1998 or had been in existence with fewer than 10 employees in 1998. (5) Unweighted workplace sample sizes are as follows: panel between 575 and 587 depending on workplace measure; 1998 stayers = 1,202; 1998 leavers = 292; 2004 stayers = 1,206; 2004 joiners = 280.

Table 9
Switching Behavior in Panel Workplaces, Great Britain, 1998-2004

	Union recognition	Any collective bargaining	Sectoral agreement	Firm-level agreement	Joint Consultative Committee
Always (%)	19.7	8.5	1.2	4.3	22.8 (7.0)
Introduced (%)	4.1	11.9	8.2	7.1	18.3 (10.1)
Abolished (%)	2.4	8.7	4.5	7.2	15.7 (8.8)
Never (%)	73.9	70.9	86.2	81.5	43.2 (74.2)
Δ	+1.7	+3.2	+3.7	-0.1	+2.6 (+1.3)

Notes: (1) Δ denotes percentage point change. (2) Unweighted sample size is between 568 and 587 depending on workplace measure.

Table 10
Probit Estimates for Union Recognition and Collective Bargaining, Great Britain, Pooled Data for WERS Panel 1998-2004

	Recognition	Any collective bargaining	Sectoral agreement	Firm-level agreement
Year (2004)	-0.022	0.159	0.344	-0.064
	(0.085)	(0.166)	(0.251)	(0.175)
Log establishment size	0.267***	0.262***	-0.012	0.395***
	(0.099)	(0.084)	(0.110)	(0.069)
Single plant	-0.301	-0.267	0.234	-0.903***
	(0.266)	(0.212)	(0.194)	(0.232)
U.K. ownership	0.253	0.314*	0.345	0.300*
	(0.241)	(0.176)	(0.277)	(0.166)
Local market	0.433**	0.621***	0.417*	0.471***
	(0.201)	(0.193)	(0.225)	(0.171)
Female workers	0.902	-0.500	-0.335	-0.280
	(0.563)	(0.356)	(0.414)	(0.354)
Fixed-term workers	-0.063	0.281	0.482*	0.024
	(0.123)	(0.201)	(0.247)	(0.160)
Team work	-0.093	-0.322**	0.039	-0.571***
	(0.142)	(0.155)	(0.181)	(0.163)
No. of contingent pay practices	-0.071	-0.256***	-0.340***	-0.089
	(0.070)	(0.066)	(0.109)	(0.077)
JCC	0.731***	0.477***	0.241	0.546***
	(0.152)	(0.155)	(0.173)	(0.168)
Constant	-1.511***	-1.581***	-1.852***	-2.053***
	(0.564)	(0.399)	(0.481)	(0.423)
Pseudo R^2	0.37	0.22	0.21	0.28
n	1,167	1,167	1,167	1,167

Notes: ***, **, * denote statistical significance at the 0.01, 0.05, and 0.10 levels, respectively. Standard errors clustered to account for repeated observations are in parentheses. All models include 10 single-digit industry dummies. Controls are as follows. Year (2004): year dummy; Log establishment size: log number of employees at workplace; Single plant: dummy for single establishment; U.K ownership: dummy for U.K. ownership; Local market: dummy for local product/service market (the default category is regional, national, and international markets); Female workers: percentage of employees female; Fixed-term workers: dummy for any temporary or fixed-term employees; Team work: 60% or more of employees in largest occupational group work in teams; No. of contingent pay practices: count of contingent pay practices (profit-related pay, deferred profit-sharing, employee share ownership, individual or group performance-related pay, and other cash bonuses); and JCC dummy for presence of a JCC at workplace or organizational level.

Table 11
Probit Estimates for Union Recognition and Collective Bargaining Status in 2004 Conditioning on 1998 Covariates, Great Britain, WERS Panel 1998-2004

	Recognition	Any collective bargaining	Sectoral agreement	Firm-level agreement
Log establishment size	0.346***	0.152	0.027	0.276**
	(0.102)	(0.132)	(0.175)	(0.130)
Single plant	-0.220	0.355	0.295	0.069
	(0.260)	(0.263)	(0.286)	(0.277)
U.K. ownership	1.028***	0.247	0.225	0.266
	(0.286)	(0.212)	(0.373)	(0.252)
Family owned	-0.967***	-0.666**	-0.648*	-0.539*
	(0.292)	(0.307)	(0.383)	(0.305)
Establishment age	-0.49*	-0.387*	-0.281	-0.275
	(0.250)	(0.224)	(0.258)	(0.224)
Occupation 1	-0.447	0.599	1.667***	-0.343
	(0.473)	(0.444)	(0.598)	(0.441)
Occupation 2	0.073	-0.065	0.766	-0.728*
	(0.600)	(0.422)	(0.615)	(0.429)
Occupation 3	-0.114	0.089	0.189	0.004
	(0.400)	(0.438)	(0.477)	(0.490)
Occupation 4	-1.270***	0.233	-0.185	-0.030
	(0.482)	(0.416)	(0.504)	(0.413)
Occupation 5	-0.071	-0.670*	-0.631	-0.901*
	(0.550)	(0.401)	(0.662)	(0.538)
Occupation 6	-0.153	0.169	0.224	-0.469
	(0.401)	(0.433)	(0.516)	(0.426)
Occupation 7	0.642*	0.181	0.271	-0.225
	(0.379)	(0.389)	(0.438)	(0.426)
Female workers	-0.002	-0.007	-0.020**	0.006
	(0.005)	(0.007)	(0.008)	(0.007)
Part-time workers	0.004	0.003	0.024**	-0.012**
	(0.005)	(0.008)	(0.012)	(0.006)
Fixed-term workers	-0.125	0.099	0.104	-0.140
	(0.211)	(0.247)	(0.341)	(0.223)
Local market	0.029	0.299	0.707**	-0.213
	(0.303)	(0.281)	(0.345)	(0.266)
JCC	0.522**	-0.047	-0.296	0.271
	(0.224)	(0.219)	(0.263)	(0.203)
Team work	-0.022	-0.133	-0.233	0.083
	(0.225)	(0.237)	(0.297)	(0.226)
No. contingent pay practices	-0.199*	-0.193	-0.347**	-0.076
	(0.109)	(0.123)	(0.148)	(0.091)
London	-0.294	-0.699**	-1.431***	-0.53*
	(0.232)	(0.279)	(0.529)	(0.320)
Union recognition	2.808***			
	(0.249)			

