Trust and Workplace Performance

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Abstract
Using European Company Survey data, this paper explores the relationship between trust and establishment performance under two different types of workplace representation, works councils on the one hand and union bodies on the other. Trust is initially measured using the individual survey respondent's assessment of the 'contribution' of the other side, the rating of the employee representative being favoured over that of management as less subject to feedback from performance. Although the potential endogeneity of employee trust in management is modelled, a preferred inverse measure of trust (or dissonance) is then constructed from the discrepancy between the assessments of the two sides of the quality of workplace industrial relations. Employee trust is associated throughout with improved establishment performance, and conversely for the dissonance counterpart. In their presence, there is no suggestion that one type of workplace representation is superior to another. Simply put, good industrial relations trumps institutional form.

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"It can be plausibly argued that much of the economic backwardness in the world can be explained by the lack of mutual confidence." (Arrow, 1972: 357)

1. Introduction

Trust or social capital can be viewed as a propensity on the part of individuals in society to cooperate and, by avoiding the snare of a prisoner's dilemma, helping to improve the performance of a society's institutions. For example, trust is said to facilitate economic growth because people who trust one another are more likely to cooperate in trade innovation and entrepreneurship, and the converse in circumstances of widening income inequality. More dramatically, the decline in the share of people trusting one another as revealed in social surveys has been viewed as a profound threat to the successful maintenance of democracy (see Putnam, 1995). And yet despite the seemingly central relevance of the concept to workplace relationships, most economic discussions have eschewed consideration of the empirical importance of employee trust in management for firm performance.

The present paper addresses this neglected trust-firm performance nexus, using cross-country data from the 2009 and 2013 waves of the European Company Survey (ECS). Three measures of trust are identified: first, the trust of management in its employee representation body (either a works council-type entity or a union); second, the trust of the employee representation agency in management; and, third, a bilateral measure exploiting differences in the perceptions of the two parties. The outcome indicators are subjective measures of the establishment's economic/financial performance and its relative labour productivity provided by management.

A two-part thematic review of the sparse economic literature examining the theory and practice of trust at the workplace is provided in Section 2. Next, section 3 outlines the formal model and summarizes the expected relationships between institutions, trust, and the performance indicators. Section 4 describes the unique cross-country dataset(s) and the construction of the key dependent and independent variables. Presentation of our detailed findings follows in Section 5. Section 6 concludes.

2. Trust and workplace performance: theoretical and empirical background

Theoretical remarks

There are three interwoven strands that contribute to an understanding of the role of trust and workplace institutions: implicit contracts, collective voice, and organizational commitment.

Contract theory covers the implied trust between the parties and examines the formation of contracts in the presence of asymmetric information that arises when one party to an economic transaction has greater substantive knowledge than the other. The literature illustrates how implicit contracts can cope with asymmetric information to make truth revelation the appropriate strategy (by restricting the choices open to the firm), while dealing with the enforcement problem (by penalizing firms that renege on future contract delivery through a reputation effects mechanism that results in their having to pay a permanently higher wage).

As initially developed, there was no mention of worker representation agencies in contract theory. Contracts were viewed as either automatically self-enforcing or accompanied by a non-union governance apparatus with procedural safeguards. The key elements of the latter were the use of promotion ladders, formal grievance procedures, and the application of the seniority principle. The characterization of the union as a commitment device was first advanced by Malcomson (1983) in discussing a situation in which uncertainty in the form of product market demand shocks encourages the use of contingent contracts to allocate risk between risk-averse employers and workers. Although such contracts are unenforceable because neither the courts nor the workers can observe the state of the world, unions can provide workers with more accurate information about the state of nature. Coordinated action via the union thus permits workers to enforce an efficient, state contingent contract.

In practice, the union role has most commonly been invoked in the context of employer opportunism arising in the case of worker investments in firm-specific training. The idea is that a union (or some other worker representation agency) could act to prevent the hold-up problem by making the firm honour its commitments. In short, worker representation agencies may facilitate efficient contracting in situations where there is a long-term relation between the two sides but where employers' ex ante promises to take workers' interests into account are not credible or where the reputation effects mechanism is weak.

The role of workplace representation agencies is fleshed out in the next strand: the collective voice model. As developed by Freeman and Medoff (1984), collective voice has several distinct components. Of these the best known is information provision. The labour market context is one of continuity rather than spot market contracting because of on-the-job skills specific to the firm and the costs attaching to worker mobility and turnover. Given, the informational problem in continuity markets, collective voice may outperform individual voice for a variety of reasons. Non-

rival consumption of shared working conditions and common workplace rules create a public goods problem of preference revelation. Without some collective form of organization, there will be too little incentive for the individual to reveal his or her preferences. The same public goods argument can also be applied to the supply of effort input. Based on these public goods arguments, collective voice may therefore lower quits and raise output.

The other main aspect of collective voice is *governance* which refers to the policing or monitoring of incomplete employment contracts. For example, the presence of a union specializing in information about the contract and in the representation of workers can prevent employers from engaging in opportunistic behaviour, and in protecting employees, unions may generate worker cooperation, including the introduction of efficiency-enhancing work practices.

The next theoretical development in collective voice recognizes the problem of rent seeking by workers and seeks to attenuate it. Freeman and Lazear (1995) argue that the machinery of the *works council* holds out the prospect of an improvement in the joint surplus of the enterprise. It is the exemplar of collective voice by reason of its more thorough-going information, exchange, consultation, and participation/codetermination functions. The problem is that the socially optimum competence of the works council lies between what management would voluntarily concede (implying a mandate) and the amount workers will demand (requiring limits on the power of the council). Examples of the latter would include a peace obligation on the part of the works council and its subordination to sectoral collective bargaining. In principle, these constraints may be sufficient to permit a decoupling of the factors that determine the size of the joint surplus from factors that determine its distribution.[1]

The final strand identified here emphasizes the importance of commitment and loyalty from the outset, drawing on the human resource management and psychology literatures and focusing on employees' supply of effort. We refer to the concept of *affective commitment* to an organization, namely the strength of an employee's emotional attachment to, identification with, and involvement in the organization, the advantages of which are formalized in the agency model of Akerlof and Kranton (2005).