Any collective bargaining		0.936***		
		(0.266)		
Sectoral collective bargaining			0.176	
			(0.474)	
Firm-level collective bargaining				1.105***
				(0.248)
Constant	-3.136***	-1.600**	-2.667***	-1.804***
	(0.694)	(0.776)	(0.963)	(0.853)
Pseudo R^2	0.699	0.256	0.377	0.285
n	584	572	566	584

Notes: ***, **, * denote statistical significance at the 0.01, 0.05, and 0.10 levels, respectively. Standard errors clustered to account for repeated observations are in parentheses. All models include 8 single-digit industry dummies. Controls are all measured in 1998 and are as follows. Log establishment size: log number of employees at workplace; Single plant: dummy for single establishment; U.K ownership: dummy for U.K. ownership; Family owned: dummy for family owned; Establishment age: a dummy for establishment aged 25 or more years; Occupation variables identify the largest non-managerial occupational group in the workplace where 1 = professionals, 2 = scientific/technical; 3 = clerical/secretarial; 4 = craft and skilled manual; 5 = personal service; 6 = sales; 7 = operative and assembly and reference is routine unskilled manual; Local market: dummy for local product/service market (the default category is regional, national, and international markets); Female workers: percentage of employees female; Fixed-term workers: dummy for any temporary or fixed-term employees; Team work: 60% or more of employees in largest occupational group work in teams; No. of contingent pay practices: count of contingent pay practices (profit-related pay, deferred profit-sharing, employee share ownership, individual or group performance-related pay, and other cash bonuses); London: dummy for location in London; and JCC: dummy for presence of a JCC at workplace or organizational level.

Table 12
Multinomial Logit Estimates for Union Recognition Status, Great Britain, 1998-2004 (reference category is no recognition in 1998 and 2004)

	1998 only	2004 only	1998 and 2004
Log establishment size	0.516	0.890***	0.694***
	(0.422)	(0.199)	(0.230)
Single plant	-1.714	-0.716	-0.848
	(1.109)	(0.691)	(0.523)
U.K. ownership	-0.196	2.797***	1.463**
	(1.689)	(0.719)	(0.584)
Family owned	-3.259*	-3.008***	-1.893***
	(1.773)	(1.080)	(0.614)
Establishment age	1.291*	-1.212*	0.170
	(0.778)	(0.674)	(0.422)
Occupation 1	0.586	-0.797	-0.612
	(1.517)	(0.994)	(1.034)
Occupation 2	0.594	-0.141	-0.461
	(1.764)	(1.211)	(0.831)
Occupation 3	-0.926	-1.079	0.790
	(1.223)	(1.200)	(0.851)
Occupation 4	1.998	-2.986***	0.521
	(1.606)	(1.123)	(0.864)
Occupation 5	-1.061	-0.72	-0.899
	(1.884)	(1.358)	(1.055)
Occupation 6	-0.274	-0.025	-0.327
	(1.363)	(0.829)	(0.754)
Occupation 7	-1.597	0.904	1.234
	(1.808)	(0.765)	(0.797)
Female workers	0.029	0.004	0.017
	(0.024)	(0.013)	(0.012)
Part-time workers	-0.003	0.003	0.006
	(0.016)	(0.014)	(0.013)
Fixed-term workers	-0.095	-0.007	-0.117
	(0.666)	(0.574)	(0.486)
Local market	3.088***	0.567	1.631***
	(1.151)	(0.760)	(0.518)
JCC	-0.414	0.726	1.326***
	(0.657)	(0.645)	(0.480)
Team work	-0.287	-0.24	-0.177
	(0.757)	(0.519)	(0.420)
No. of contingent pay practices	-0.179	-0.527*	-0.27
	(0.268)	(0.298)	(0.186)
London	-33.969***	-1.612**	-1.044*
	(0.875)	(0.696)	(0.579)
Constant	-6.958**	-6.967***	-6.594***
	(2.921)	(1.476)	(1.419)
Pseudo R^2	0.45		
n	584		

Notes: ***, **, * denote statistical significance at the 0.01, 0.05, and 0.10 levels, respectively. Standard errors are in parentheses. All models include 8 single-digit industry dummies. See also notes to Table 11.

Table 13
Multinomial Logit Estimates for Collective Bargaining Status, Great Britain, 1998-2004 (reference category is no collective bargaining in 1998 and 2004)

	1998 only	2004 only	1998 and 2004
Log establishment size	0.696***	0.058	0.744***
	(0.228)	(0.380)	(0.206)
Single plant	-1.039	0.495	-0.881
	(0.706)	(0.542)	(0.621)
U.K. ownership	0.024	1.348*	-0.117
	(0.896)	(0.720)	(0.465)
Family owned	0.427	-1.249*	-0.813
	(0.680)	(0.685)	(0.649)
Establishment age	0.382	-0.894	0.110
	(0.513)	(0.608)	(0.405)
Occupation 1	-2.076	0.222	2.001
	(1.297)	(0.932)	(1.395)
Occupation 2	0.055	-0.843	0.550
	(1.143)	(1.040)	(0.897)
Occupation 3	0.263	-0.206	0.902
	(1.120)	(0.928)	(0.770)
Occupation 4	1.148	0.585	0.158
	(1.175)	(0.886)	(0.929)
Occupation 5	-1.824	-2.451**	1.107
	(1.135)	(1.129)	(1.129)
Occupation 6	1.001	1.202	-0.197
	(0.966)	(0.865)	(0.850)
Occupation 7	1.855	0.518	1.189
	(1.236)	(0.888)	(0.858)
Female workers	0.008	-0.007	-0.028**
	(0.013)	(0.014)	(0.013)
Part-time workers	0.013	-0.022	0.047***
	(0.018)	(0.016)	(0.017)
Fixed-term workers	-0.217	0.476	-0.135
	(0.599)	(0.567)	(0.436)
Local market	1.719***	1.520**	0.795
	(0.532)	(0.698)	(0.583)
JCC	1.425***	-0.099	1.200***
	(0.526)	(0.541)	(0.427)
Team work	0.687	0.067	-0.231
	(0.546)	(0.643)	(0.438)
No. of contingent pay practices	-0.504**	-0.733***	-0.241
	(0.242)	(0.267)	(0.206)
London	-2.392***	-2.430***	-1.538**
	(0.687)	(0.913)	(0.653)
Constant	-6.183***	-2.046	-6.598***
	(1.778)	(2.175)	(1.414)
Pseudo R^2	0.37		
n	572		

Notes: ***, **, * denote statistical significance at the 0.01, 0.05, and 0.10 levels, respectively.
Standard errors are in parentheses. All models include 8 single-digit industry dummies. See also notes to Table 11.