The essence of the model is well conveyed by Brown et al. (2011), whose starting point is the observation that, in the standard principal agent model, the employer principal has an interest in motivating the employee agent to take an action that is more costly to that agent (i.e. involves more effort) than another action. To this end, the employer can either raise the wage or reduce the

cost of that the higher effort option. Brown et al. then extend the basic model by assuming that employers have full information about the probability distribution of the rewards to employee effort (and their costs) but the employee only knows those attaching to the lower level of effort. In this setting there are benefits to human resource policies that foster organizational communication and employee involvement. Such policies inform the employee of the actual benefits of the action involving the higher level of effort, tipping the employee's decision in its favour. But this resolution of the asymmetric information problem is not the end of the story. There are also the benefits stemming from the commitment-raising human resource practices advocated by Akerlof and Kranton (2005) that serve to influence worker identity. Policies that cause the employee to identify as an insider as opposed to an outsider establish firm-specific utility. An employee who identifies as an insider will work in the company's interest (otherwise suffering a loss in utility), again reducing the wage needed to encourage employee choice of the costlier action. Employee involvement and organizational citizenship operate in tandem to in favour of a high effort outcome and with it improved firm performance.

The concept of trust is inevitably latent in every contractual relationship, and there is clearly overlap between these three strands, most obviously continuity markets, information asymmetries, and agency problems. As regards collective voice, the model is more properly described as a *collective voice-institutional response* model; that is, much hinges on management response to worker representation (Freeman and Medoff, 1984: 165).

A selective review of the micro-economic literature on trust at the workplace

Before turning to the micro-economic studies, one macro analysis needs to be reviewed since it pertains directly to the instrumental variable component of our analysis. In common with other macro studies, Blanchard and Philippon's (2004) comparative analysis of the association between labour relations and unemployment, 1965-2002, uses data on trust from the 1999 Global Competitiveness report published by the World Economic Forum (WEF). The measure is based on the responses of senior executives to the question "are labour relations in your firm cooperative?" The authors contend that in countries where wages are largely determined by collective bargaining, the impact on unemployment of changes in the economic environment will depend in large part on the speed of learning of unions. The latter is seen as a reflection of the quality of dialogue between the two sides, or the quality of industrial relations, which is (first) proxied by strike intensity averaged over 1960-67. In practice, they also use a second, direct

measure based on the survey responses of senior executives reported in the WEF. Blanchard and Philippon regress unemployment in each of the roughly four decades on the strike intensity measure and then on the perceptions measure. Further, given that the outcome measure might be reflected in the responses of managers via a feedback effect, they use the strike data for the 1960s to provide a predicted value for the 1999 survey measure. All regressions indicate a strong and statistically significant effect of each of the quality of industrial relations measures on unemployment.

Turning to the economic analysis of trust at the workplace, the sparseness of research is amplified once we discard that part of the literature that simply equates labour relations quality with union presence. Our attention thus addresses studies using indirect and direct measures of trust. Examples of the former are studies using strikes (Kleiner at al., 2002; Krueger and Mas, 2004), grievances (Ichniowski, 1986; Katz et al., 1983), absenteeism (Katz et al., 1983), and the styles and approaches of leaders of unions (Kleiner at al., 2002). Such case studies, examining different plants of the same firm in the automobile, aircraft and paper mills industries, point to the adverse effect of a poor climate of industrial relations, thus proxied, on measures of productivity or product quality. An obvious issue here is whether certain of the above variables, most conspicuously strikes, might have a direct as opposed to an indirect effect on the output indicators. An accident model of strikes (e.g. Siebert and Addison, 1981) would suggest that any impact of strikes on output depends primarily on the ease of communication between the two sides which will be reflected in information costs. Poor communications and bargaining protocols that are not fit for purpose are expected to lead to bargaining mistakes. On this view, the association between strike activity and output losses is indirect rather than direct.

However, studies seeking a more direct measure of trust in a nationally representative sample framework enable us to examine causality more thoroughly. Two such studies may be identified. Each uses the British Workplace and Employee Relations Survey (WERS). The first closely conforms to the final theoretical pillar of the trust model introduced earlier. Brown et al. (2011) use data from the fifth (2004) wave of the survey to examine the determinants of worker commitment and loyalty and then evaluate whether their commitment-loyalty index (derived from the Employee Questionnaire of the WERS)[2] influences subjective measures of company workplace labour productivity and financial performance (taken from the Management Questionnaire). It is reported that among the set of workplace-level characteristics human resource practices pertaining

to information and communication, organizational trust and, especially, employee involvement and participation, are material determinants of employee commitment and loyalty (see the preceding subsection). In turn, the commitment-loyalty index is positively related to higher levels of labour productivity and financial performance, suggesting that that it is in a firm's interest to foster such attachments. The policy prescription offered is therefore to instil in employees a sense of identity and attachment to the organization, so as to more closely align the interests of the employer principal and worker agent.

The second and final study examined here more closely informs one part of our own empirical approach. Brown et al. (2015) examine the relation between employee trust in their managers and subjective measures of relative financial performance, labour productivity, and product quality in British establishments. On this occasion, the study focuses on questions from the Employee Questionnaire of the WERS inquiring of employees whether they strongly agree, agree, neither agree nor disagree, or strongly disagree with statements on four types of trust in managers (e.g. *managers can be relied upon to keep their promises*). Their responses are used to establish four ordered trust indices that are then matched with the three ordered relative workplace performance indicators. The authors' ordered probit regressions indicate a well-determined positive relationship between the measures of workplace performance and average trust for both waves of the WERS.

In recognition of the potential endogeneity of the employee trust (in management) measure, the authors also jointly model average employee trust and firm performance in an instrumental variable framework. Two separate instruments for (average) employee trust in management are deployed: first, the proportion of employees in the workplace who are religious; and, second, a set of three instruments capturing the perceived ability of the manager to keep the employees informed about changes in organization, staffing, and job content. The rationales are that there is a direct relation between religion and trust in the employer and between efficient managerial behaviour toward the employee and trust in the employer, and in neither case is there any direct association with firm performance only an indirect one operating through trust. The exogenous trust results prove robust to both IV procedures.