Table 14
Multinomial Logit Estimates for Sectoral Collective Bargaining Status, Great Britain, 1998-2004 (reference category is no sectoral collective bargaining in 1998 and 2004)

	1998 only	2004 only	1998 and 2004
Log establishment size	0.170	-0.667	1.117***
	(0.316)	(0.565)	(0.406)
Single plant	-2.018*	0.732	-0.786
	(1.166)	(0.714)	(1.032)
U.K. ownership	0.570	0.645	0.310
	(1.788)	(1.221)	(1.390)
Family owned	0.493	-0.834	-0.994
	(0.806)	(0.768)	(0.955)
Establishment age	0.060	-0.664	0.235
	(0.838)	(0.597)	(0.716)
Occupation 1	-4.477***	3.102**	2.618
	(1.723)	(1.238)	(1.911)
Occupation 2	-0.029	1.956	0.099
	(1.226)	(1.434)	(2.517)
Occupation 3	0.619	-0.144	-31.056***
	(0.994)	(1.131)	(1.158)
Occupation 4	-0.546	-0.819	-1.427
	(1.015)	(1.361)	(1.846)
Occupation 5	-5.484***	-3.797	0.494
	(1.631)	(2.598)	(1.654)
Occupation 6	-0.017	0.143	-32.278***
	(1.142)	(1.064)	(1.893)
Occupation 7	-2.067*	0.048	0.908
	(1.174)	(1.142)	(1.571)
Female workers	0.009	-0.049**	-0.038**
	(0.016)	(0.021)	(0.019)
Part-time workers	0.021	0.057**	0.021
	(0.023)	(0.027)	(0.022)
Fixed-term workers	0.181	1.211	-0.791
	(0.863)	(0.923)	(1.326)
Local market	1.032	2.224**	0.397
	(0.723)	(0.973)	(1.230)
JCC	0.422	0.169	-1.684*
	(0.829)	(0.700)	(0.907)
Team work	1.510*	-0.441	-0.707
	(0.900)	(0.719)	(0.864)
No. of contingent pay practices	-1.003**	-0.707**	-1.189**
	(0.450)	(0.285)	(0.574)
London	-2.387**	-2.517**	-33.21***
	(1.077)	(1.104)	(1.925)
Sic1	2.222	4.768*	-0.416
	(1.550)	(2.508)	(1.149)
Sic2	3.981***	6.535***	3.788***

	(1.391)	(2.468)	(1.187)
Sic3	-1.339	2.919	-33.047***
	(1.350)	(1.882)	(1.047)
Sic4	-34.897***	2.906**	-33.338***
	(1.035)	(1.227)	(0.956)
Sic5	-3.021	6.036**	-33.538***
	(2.236)	(2.580)	(1.391)
Sic6	1.437	7.937***	-28.889***
	(1.586)	(2.619)	(2.996)
Sic7	-1.743	3.176**	-2.846*
	(1.132)	(1.558)	(1.682)
Constant	-5.283**	-4.857**	-5.647**
	(2.272)	(2.265)	(2.276)
Pseudo R^2	0.44		
n	566		

Notes: ***, **, * denote statistical significance at the 0.01, 0.05, and 0.10 levels, respectively. Standard errors are in parentheses. SIC variables are the standard industry classification codes as follows. Sic1: Manufacture and Utilities; Sic2: Construction; Sic3: Wholesale and Retail; Sic4: Hotels and Restaurants; Sic5: Transport and Communication; Sic6: Financial Services; Sic7: Other business services. The Sic reference category is Education, Health, and Other Community Services. See also notes to Table 11

Table 15
Multinomial Logit Estimates for Firm Collective Bargaining Status, Great Britain, 1998-2004 (reference category is no firm collective bargaining in 1998 and 2004)

	1998 only	2004 only	1998 and 2004
Log establishment size	0.616***	0.418	0.968***
	(0.234)	(0.309)	(0.203)
Single plant	-0.865	0.411	-1.820***
	(0.564)	(0.590)	(0.697)
U.K. ownership	-0.202	0.882	-0.459
	(0.602)	(0.647)	(0.471)
Family owned	0.073	-1.331*	-0.279
	(0.733)	(0.696)	(0.688)
Establishment age	0.371	-0.799	0.685
	(0.560)	(0.546)	(0.499)
Occupation 1	-0.427	-1.432	1.079
	(1.623)	(1.107)	(1.016)
Occupation 2	0.116	-1.822*	0.000
	(1.506)	(0.951)	(0.870)
Occupation 3	-0.596	-0.312	0.812
	(1.126)	(0.986)	(0.821)
Occupation 4	1.781	0.049	0.498
	(1.256)	(0.768)	(1.031)
Occupation 5	0.745	-2.377	0.678
	(1.279)	(1.458)	(1.087)
Occupation 6	0.801	-0.909	-0.462
	(0.938)	(0.922)	(1.179)
Occupation 7	3.383***	0.164	1.416*
	(1.280)	(0.861)	(0.757)
Female workers	-0.010	0.006	-0.004
	(0.014)	(0.016)	(0.011)
Part-time workers	0.036*	-0.029*	0.025*
	(0.019)	(0.016)	(0.013)
Fixed-term workers	-1.037**	-0.855	0.375
	(0.474)	(0.546)	(0.480)
Local market	1.390**	-0.007	0.491
	(0.642)	(0.641)	(0.580)
JCC	1.212**	0.531	1.768***
	(0.556)	(0.478)	(0.434)
Team work	0.198	0.824	-0.839**
	(0.490)	(0.600)	(0.406)
No. of contingent pay practices	0.232	-0.188	0.146
	(0.259)	(0.221)	(0.217)
London	-2.375***	-2.174**	-0.342
	(0.841)	(1.001)	(0.611)
Constant	-7.026***	-2.590	-7.811***
	(1.932)	(2.316)	(1.273)
Pseudo R^2	0.39		
n	584		

Notes: ***, **, * denote statistical significance at the 0.01, 0.05, and 0.10 levels, respectively.
Standard errors are in parentheses. All models include 8 single-digit industry dummies. See also notes to Table 11.