3. Modelling strategy

We earlier reviewed the manner in which trust may be expected to exert a positive influence upon performance. Consider a reduction in uncertainty and with it a lessened risk that higher employee

effort will go unrewarded by the employer (e.g. Brown et al., 2015: 364). In this case trust impacts worker effort favourably, leading us to anticipate a positive association between trust and performance. A broader implication is that less uncertainty in the economic environment will improve trust, as a less contentious link between effort and performance is now more likely. Accordingly, other things being equal, trust should be lower in recessions. Performance also depends on workers' skills and their accumulated human capital. The incentive to participate in human capital acquisition is higher if workers are confident that the corresponding effort is sufficiently rewarded and not subject to hold-up. We expect that trust will have the ability to generate improved establishment performance through this channel as well. Finally, greater worker effort can be induced if workers are well aligned with organizational practices. The argument here is that a 'detached' workforce is not good for worker effort and that worker identity can be fostered by trust (Akerlof and Kranton, 2005).

Beginning with our first measure of trust – specifically, management trust, that is, management's view of employee representation – one therefore expects the variable to be highly positively correlated with performance, either because trust may genuinely be present, leading to improved performance, or because management's view of employee representation is filtered through the lens of performance. Clearly, if the latter element (i.e. reverse causation) is present, one cannot be sure that establishment performance is high *because* trust is high at the establishment – or, for that matter, exclude the possibility that, had trust been low, performance might nevertheless be high.

In principle, reverse causation is less severe a problem if *management trust* is replaced by *employee trust in management*; as reflected, say, in the assessment of the employee representative that *management can be trusted*. The rationale here is that workers – and their representatives – are mainly concerned with wages and working conditions, rather than the establishment's economic performance. Also, possible measurement error in the subjective employee trust variable is likely to be unrelated to measurement error in management's subjective assessments of economic performance (see Brown et al., 2015: 366). However, although employee trust seems clearly preferable to management trust, establishment performance is also likely to reinforce employees' views on trust. A standard remedy in this case is to instrument employee trust (see below).

Yet there remains a less artificial strategy available to us in the form of an alternative trust measure. Specifically, we shall exploit the notion of *dissonance*, that is, the difference between the views of management and the employee representative as to the state of trust. The critical point here is that dissonance and non-dissonance cases are sufficiently distinct from each other to allow identification of a relevant parameter; or, expressed differently, does dissonance between the two parties matter? The expectation is that a lack of mutual trust implies weaker performance. In other words, even if one concedes that the cases of non-dissonance (in which the parties state that they trust each other) may not be fully indicative of genuine trust between the parties, they are likely to be sufficiently distinct from those situations in which the views of the parties patently diverge. By construction, a dissonance measure captures a more basic concept of trust than any unilateral measure.

A final aspect is related to the type of workplace representation. As noted earlier, the literature provides grounds for anticipating that workplace representation through works councils might outperform that via unions. However, if trust – that is, effective interaction between management and employee representation at the workplace – is at root the key element here, and we can control for it, then type of workplace agency per se might be *neither a plus nor a minus* to the performance outcome (Freeman and Medoff, 2004: 179).

To formalize our testing procedures, we specify a multilevel mixed effects ordered logistic model as follows:

$$Pr\ (y_{ij} > k\ |X_{ij}, \boldsymbol{\kappa}, \boldsymbol{u}_j) = H(X_{ij}\beta + \boldsymbol{u}_j - \kappa_k), \qquad (1)$$

where $H(.)$ is the logistic cumulative distribution function. The management subjective measure of performance (economic/financial performance in 2009/2013 and relative labour productivity in 2009) in establishment i and country j, y_{ij}, is an ordered response, that is, a categorical and ordered variable, from low to high, while $\boldsymbol{\kappa}$ denotes the corresponding set of cut-points. In this framework, the information at the first-level (i.e. the establishment) is nested within countries or clusters (the second level), with $\boldsymbol{u}_j$ giving the set of country random intercepts. (Ignoring this first- and second-level hierarchy would fail to recognize that respondents from the same country are much more alike than respondents from different countries as a result of some unobserved cluster effect, leading to estimated standard errors that are likely too small.) To examine the sensitivity of the results to model implementation we shall also report the results from an ordinary ordered logit model with country dummies and cluster-robust standard errors. Finally, for compactness, X_{ij}

contains all the explanatory variables, including trust and type of workplace representation at establishment level. The full set of establishment characteristics is described in the data section below.

In practice, model (1) amounts to computing the probability that the score S_{ij} is less than κ_1 to obtain the probability that the firm's financial performance, for example, is in category 1. S_{ij} is defined as $S_{ij} = X_{ij}\beta + \boldsymbol{u}_j + e_{ij}$. The probability that S_{ij} is between $\kappa_1$and κ_2 will in turn give the probability that establishment performance is in category 2; and similarly for the remaining categories. The exercise is carried out for two separate cross-sections, 2009 and 2013 (2009 in the labour productivity case), using the *meologit* command in Stata 15.0, except in the instrumental variable (IV) approach, which is described below.

As a first step, we use management trust in order to confirm the expected correlational relationship. Next, we replace management trust by the employee trust indicator. The IV approach enters as a third step. The latter is designed to control for the possible endogeneity of employee trust, which under certain conditions permits the discussion of causal effects. To simplify matters, consider the structural model in which the relevant outcome *y* is a function of *T* and *X*, where *T* denotes trust and *X* the set of control variables. Assume further that *T*, the endogenous variable, depends on *Z*, the (excluded) instrument, and *X*. Given that in our data observations are clustered in countries while performance – the selected outcome – is provided as an ordered categorical variable, the IV approach is accommodated by a multilevel ordered logistic model using a conditional (recursive) mixed-process estimator (CMP), in which the first-stage (treatment) equation and the second-stage reduced-form (performance) equation are jointly estimated. Given the simultaneity between trust and performance, the availability of instruments permits the construction of a recursive set of equations, similar to a two-stage least squares (2SLS) procedure (Roodman, 2011).

In a IV approach much hinges on the availability of a relevant instrument. Ideally, an instrument should be 'as good as random assignment,' implying that it should be independent of the vector of potential outcomes (the independence assumption). A second IV assumption (the exclusion restriction or instrument exogeneity) requires the outcome to be only a function of treatment. In other words, the direct effect of the instrument is 'excluded,' which means that the instrument operates only through the treatment variable (i.e. trust). In this context, the instrument must have a clear effect on trust in the first-stage treatment equation (the 'first-stage assumption').