Table 16
Multinomial Logit Estimates for Joint Consultative Committee Status, Great Britain, 1998-2004 (reference category is no JCC in 1998 and 2004)

	1998 only	2004 only	1998 and 2004
Log establishment size	-0.027	0.213	0.522**
	(0.302)	(0.226)	(0.251)
Single plant	-1.154*	-0.843*	-2.420***
	(0.668)	(0.502)	(0.574)
U.K. ownership	0.111	-2.163***	0.014
	(0.642)	(0.572)	(0.542)
Family owned	-1.046**	-1.372**	-2.657***
	(0.502)	(0.574)	(0.577)
Establishment age	-0.662	-1.818***	0.224
	(0.492)	(0.489)	(0.463)
Occupation 1	0.804	-0.855	0.262
	(1.140)	(0.897)	(0.943)
Occupation 2	1.358	-1.734	-0.659
	(1.006)	(1.393)	(0.986)
Occupation 3	0.775	-1.083	0.571
	(0.981)	(0.728)	(0.782)
Occupation 4	1.179	-0.273	0.894
	(0.876)	(0.890)	(0.834)
Occupation 5	1.031	-1.62	-0.768
	(0.958)	(1.001)	(0.829)
Occupation 6	-0.216	-0.158	1.455*
	(1.012)	(0.752)	(0.780)
Occupation 7	-0.747	-0.01	-0.039
	(0.875)	(0.803)	(0.660)
Female workers	-0.018	0.015	-0.006
	(0.019)	(0.012)	(0.012)
Part-time workers	0.017	-0.017	-0.011
	(0.013)	(0.011)	(0.011)
Fixed-term workers	0.455	-0.429	-0.427
	(0.571)	(0.540)	(0.537)
Local market	-1.418**	-0.225	-0.527
	(0.699)	(0.530)	(0.489)
Union recognition	1.019*	1.012*	1.537***
	(0.610)	(0.605)	(0.497)
Team work	-0.281	0.180	-0.228
	(0.569)	(0.467)	(0.507)
No. of contingent pay practices	0.328	0.001	0.069
	(0.263)	(0.180)	(0.190)
London	-0.869	-0.071	-0.022
	(0.890)	(0.603)	(0.758)
Constant	0.052	2.582*	0.190
	(1.973)	(1.385)	(1.700)
Pseudo R^2	0.31		
n	584		

Notes: ***, **, * denote statistical significance at the 0.01, 0.05, and 0.10 levels, respectively.
Standard errors are in parentheses. All models include 8 single-digit industry dummies. See also notes to Table 11 for a description of all other regressors; the only difference here is the inclusion of union recognition (a 1/0 dummy for the presence of a recognized union) and the excision of JCC.

Table 17
Multinomial Logit Estimates for Workplace-level Joint Consultative Committee Status, Great Britain, 1998-2004 (reference category is no workplace JCC in 1998 and 2004)

	1998 only	2004 only	1998 and 2004
Log establishment size	0.893***	1.169***	1.495***
	(0.222)	(0.200)	(0.214)
Single plant	0.528	-0.264	0.396
	(0.621)	(0.497)	(0.552)
U.K. ownership	-0.56	-0.635	0.459
	(0.580)	(0.485)	(0.533)
Family owned	0.121	-0.643	-1.627**
	(0.498)	(0.487)	(0.696)
Establishment age	0.035	-0.573	0.140
	(0.454)	(0.444)	(0.472)
Occupation 1	2.733**	0.289	-0.601
	(1.105)	(0.731)	(0.922)
Occupation 2	1.587	-1.232	-0.712
	(1.198)	(1.139)	(0.814)
Occupation 3	1.896*	0.196	0.784
	(1.107)	(0.652)	(0.831)
Occupation 4	1.896*	0.007	1.052
	(1.028)	(0.683)	(0.814)
Occupation 5	0.721	-1.125	-2.004**
	(1.243)	(0.815)	(1.008)
Occupation 6	-0.364	-1.181	1.340
	(1.690)	(0.742)	(0.943)
Occupation 7	0.487	-0.78	0.189
	(1.005)	(0.653)	(0.687)
Female workers	-0.006	-0.01	-0.008
	(0.022)	(0.009)	(0.011)
Part-time workers	0.018	0.001	-0.009
	(0.014)	(0.011)	(0.011)
Fixed-term workers	0.285	-0.405	0.714
	(0.511)	(0.383)	(0.481)
Local market	-1.765***	-1.002**	-0.738
	(0.612)	(0.452)	(0.473)
Union recognition	0.301	0.262	-0.106
	(0.520)	(0.456)	(0.448)
Team work	0.147	0.352	0.510
	(0.481)	(0.387)	(0.434)
No. of contingent pay practices	0.107	0.242	-0.013
	(0.227)	(0.193)	(0.208)
London	-0.895	0.141	1.095**
	(0.999)	(0.538)	(0.556)
Constant	-5.802***	-3.693***	-7.176***
	(1.944)	(1.144)	(1.366)
Pseudo R^2	0.25		
n	584		

Notes: ***, **, * denote statistical significance at the 0.01, 0.05, and 0.10 levels, respectively.
Standard errors are in parentheses. All models include 8 single-digit industry dummies and a constant. See also notes to Table 11 for a description of all other regressors; the only difference here is the inclusion of union recognition (a 1/0 dummy for the presence of a recognized union) and the excision of JCC

Figure 1
The Collective Bargaining and Works Council Coverage of Establishments in Germany, 1998-2004 (establishments with at least 5 employees, cross-section weighted data)