In our discussion of Table 6 below, we test *instrument relevance* following the recommendations of Angrist and Pischke (2009: 212-213). Thus, using the first-stage equation we report the magnitude and sign of the estimated coefficient on the excluded instrument. In particular, strong statistical significance will be interpreted as confirmation that the selected instrument affects treatment (i.e. trust) as hypothesized.[3] We then test the causal relation between performance and trust using a reduced-form regression of performance on the selected instrument. The reduced form estimates are estimated by OLS and are unbiased, with a statistically significant coefficient on the excluded instrument indicating that the hypothesized causal relation between trust and performance "is there" (Angrist and Pischke, 2009: 213). Finally, our 2SLS approach is tested for the presence of cross-equation correlation. In this case, a statistically significant correlation across the first- and second-stage equations indicates endogeneity in the system.

In our cross-section data there are no obvious instruments for trust. However, in the light of the discussion in Section 2, we propose to use two separate instruments: first, strike incidence at the establishment over the preceding 12 months; and, second, information supplied by the employee representative as to the perceived influence of the representation body on certain key management decisions. As noted earlier, strikes may be viewed as capturing the speed of learning of the employee side, and as such may be taken as reflection of the quality of the dialogue between management and labour. By the same token, the bigger the say of the representative body in decisions, the greater the trust that is reposed in workers. In each case, the underlying hypothesis is that these variables only influence performance through their ability to affect trust. No direct effect is therefore supported. Finally, as good instruments are only as good as the data, our final test seeks to rely less on the exclusion restriction. In this case, as described earlier, we use a measure of dissonance or the deviation in stated trust between the two parties.

4. Data

Our data are taken from the Management (MM) and Employee Representative (ER) Questionnaires of the second (2009) and third (2013) European Company Surveys (ECS), which are provided by the U.K Data Service site at https://www.ukdataservice.ac.uk/. We restrict our analysis to the original EU-27 countries, plus Croatia. For 2009 a total of 25,140 (6,376) establishments were surveyed in the MM (ER) Questionnaires. The corresponding totals for 2013 were 24,471 and 6,919, respectively.

For regression purposes, the relevant sample is further restricted. Each includes only those establishments with an ER body as (a) management trust indicates whether the ER body can be trusted by management (MM Survey); and (b) employee trust indicates whether management can be trusted by the ER body (ER Survey). It follows that for a given establishment the management respondent will assign the corresponding score (on management trust) whenever there is an ER body; and if the corresponding ER representative is asked, that individual will offer a score on worker trust. However, not all ER bodies were actually interviewed (by reason of missing private address, refusal to answer, etc.), and as a result in 2009 we have 12,188 answers with a valid management trust score and only 6,236 answers with a valid employee trust score (as shown in Table 2). In 2013, for reasons of data confidentiality, we have the additional constraint that the MM and ER raw datasets are provided in separate files. This means that in order to run establishment performance (which is extracted from the MM survey) on employee trust (extracted from the ER survey) we have to link the two datasets, using some matching procedure (available upon request). In this case, we obtain the matched MM-ER estimation sample, with a total of 2,969 observations (Table 2).

The coding of the type of workplace employee representation is also central to our approach. First, as was noted earlier, our focus is upon formal representation, either in the form of a trade union entity or a works council type of representation at the establishment. We also have information on informal representation which refers to any ad hoc form of worker representation (e.g. unalloyed occupational safety and health committees) but net these bodies out. Second, as union and works council bodies can both be present in some establishments, we adopt the terminology of a *prevalent union agency* (or a *prevalent works council*) to encompass situations in which one type dominates. More precisely, a prevalent union agency obtains in circumstances where there is either a unique union agency at the workplace or where the union agency can be adjudged more influential than the corresponding works council agency where both entities are present; and similarly for a prevalent works council. This procedure has the advantage of generating a unique allocation of union/works council status as the identity of the employee representative respondent is known with certainty. (The raw variables that identify the respondent in the 2009 and 2013 surveys are given by ER_resp and er_type_er, respectively.)

The MM survey provides management's views on establishment-level performance and trust. In the former case, the respondent (namely, the most senior person in charge of personnel in

the establishment) is asked to give a score as to the economic/financial situation of the establishment.[4] In the latter case, the respondent gives a score on the management-employee representation relationship. Relative labour productivity, defined as labour productivity in the establishment as compared to other establishments in the same sector of activity, is the alterative performance measure. This indicator is only available for 2009, meaning that there are no results for productivity in 2013.

As far as possible, we select the same questions in the 2009 and 2013 surveys. For example, in 2009 respondents are asked about the economic situation, whereas in 2013 the question pertains to the financial situation. In the case of management trust in 2013, respondents are asked whether *employee representation can be trusted*; in 2009, however, this item is replaced by the question on whether *employee representation helps us to find ways to improve workplace performance*. The sensitivity of the results to the use of alternative measures of trust is reported in the next section.

Establishment-level characteristics are also extracted from the MM questionnaire. They include sector (industry) affiliation, establishment size (number of employees), single versus multi-establishment organization, as well as workforce composition by skill and occupation, worker participation in on- and off- the-job training, type of wage collective agreement, labour productivity growth, and presence of performance-based pay schemes in the organization. Changes in the organization, that is, changes in the remuneration system, work process, working time, and recruitment policies are also extracted from the management questionnaire. These controls are described in Appendix Table 1. Although space constraints do not allow us to provide estimates of their impact, full regression results are available from the authors upon request.

The employee representation questionnaire in turn provides the views of the employee representative on trust. Specifically, in 2013, the respondent (the person who is entitled to represent the opinions of the leading employee representation body at the workplace) is asked whether *management can be trusted*. As this wording is not repeated in the 2009 survey, we instead selected the question on whether the *relationship between management and employee representation can best be described as hostile*. Since the latter question is repeated in the 2013 ER survey, this alternative measure will serve to test for sensitivity in the reported results. The ER survey also contains information on union density at establishment level.

Based on management and employee (representative) views on trust, we finally generate our dissonance variable or inverse measure of mutual trust, which is defined as the difference between the views of management and the worker representative as to the *general climate at the workplace*. We implement this particular definition to render the dissonance variable fully comparable across the two cross-sections. In the findings section we shall also provide alternative measures for dissonance and test for robustness.

Tables 1 through 3 provide a concise review of our data on the key performance and trust variables. As can be seen in Table 1, establishment performance, measured by the stated economic/financial situation is predominantly high (i.e. good or very good). The corresponding average (on an ascending 1-5 scale) is 3.44 and 3.66 in 2009 and 2013, respectively. Unsurprisingly, there is some improvement in 2013 over 2009. Interestingly, in panel (b) of the table, virtually the same average values and the same shares are observed in the set of establishments *without* employee representation. Unfortunately, as was noted earlier, we cannot measure trust in establishments without employee representation.

[Table 1 near here]

Management trust and employee trust are presented in Table 2. In 2009, management trust averages 3.71, while employee trust is higher at 4.13 (both on an ascending 1-5 scale). For 2013, management trust stands at 3.14 and employee trust at 3.02 (each now on an ascending 1-4 scale). Trust that each party has in the other is therefore high in establishments with formal employee representation in both survey years. Note that management trust in 2009 is on average lower than employee trust, while in 2013 the situation is reversed. As performance improved from 2009 to 2013 with the recovery of the overall economy, this result may suggest that management's perception of trust may indeed be more sensitive to establishment performance than that of the employee representatives.

[Table 2 near here]

Finally, Table 3 compares establishment performance, management trust, and employee trust in the MM versus matched MM-ER and the ER versus matched MM-ER samples in 2013. As shown in the table, the reported means are virtually the same in each of the three main rows. The corresponding shares are also similar, with the difference by score (indicator) never exceeding 3 percentage points.

[Table 3 near here]

5. Regression results

Table 4 presents the results from implementing model (1) using management trust as the selected trust indicator. Regarding the economic situation in 2009, given in the first main row of the table, observe that the marginal effects are negative for outcome indicators 1, 2, and 3, and positive for indicators 4 and 5. In other words, a high level of (management) trust is negatively associated with a low establishment performance *and* positively associated with a high establishment performance. As of 2009, therefore, the higher is management trust, the better the economic situation. Across all five ordered outcome indicators, the relationship is statistically significant at the 0.01 level.

Space constraints rule our reporting the marginal effects for the detailed set of controls. In brief, we found that changes in working time arrangements and the introduction of restructuring measures are positively associated with low establishment performance, possibly indicating that these measures were concentrated in establishments at a competitive disadvantage. The presence of profit sharing schemes and labour productivity growth are in turn positively associated with performance, as might be expected.[5] We also note that the magnitude of the marginal effects of these variables are similar to those reported in Table 4. The remaining control variables, including the establishment size dummies, are not statistically significant, while strong statistical significance across industry dummies indicates the existence of sectoral heterogeneity. Full results are available upon request.

[Table 4 near here]

This relationship between management trust and establishment performance also holds for 2013. As can be seen from the second main row of the table, all the reported marginal effects maintain their sign and statistical significance and are of approximately the same magnitude. The relationship is also robust in 2009 to the introduction of an alternative performance measure, namely relative labour productivity, shown in the final main row of the table. In this case, the outcome measure is calibrated on a 1 through 4 scale. It is readily apparent that trust is positively associated with a somewhat better and a lot better labour productivity than the industry average (outcome indicators 3 and 4) *and* negatively associated with an establishment performance below and at the industry average (indicators 1 and 2). Finally, although not shown in the table, we experimented with alternative ordered measures of management trust (e.g. derived from responses to the statement *consulting the employee representation in important changes leads to more*

commitment of the staff in the implementation of changes). The same pattern of strong results obtains and is available upon request.

Turning to the role of workplace representation, although the first two main rows of the table seem to indicate a positive association between works council representation and economic/financial performance, the association is not statistically significant in the case of the relative labour productivity outcome indicator, which result provides the first hint that the relationship between type of workplace employee representation and performance might not survive the introduction of alternative trust measures based on employee representative perceptions of the social dialogue process (see below). Observe also that for all the regressions implemented in Table 4, the null of an ordinary ordered logistic model against the multilevel mixed-effects ordered logistic model is easily rejected by the data. The log-likelihood ratios reported in the notes to the table confirm that the two-level mixed effects model in equation (1) is preferable to an ordinary logistic regression. As a further test of the sensitivity of the results to model implementation, we ran an ordinary ordered logit model with country dummies and found that the marginal effects of the key variables of interest had roughly the same magnitude, and largely maintained both their sign and statistical significance.[6] (Similar results were obtained for Tables 5 and 7, below.)

In Table 5 we replace management trust by employee trust. It will be recalled that the main reason for doing so is to mitigate problems of reverse causation, employee trust being in principle less contaminated by the level of establishment performance than is management trust. This implementation has also the advantage of reducing the possible correlation between measurement error in both the dependent and explanatory variables insofar as these reflect the points of view of management and the employee representative, respectively. We have therefore a measure of trust that can be thought of as potentially exogenous. Under exogeneity of employee trust, the table shows that the variable does have a positive impact on establishment economic/financial performance. Indeed, the marginal effects of employee trust are always statistically significant at the 0.05 level or better, while the corresponding signs are negative for low performance scores 1, 2, and 3 (1 and 2 in the case of relative labour productivity) and positive for high scores 4 and 5 (3 and 4 in the case of relative labour productivity). In short, if employee trust is high the chances are that establishment performance is likely to register improvement. The interpretation of the magnitude of the marginal effects, which are clearly larger in absolute value for relative labour

productivity than for either economic or financial performance, is addressed in the discussion of the context of Tables 6 and 7, below.

[Table 5 near here]

For its part, the lack of statistical significance of the works council variable is now palpable, indicating that under exogeneity of trust differential effects of type of worker representation on performance might not be anticipated. These results again prove robust to the use of alternative measures of employee trust. For example, if in 2013 we replace the baseline employee trust variable by the employee representative's opinion as to whether *the relationship between management and employee representation can best be described as hostile* the results are unchanged. (No obvious alternative is available for 2009.) Full results are available from the authors upon request.

The implication that trust begets improved establishment performance is conditional on the exogeneity of the selected trust measure. If one suspects that employee trust might be boosted by establishment performance, reverse causality reemerges as a concern. Table 6 addresses this issue by implementing an IV approach in which employee trust is instrumented by a measure of the influence of employee representation on management decisions. In 2009, and for the economic performance case, we also use strike incidence at establishment level as an alternative instrument, as was discussed in the modeling section.