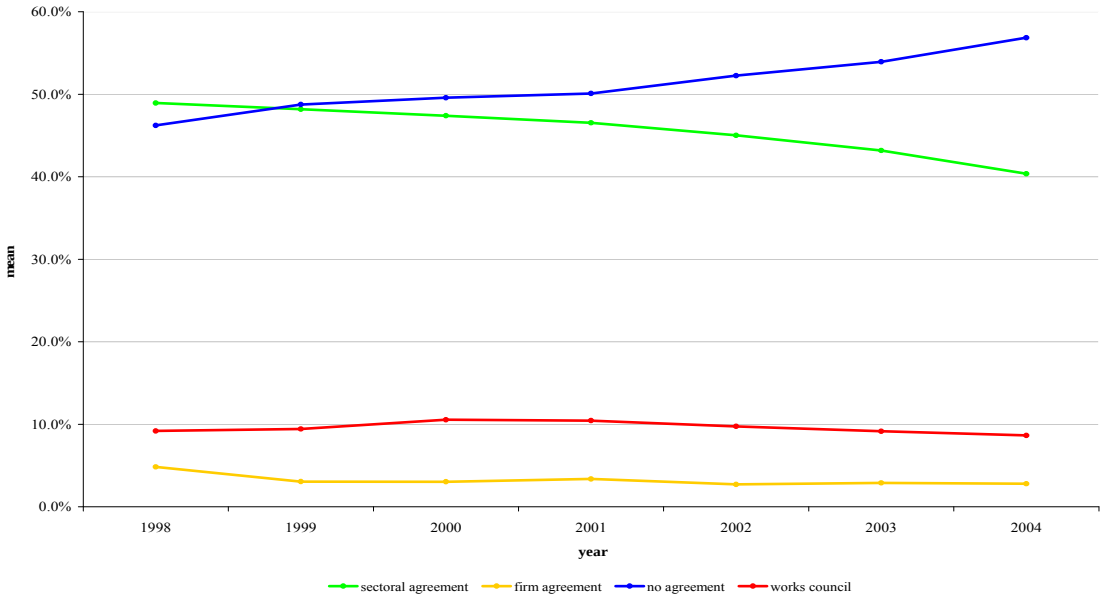


Figure 2
The Collective Bargaining and Works Council Coverage of Employees in Germany, 1998-2004 (establishments with at least 5 employees, cross-section weighted data)

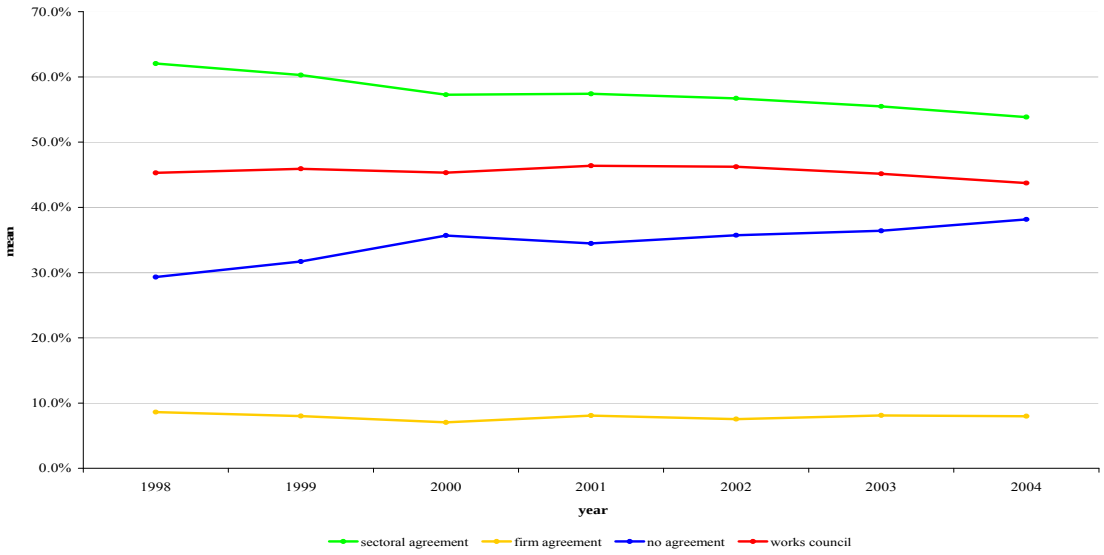


Figure 3
The Collective Bargaining and Works Council Coverage of Establishments in Germany, Permanent Stayers, 1998-2004 (establishments with at least 5 employees, cross-section weighted data)

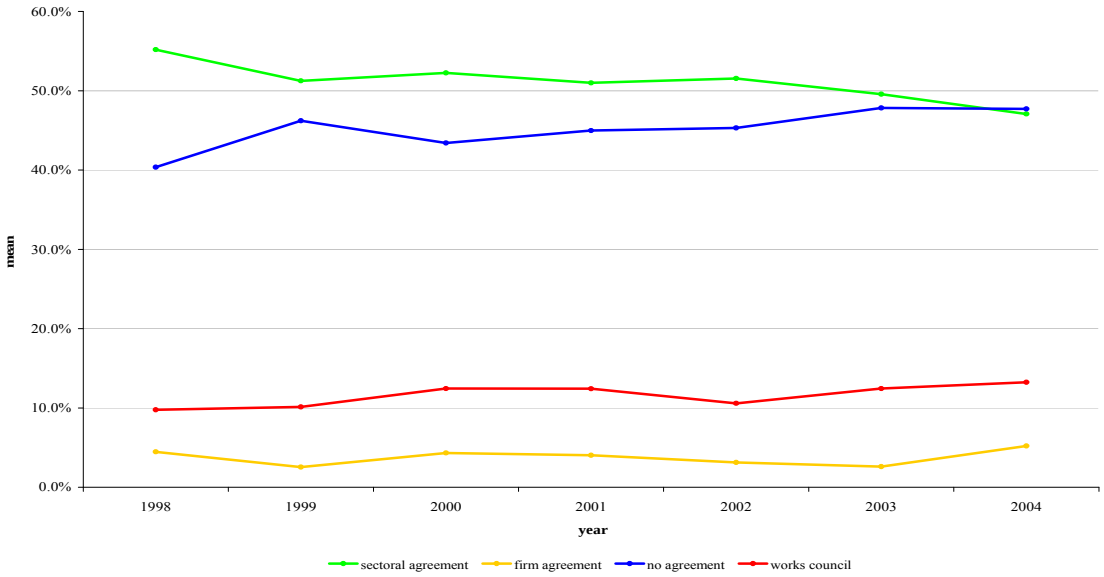
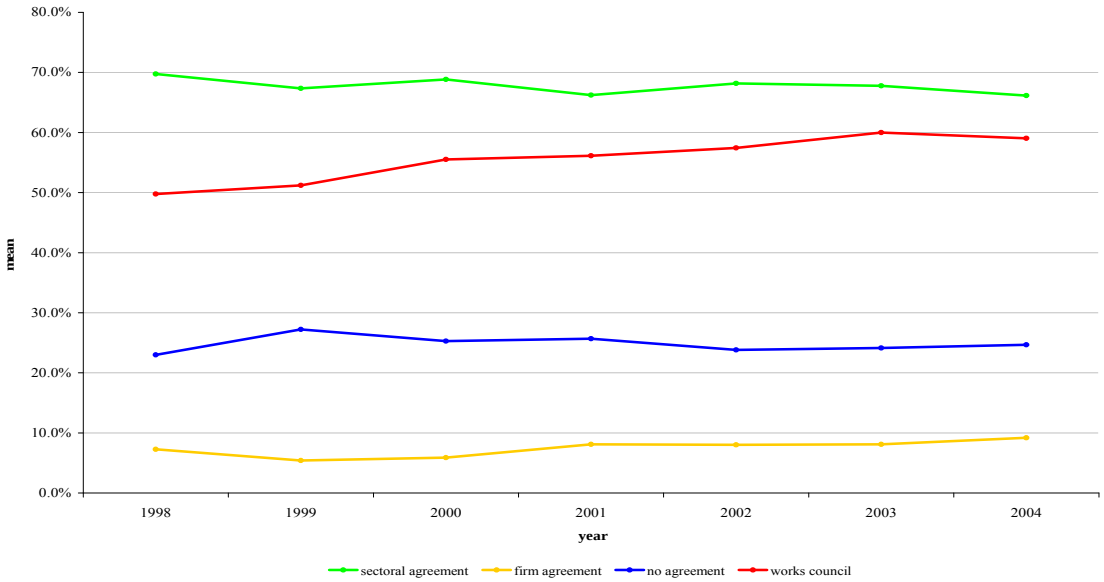