[Table 6 near here]

The first main row of the table indicates that, after controlling for possible endogeneity – the instrument is the employee representative's perception of the extent of the influence of the employee representation body on career management (selection, appraisal and training) in the establishment – employee trust is significant at the 0.01 level throughout. The marginal effects are negative in the first three columns (outcome indicator levels 1, 2, and 3) and positive in the last two columns (indicator levels 4 and 5). We have therefore the result that trust produces a better economic situation, meaning that the higher is the stated level of employee trust, the higher is the probability that the establishment performance is good or very good, and symmetrically a decreased chance that performance will be very bad, bad, or neither good nor bad. If we replace, in the second main row of the table, employee representation influence by strike incidence (a dummy variable taking the value of 1 if there has been a stoppage or strike in the establishment in the last 12 months) as our selected instrument for employee trust, the same result obtains: the

higher the level of trust, the better is economic performance. For example, the marginal effect of 0.0524 shown in the last column gives the approximate change in the probability that economic performance is very good as a result of a one-point change in the employee trust score. Specifically, if employee trust increased by one unit, the likelihood of observing a very good economic situation would increase by 5.2 percentage points.[7]

Note that we are here simplifying matters in the interests of providing a first-pass approximate magnitude of the impact of a given change in trust on performance. Taking employee trust as a continuous variable, the approximate impact on performance is computed by multiplying the estimated marginal effect by a unit change in employee trust. However, where employee trust is measured as a 1 through 5 categorical variable, we need compute the separate impact of a change in employee trust from 1 to 2, 2 to 3, 3 to 4, and 4 to 5 and then take some average of the impact of one unit change in trust. In our data, the two approaches generate an impact on establishment performance of similar magnitude. Also note that although the marginal effects given in each column are not large in absolute value, the impact of a change from, say, the lowest level of trust to the highest is not at all small. Indeed, the impact can be as high as 10 to 20 percentage points. Finally, observe that in no case is the works council variable statistically significant at conventional levels.

In both the first and second main rows of the table the statistical evidence is favourable to the instrument relevance assumption. In the first main row, the coefficient of the selected instrument in the reduced-form equation for performance is equal to 0.0811, while in the second main row the corresponding coefficient is equal to -0.1980. Each coefficient estimate is statistically significant at 0.05 level. In turn, both employee representation influence and strikes are also statistically significant (at the 0.01 level) in the corresponding first-stage equations, with coefficients of 0.1210 and -0.3688, respectively. Moreover, observe that the cross-equation correlation between the first- and second-stage equations in the CMP system, using employee representation influence as the selected instrument in the first main row, falls within the (-0.1351, -0.0629) 95% confidence interval; as is also the case for strikes in the second main row of the table. These findings, on the cross-equation correlation, mean that the assumed endogeneity in the system is supported.

Results for the relative labour productivity case are given in the third main row of Table 6. Two observations might usefully be made. First, the instrumental variable diagnostic statistics

perform as expected. Second, the directional influence of trust is again confirmed. Thus, the higher is employee trust, the lower is the probability that labour productivity in the establishment is either below or at the industry average, the corresponding marginal effects being equal to -0.0182 and -0.0892, respectively. Equally, labour productivity is expected to be somewhat better or a lot better than the industry average if employee trust increases, with marginal effects of 0.0440 and 0.0634, respectively. The estimated marginal effects are all statistically significant at the 0.01 level.

Replication for 2013 is given in the last main row of the table. In this case, we are limited to a single establishment performance measure – the financial situation – and to using employee representation influence as the selected instrument (as the strikes variable fails to achieve statistical significance in the corresponding reduced-form equation for this performance measure). Evidently, the coefficient on employee representation influence is highly statistically significant in not only the reduced-form equation for performance but also in the first-stage equation as well. The cross-equation correlation falls within the expected confidence interval, while the statistical insignificance of the works council variable is confirmed.

Table 7 presents results from using our constructed measure of dissonance between the parties. In this case, we have establishment performance as a function of an indicator that is presumed to reflect some underlying dysfunction at the organization. The model implementation contains two dissonance variables, namely Dissonance_1 and Dissonance_2. For the former measure, management rates industrial relations quality as good or very good and the worker representative agrees or strongly agrees with the statement that the relationship is hostile, whereas for the latter dissonance measure each party reverses its stance. In this setting, we do allow therefore for differentiated effects vis-à-vis the reference category (i.e. the situation where there is no deviation between the parties who view the workplace situation as favourable). Table 7 indicates that the two terms have the expected sign, with Dissonance_2 always showing both strong statistical significance and larger (in absolute value) marginal effects than Dissonance_1. Given that the two terms have the same sign throughout, we could have aggregated them into a single dissonance variable. For completeness, we prefer to persevere with a specification that includes two dissonance variables.[8]

[Table 7 near here]

Beginning with the results for 2009 in the first main row of Table 7, dissonance between the parties as measured by Dissonance_2 implies an approximately 3.4, 10.7, and 12.9 percentage

point increase in the probability that the economic situation is very bad, bad, and neither bad nor good, respectively, in comparison with a circumstances in which the two parties do not deviate. Conversely, Dissonance_2 implies respective reductions of 16.1 and 10.9 percentage points in the probability that the economic situation is good or very good. These marginal effects are statistically significant at the 0.01 level. For its part, Dissonance_1 is never statistically significant.

Turning to the second main row of the table, the marginal effects of Dissonance_2 are 2.3, 8.9, and 18.1 percentage points for categories 1, 2 and 3, respectively, and -13.5 and 15.7 percentage points respectively for categories 4 and 5. These are clearly sizeable magnitudes, suggesting that dissonance between the parties can be very damaging for establishment financial performance vis-à-vis the situation where there is no stated disagreement between the viewpoints of the two parties.

The evidence for the relative labour productivity outcome is shown in the last main row of the table. The Dissonance_2 term is again statistically significant at the 0.01 percent level, with the reported marginal effects implying that (this type of) dissonance between the parties increases the probability that labour productivity in the establishment is below or at the industry average, on the one hand, and decreases the probability that labour productivity in the establishment is somewhat or a lot better than the industry average, on the other.

Regarding the role of the works council, we again find no hard evidence that this body is more strongly associated with higher performance than the alternative type of workplace representation in the form of a union entity. The works council dummy variable is not statistically significant in 2009, while in 2013 it only achieves statistical significance at the 0.10 level.