Figure 4
The Collective Bargaining and Works Council Coverage of Employees in Germany, Permanent Stayers, 1998-2004 (establishments with at least 5 employees, cross-section weighted data)



Appendix Table 1
Variable Description and Summary Statistics of the Estimation Sample, Germany

Variable	Type	Mean	S. D.	*n*
Any type of collective agreement	Dummy	0.685	0.465	1,747
Sectoral (i.e.multi-employer) collective agreement	Dummy	0.583	0.493	1,747
Firm-level collective agreement	Dummy	0.102	0.303	1,747
Introduction of a collective agreement between 1998 and 2004	Dummy	0.142	0.349	550
Introduction of a sectoral collective agreement between 1998 and 2004	Dummy	0.133	0.340	728
Introduction of a firm-level collective agreement between 1998 and 2004	Dummy	0.043	0.202	1,569
Abolition of a collective agreement between 1998 and 2004	Dummy	0.190	0.382	1,197
Abolition of a sectoral collective agreement between 1998 and 2004	Dummy	0.216	0.412	1,019
Abolition of a firm-level collective agreement between 1998 and 2004	Dummy	0.522	0.500	178
Works council presence	Dummy	0.431	0.495	1,747
Introduction of a works council between 1998 and 2004	Dummy	0.038	0.192	994
Abolition of a works council between 1998 and 2004	Dummy	0.076	0.265	753
Establishment size (total number of employees; as of June30, 1998)	log value	4.093	1.692	1,747
Increasing sales expected	Dummy	0.339	0.474	1,737
High-tech (technology of equipment is high/very high)	Dummy	0.026	0.159	1,745
Delegation (of responsibilities to lower levels during the last 24 months)	Dummy	0.288	0.453	1,731
Team-work (introduction of team-work during the last 24 months)	Dummy	0.224	0.417	1,731
Profit-center (introduction of profit center during the last 24 months)	Dummy	0.156	0.363	1,731
R&D (establishment or another unit within company is engaged in R&D)	Dummy	0.260	0.439	1,744
Skilled workers	Proportion	65.203	26.840	1,746
Female workers	Proportion	35.820	29.226	1,742
Part-time workers	Proportion	13.870	20.966	1,741
Fixed-term contract workers	Proportion	3.929	9.878	1,741
Legal form: individually-owned firm	Dummy	0.198	0.399	1,736
Single establishment (independent company with no other place of business	Dummy	0.722	0.448	1,744
Age of establishment (founded before 1990)	Dummy	0.539	0.499	1,743
Exports	Proportion	8.541	19.328	1,701
Foreign property (foreign majority ownership [taken from 2004 data]}	Dummy	0.083	0.276	1,725
Presence of profit sharing schemes (in 1998)	Dummy	0.157	0.364	1,747
High competition (pressure from competition is ‘substantial’[in 1998])	Dummy	0.656	0.475	1,747
West Germany (establishment located in western Germany)	Dummy	0.463	0.499	1,747
Industry dummies (32)	Dummy	-	-	1,747

Appendix Table 2
Variable Description and Summary Statistics of the Estimation Sample, Great Britain

Variable	Type	Mean	S. D.	*n*
Any union recognition	Dummy	0.380	0.486	587
Any type of collective agreement	Dummy	0.341	0.475	577
Sectoral (i.e.multi-employer) collective agreement	Dummy	0.071	0.257	580
Firm-level collective agreement	Dummy	0.271	0.445	587
Introduction of union recognition between 1998 and 2004	Dummy	0.075	0.264	587
Abolition of union recognition between 1998 and 2004	Dummy	0.031	0.173	587
Retention of union recognition between 1998 and 2004	Dummy	0.349	0.477	587
No union recognition between 1998 and 2004	Dummy	0.545	0.498	587
Introduction of a collective agreement between 1998 and 2004	Dummy	0.101	0.302	574
Abolition of a collective agreement between 1998 and 2004	Dummy	0.124	0.330	574
Retention of a collective agreement between 1998 and 2004	Dummy	0.218	0.413	574
No collective agreement between 1998 and 2004	Dummy	0.558	0.497	574
Introduction of a sectoral collective agreement between 1998 and 2004	Dummy	0.055	0.227	568
Abolition of a sectoral collective agreement between 1998 and 2004	Dummy	0.049	0.217	568
Retention of a sectoral collective agreement between 1998 and 2004	Dummy	0.021	0.144	568
No sectoral collective agreement between 1998 and 2004	Dummy	0.875	0.331	568
Introduction of a firm-level collective agreement between 1998 and 2004	Dummy	0.090	0.287	587
Abolition of a firm-level collective agreement between 1998 and 2004	Dummy	0.111	0.314	587
Retention of a firm-level collective agreement between 1998 and 2004	Dummy	0.160	0.367	587
No firm-level collective agreement between 1998 and 2004	Dummy	0.639	0.481	587
Any joint consultative committee	Dummy	0.521	0.450	587
Introduction of a JCC between 1998 and 2004	Dummy	0.181	0.385	587
Abolition of a JCC between 1998 and 2004	Dummy	0.141	0.349	587
Retention of a JCC between 1998 and 2004	Dummy	0.380	0.486	587
No JCC between 1998 and 2004	Dummy	0.298	0.458	587
Any workplace JCC	Dummy	0.346	0.477	587
Introduction of a workplace JCC between 1998 and 2004	Dummy	0.179	0.384	587
Abolition of a workplace JCC between 1998 and 2004	Dummy	0.119	0.324	587
Retention of a workplace JCC between 1998 and 2004	Dummy	0.227	0.419	587
No workplace JCC between 1998 and 2004	Dummy	0.475	0.500	587
Establishment size (total number of employees)	Log value	4.726	1.212	587
Team-work (60 percent or more of largest occupational group in teams)	Dummy	0.652	0.477	587
Percent female employees	Percent	43.323	26.862	585
Part-time workers	Percent	21.361	27.058	585
Any fixed-term or temporary contract workers	Dummy	0.465	0.499	587
Single establishment (independent company with no other place of business)	Dummy	0.273	0.446	587
Age of establishment (founded before 1990)	Dummy	0.356	0.479	587
Market for main product/service is local	Dummy	0.256	0.437	587
U.K.-owned	Dummy	0.768	0.422	587
Family-owned	Dummy	0.187	0.391	587
Number of contingent pay schemes (share ownership, profit-related pay, deferred profit sharing, individual or group PBR, cash bonuses)	Count (0,5)	1.522	1.220	586
London (establishment located in London)	Dummy	0.135	0.342	587
Largest occupational group (8)	Dummy			587
Industry dummies (10)	Dummy	-	-	587

Note: Descriptive statistics are for 1998 baseline data, with the exception of switching status in 1998-2004

Appendix Table 3
Number of Employees and Establishments Covered by Collective Agreements and Works Councils in Germany, 1998-2004, Weighted Data

	Collective agreement status						Works council		Totals	
	Sectoral agreement		Firm agreement		No agreement					
Year	Establishments	Employees	Establishments	Employees	Establishments	Employees	Establishments	Employees	Establishments	Employees
1998	469,272	13,259,878	46,454	1,845,006	443,245	6,266,971	88,162	9,680,309	958,971	21,371,855
	48.9%	62.0%	4.8%	8.6%	46.2%	29.3%	9.2%	45.3%		
1999	453,854	12,667,567	28,870	1,687,144	459,346	6,660,295	88,850	9,648,126	942,070	21,015,006
	48.2%	60.3%	3.1%	8.0%	48.8%	31.7%	9.4%	45.9%		
2000	422,719	11,917,790	27,071	1,463,513	442,239	7,426,812	94,024	9,429,656	892,029	20,808,115
	47.4%	57.3%	3.0%	7.0%	49.6%	35.7%	10.5%	45.3%		
2001	400,009	11,805,583	29,086	1,664,439	430,685	7,089,134	89,922	9,536,473	859,780	20,559,156
	46.5%	57.4%	3.4%	8.1%	50.1%	34.5%	10.5%	46.4%		
2002	395,493	11,709,360	23,931	1,560,952	459,054	7,376,187	85,579	9,545,364	878,478	20,646,499
	45.0%	56.7%	2.7%	7.6%	52.3%	35.7%	9.7%	46.2%		
2003	377,128	11,439,852	25,392	1,673,711	471,057	7,508,745	79,948	9,310,295	873,577	20,622,308
	43.2%	55.5%	2.9%	8.1%	53.9%	36.4%	9.2%	45.1%		
2004	350,469	10,877,501	24,345	1,614,867	493,661	7,711,302	75,084	8,834,736	868,475	20,203,670
	40.4%	53.8%	2.8%	8.0%	56.8%	38.2%	8.6%	43.7%		

Source: IAB Establishment Panel 1998 to 2004, own calculations.

Appendix Table 4
Number of Employees and Establishments Not Covered by Collective Agreements and Works Councils but Acting upon a Collective Agreement, Germany, 1998-2004, Weighted Data

	Acting upon collective agreement						Overall numbers	
	Yes		No		Totals			
Year	Establishments	Employees	Establishments	Employees	Establishments	Employees	Establishments	Employees
1999	205,905	3,265,817	239,557	3,194,755	445,462	6,460,572	942,070	21,015,006
	21.9%	15.5%	25.4%	15.2%	47.3%	30.7%		
2000	215,617	3,761,630	213,123	3,455,910	428,740	7,217,540	892,029	20,808,115
	24.2%	18.1%	23.9%	16.6%	48.1%	34.7%		
2001	192,599	3,517,545	207,954	3,097,784	400,553	6,615,329	859,780	20,559,156
	22.4%	17.1%	24.2%	15.1%	46.6%	32.2%		
2002	210,636	3,745,272	231,537	3,352,851	442,173	7,098,123	878,478	20,646,499
	24.0%	18.1%	26.4%	16.2%	50.3%	34.4%		
2003	232,241	3,820,184	213,870	3,245,989	446,111	7,066,173	873,577	20,622,308
	26.6%	18.5%	24.5%	15.7%	51.1%	34.3%		
2004	218,247	3,598,989	253,611	3,778,227	471,858	7,377,216	868,475	20,203,670
	25.1%	17.8%	29.2%	18.7%	54.3%	36.5%		

Note: Percentage values are based upon the overall number of establishments/employees. Because of missing values, the totals of employers/employees are smaller compared with the total number of uncovered establishments/employees presented in Appendix Table 3.
Source: IAB Establishment Panel 1998 to 2004, own calculations.