As a final exercise, we sought to test the sensitivity of the results presented in Table 7 to alternative dissonance measures. That is, although the definition of dissonance between the parties, based on their (independent) views on industrial relations climate at the establishment, has the virtue of making the results fully comparable across 2009 and 2013, we thought it worthwhile experimenting with alternative components of the measure. Specifically, for 2009 we replaced management's view of the industrial relations climate by our selected management trust variable (obtained by using the question on whether *the employee representation helps us to find ways to improve workplace performance*) but retained the other component as no real alternative to the employee trust variable was available for 2009. For 2013 we experimented with an alternative measure of dissonance, in which we replaced the baseline employee representative view of

industrial relations at the establishment with our selected measure of employee trust (given by the *management can be trusted* indicator).

We found no evidence that the results reported in Table 7 were sensitive in any material sense to these changes. Thus, for both the economic situation measure and relative labour productivity in 2009 we reproduced quite closely the results given in the first main row of Table 7. Further, there was also a close replication of the corresponding estimates for 2013, both with respect to the relevant magnitude of the marginal effects and their statistical significance.

6. Conclusions

The present study, has examined the relationship between trust and establishment performance using data from the European Company Survey. The survey respondents are spokespersons of senior management and of the key employee workplace representation body, one of each per establishment. The (subjective) performance outcome measures are management's assessment of the economic/financial situation of the establishment and of its labour productivity relative to the sectoral mean. Trust is initially measured using both individual respondent's assessment the 'role' of the other side. These responses are used to create separate trust indices or independent variables of management trust (in employee representation) and employee representative trust (in management). In a new departure, a third, bilateral measure of trust or *dissonance* is fashioned from the discrepancy between the views of the two sides of the quality of workplace industrial relations.

Employee trust is accorded more attention than management trust as it is less subject to feedback from performance than the management counterpart. That said, employee trust and firm performance are jointly modelled, using the perceived influence of the employee representation body on certain key management decisions *and* strike incidence as separate instruments for employee trust. Further, a dissonance argument, or bilateral measure of trust, is offered as a less artificial construct and is our preferred measure. The other key regressor is the dominant form of workplace representation at the establishment, either a works council or a union body.

Higher levels of management and employee representative trust were found to be associated with improved workplace economic and financial performance and higher labour productivity, and conversely for heightened dissonance. A significantly positive association between works council presence and improved firm performance was also reported for

specifications using the management trust argument. However, this association failed to survive the incorporation of a preferred measure of trust, either employee trust or dissonance. The bottom line would appear to be that good industrial relations trumps type of workplace representation, suggestive of Freeman and Medoff's (1984: 179) injunction that "[T]he lesson is that unionism per se *is neither a plus nor a minus to productivity. What matters is how unions and management interact at the workplace"* [emphasis in original].

Endnotes

1. These constraints are features of the German system of codetermination. In fact, Freeman and Lazear (1995: 48) are more explicit in addressing German codetermination in the context of its ability to enhance job security which the authors view as crucial in bringing worker interests more into line with those of shareholders.

2. This index has a basis in two questions asked of employees as to how strongly they agreed or disagreed with the statements: (a) *I share many values of my organization*, and (b) *I feel loyal to my organization*. In practice, a hybrid combination of the two questions is used.

3. Given that in all three main rows there is one excluded instrument, we have a just-identified model. The main advantage of using just one instrument is that the model is less likely to be subject to the weak instrument critique, as the bias in 2SLS is an increasing function of the number of instruments (Angrist and Pischke, 2009: 209).

4. Since the raw score is actually given in descending order, from high to low, a variable transformation was required to generate an ascending scale so that the lowest score reflects the lowest performance category. Similar transformations were implemented in the cases of management trust, employee trust, and relative labour productivity.

5. As mentioned earlier, the introduction of a labour productivity growth variable was mainly intended to reduce the possibility of reverse causation. Nevertheless, when we excluded the regressor and re-ran the model, the magnitude, sign, and statistical significance of the other marginal effects were largely unaffected.

6. As suggested by one of the referees, we also evaluated whether trust has differential effects across countries. To this end, we ran an extension of model (1) in which we allow a country random slope for the trust variable. The main finding was that the results are not sensitive to this application, with the marginal effects being virtually unchanged. As anticipated, the country slopes evinced some country heterogeneity that was more pronounced for 2009 than 2013.

7. Note that for this implementation – using strikes as the selected instrument – the IV approach produces larger (in absolute value) marginal effects than Table 5. The most important point, however, is that Table 6 confirms the sign and statistical significance of these results. Moreover, despite differences in magnitude, the IV implementation maintains the same ordering across the different categories of the outcome (performance) indicators, with the corresponding estimates being larger for categories 3, 4, and 5 than 1 and 2. As mentioned below, in all cases the works council term is always statistically insignificant, with and without allowing for endogeneity of trust.

8. We implemented an alternative specification that included an additional dissonance dummy variable flagging mutual distrust, while retaining the reference category. The coefficient estimates for Dissonance_1 and Dissonance_2 imply marginal effects that are practically unchanged both in size and statistical significance. In turn, the marginal effect of the new 'mutual distrust' term is slightly larger (smaller) than the marginal effect of Dissonance_2 in 2009 (2013). Given these results, and the fact that the exclusion of the mutual distrust situations involves the loss of only 232, 51, and 227 observations – or 5.1, 2.2, and 5.2 percent of the row totals, respectively – we decided to maintain the model specification of Table 7.

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TABLE 1

Establishment Performance in European Establishments, 2009 and 2013 (in percent)

			Outcome indicator (in ascending order)					
Sample year	Outcome (management view of establishment performance)	N	1	2	3	4	5	Average
	(a) Establishments with a formal workplace employee representation							
2009	Economic situation [MM500]	12,110	2.74	11.79	34.36	40.55	10.55	3.44
2013	Financial situation [KFINAN]	11,340	1.38	7.88	26.85	50.35	13.53	3.67
			1	2	3	4		
2009	Relative labour productivity	11,328	2.34	47.82	35.43	14.41		2.62
	(b) Establishments without workplace employee representation							
2009	Economic situation [MM500]	12,145	2.16	8.80	33.85	43.85	11.35	3.53
2013	Financial situation [KFINAN]	12,257	1.31	6.74	29.00	50.24	12.70	3.66
2009	Relative labour productivity [MM501]	10,997	2.39	44.98	34.67	17.96		2.68

Notes: Establishment performance is a five-point indicator in ascending order, from 1 (low) to 5 (high). Relative labour productivity, which is only available for 2009, is given in a four-point increasing scale. Variable identifiers from the respective surveys are given in square brackets.
Sources: 2009 and 2013 European Company Surveys.