Appendix Table 5
Number of Employees and Establishments Covered by Collective Agreements and Works Councils, Permanent Stayers, Germany, 1998-2004, Weighted Data

	Collective agreement status						Works council		Totals	
	Sectoral agreement		Firm agreement		No agreement					
Year	Establishments	Employees	Establishments	Employees	Establishments	Employees	Establishments	Employees	Establishments	Employees
1998	101,539	3,240,623	8,219	338,041	74,263	1,067,858	17,979	2,311,963	184,021	4,646,522
	55.2%	69.7%	4.5%	7.3%	40.4%	23.0%	9.8%	49.8%		
1999	89,075	2,947,818	4,429	236,590	80,336	1,192,041	17,619	2,241,176	173,840	4,376,449
	51.2%	67.4%	2.5%	5.4%	46.2%	27.2%	10.1%	51.2%		
2000	66,702	2,430,972	5,548	207,633	55,439	892,900	15,885	1,960,510	127,689	3,531,505
	52.2%	68.8%	4.3%	5.9%	43.4%	25.3%	12.4%	55.5%		
2001	56,516	2,159,535	4,476	263,964	49,862	837,889	13,768	1,830,756	110,854	3,261,388
	51.0%	66.2%	4.0%	8.1%	45.0%	25.7%	12.4%	56.1%		
2002	57,317	2,277,864	3,496	268,272	50,374	795,457	11,771	1,918,925	111,187	3,341,593
	51.6%	68.2%	3.1%	8.0%	45.3%	23.8%	10.6%	57.4%		
2003	53,374	2,293,113	2,808	273,965	51,508	816,232	13,398	2,029,893	107,690	3,383,310
	49.6%	67.8%	2.6%	8.1%	47.8%	24.1%	12.4%	60.0%		
2004	48,873	1,991,173	5,411	276,291	49,527	742,178	13,754	1,776,610	103,811	3,009,642
	47.1%	66.2%	5.2%	9.2%	47.7%	24.7%	13.2%	59.0%		

Source: IAB Establishment Panel 1998 to 2004, own calculations.

Appendix Table 6
Number of Employees and Establishments Covered by Collective Agreements and Works Councils, Entrants, Germany, 1998-2004, Weighted Data

	Collective agreement status						Works council		Totals	
	Sectoral agreement		Firm agreement		No agreement					
Year	Establishments	Employees	Establishments	Employees	Establishments	Employees	Establishments	Employees	Establishments	Employees
1998	278,072	7,694,051	22,847	1,105,687	251,036	3,638,483	50,472	5,702,011	551,955	12,438,221
	50.4%	61.9%	4.1%	8.9%	45.5%	29.3%	9.1%	45.8%		
1999	101,031	2,479,482	7,792	275,098	102,509	1,481,099	17,017	1,713,606	211,332	4,235,679
	47.8%	58.5%	3.7%	6.5%	48.5%	35.0%	8.1%	40.5%		
2000	123,427	3,192,307	6,108	387,848	136,861	2,287,127	27,746	2,428,057	266,396	5,867,282
	46.3%	54.4%	2.3%	6.6%	51.4%	39.0%	10.4%	41.4%		
2001	75,202	1,981,450	7,051	335,458	98,157	1,546,608	15,382	1,678,426	180,410	3,863,516
	41.7%	51.3%	3.9%	8.7%	54.4%	40.0%	8.5%	43.4%		
2002	62,060	1,489,400	3,170	177,627	78,638	1,182,265	10,412	1,022,064	143,868	2,849,292
	43.1%	52.3%	2.2%	6.2%	54.7%	41.5%	7.2%	35.9%		
2003	58,150	1,292,368	5,670	221,410	94,789	1,294,635	12,463	901,964	158,609	2,808,413
	36.7%	46.0%	3.6%	7.9%	59.8%	46.1%	7.9%	32.1%		
2004	31,294	1,404,770	3,494	210,153	64,212	1,016,514	7,994	1,286,430	99,000	2,631,437
	31.6%	53.4%	3.5%	8.0%	64.9%	38.6%	8.1%	48.9%		

Source: IAB Establishment Panel 1998 to 2004, own calculations.

Appendix Table 7
Number of Employees and Establishments Covered by Collective Agreements and Works Councils, Exits, Germany, 1998-2004, Weighted Data

	Collective agreement status						Works council		Totals	
	Sectoral agreement		Firm agreement		No agreement					
Year	Establishments	Employees	Establishments	Employees	Establishments	Employees	Establishments	Employees	Establishments	Employees
1998	*89,660*	*2,325,204*	*15,389*	*401,278*	*117,945*	*1,560,630*	*19,756*	*1,666,335*	*222,994*	*4,287,112*
	40.2%	*54.2%*	*6.9%*	*9.4%*	*52.9%*	*36.4%*	*8.9%*	*38.9%*		
1999	67,495	1,417,745	4,291	300,083	61,337	790,616	10,149	1,030,570	133,123	2,508,444
	50.7%	56.5%	3.2%	12.0%	46.1%	31.5%	7.6%	41.1%		
2000	43,843	1,047,473	4,503	166,125	48,014	793,086	96,360	2,006,684	96,360	2,006,684
	45.5%	52.2%	4.7%	8.3%	49.8%	39.5%	100.0%	100.0%		
2001	46,052	1,535,021	4,177	183,685	51,052	908,131	11,579	1,268,402	101,281	2,626,837
	45.5%	58.4%	4.1%	7.0%	50.4%	34.6%	11.4%	48.3%		
2002	56,401	1,521,910	8,032	293,909	65,879	984,222	16,283	1,351,303	130,312	2,800,041
	43.3%	54.4%	6.2%	10.5%	50.6%	35.2%	12.5%	48.3%		
2003	49,660	1,632,561	4,463	288,233	57,920	902,712	13,136	1,413,465	112,043	2,823,506
	44.3%	57.8%	4.0%	10.2%	51.7%	32.0%	11.7%	50.1%		
2004	44,482	1,119,542	2,308	197,490	69,510	878,276	7,584	932,824	116,300	2,195,308
	38.2%	51.0%	2.0%	9.0%	59.8%	40.0%	6.5%	42.5%		

Note: For each cross section we have two types of exit: exits of establishments populating the sample from earlier years and those establishments entering and leaving the sample in the given year. In 1998 we cannot distinguish the latter 'mayflies' from the former exits and therefore present the 1998 data in italics.
Source: IAB Establishment Panel 1998 to 2004, own calculations.

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