TABLE 2

Management and Employee (Representative) Trust in European Establishments, 2009 and 2013 (in percent)

			Trust indicator (in ascending order)					
Sample year	Trust	N	1	2	3	4	5	Average
2009	Management trust [MM702_1]	12,188	3.45	11.52	15.88	48.92	20.23	3.71
2009	Employee (representative) trust [ER151_3]	6,236	2.39	8	7.86	37.92	43.83	4.13
			1	2	3	4		
2013	Management trust [er15e]	11,376	1.07	7.92	66.63	24.38		3.14
2013	Employee (representative) trust [q42a_c]	2,969	3.67	13.51	59.48	23.34		3.02

Notes: Management trust is extracted from the MM survey and contains all establishments in which management reports the presence of a formal employee representation body. Employee trust is obtained from the ER survey and comprises all establishments with a valid response from the representative of the workplace representation body. The information on employee trust in 2013 is generated from the constructed MM-ER data. Survey variable question identifiers from the raw datasets are given in square brackets.

TABLE 3

Financial Performance and Management/Employee Representative Trust in 2013: Comparisons Between the Separate MM and ER Samples and Their Counterpart Matched MM-ER Samples (in percent)

		Indicator						
Variable	Sample	N	1	2	3	4	5	Average
Financial situation	Establishments with a formal employee representation body	11,340	1.38	7.88	26.85	50.35	13.53	3.67
	Establishments in the matched MM-ER sample	2,964	1.86	8.5	28.41	48.21	13.02	3.62
Management trust	Establishments with a formal employee representation body	11,376	1.07	7.92	66.63	24.38		3.14
	Establishments in the matched MM-ER sample	2,966	0.84	7.25	66.12	25.79		3.17
Employee (representative) trust	Establishments with a valid employee representative response	7,373	3.27	13.79	61.10	21.84		3.02
	Establishments in the matched MM-ER sample	2,969	3.67	13.51	59.48	23.34		3.02

Notes: The three different selected samples in the table are: *Establishments with a formal employee representation body*, *Establishments with a valid employee representative response*, and *Establishments in the matched MM-ER sample.* They are defined as follows: the first contains all the establishments for which the MM Survey responder says there is a formal employee representation body at the establishment; the second is made up of all establishments with a valid employee representative response in the ER Survey; and the third is obtained using the MM Survey-ER Survey matching procedure described in the text and corresponding Appendix.

TABLE 4

Establishment Performance, Management Trust, and Workplace Employee Representation Type, 2009 and 2013, Marginal Effects

			Outcome indicator (in ascending order)				
Year	Variable	Outcome (establishment performance)	1	2	3	4	5
2009	Management trust	Economic situation	-.0039*** (.0007)	-.0138*** (.0019)	-.0168*** (.0024)	.0219*** (.0029)	.0127*** (.0019)
	Works council		-.0045*** (.0017)	-.0159*** (.0057)	-.0194*** (.0071)	.0252*** (.0090)	.0146*** (.0054)
2013	Management trust	Financial situation	-.0031*** (.0006)	-.0161*** (.0026)	-.0328*** (.0048)	.0252*** (.0044)	.0267*** (.0042)
	Works council		-.0022*** (.0008)	-.0112*** (.0038)	-.0229*** (.0077)	.0176*** (.0060)	.0187*** (.0064)
2009	Management trust	Relative labour productivity	-.0030*** (.0005)	-.0283*** (.0043)	.0152*** (.0025)	.0160*** (.0026)	
	Works council		-.0016 (.0014)	-.0155 (.0134)	.0084 (.0072)	.0088 (.0076)	

Notes: The multilevel mixed-effects ordered logistic model is given in equation (1) in the text, and is estimated using the *meologit* command in Stata 15. The reported values are the mean marginal effects. By construction, all establishments in the estimation sample have a formal employee representation body. The number of observations in the first, second, and third main rows is 9,909, 8,899, and 9,458, respectively. respectively. The corresponding log-likelihood ratio statistics, not reported in the table, are equal to 287.48 (p-value: 0.000), 230.30 (0.000), 170.43 (0.000). In all cases, the null of an ordinary ordered logistic model is rejected against the multilevel mixed-effects ordered logistic model. *** denotes statistical significance at the 0.01 level; standard errors are given in parentheses.
Sources: 2009 and 2013 European Company Surveys.

TABLE 5

Establishment Performance, Employee (Representative) Trust, and Workplace Employee Representation Type, 2009 and 2013, Marginal Effects

			Outcome indicator (in ascending order)				
Year	Variable	Outcome (establishment performance)	1	2	3	4	5
2009	Employee trust	Economic situation	-.0024** (.0009)	-.0070** (.0028)	-.0076** (.0030)	.0106** (.0042)	.0064** (.0026)
	Works council		-.0017 (.0033)	-.0050 (.0097)	-.0054 (.0104)	.0075 (.0146)	.0045 (.0088)
2013	Employee trust	Financial situation	-.0045*** (.0012)	-.0175*** (.0041)	-.0371*** (.0080)	.0293*** (.0072)	.0299*** (.0069)
	Works council		-.0020 (.0019)	-.0080 (.0075)	-.0169 (.0158)	.0134 (.0125)	.0136 (.0128)
2009	Employee trust	Relative labour productivity	-.0027*** (.0008)	-.0239*** (.0064)	.0135*** (.0037)	.0132*** (.0037)	
	Works council		-.0024 (.0025)	-.0213 (.0217)	.0120 (.0122)	.0118 (.0120)	

Notes: See notes to Table 4. By construction, all establishments in the estimation sample have a valid employee representative response. In 2013 the sample is based on the matched MM-ER dataset. The number of observations in the first, second, and third main rows is 4,532, 2,274, and 4,344, respectively. The corresponding log-likelihood ratio statistics, not reported in the table, are equal to 119.76 (p-value: 0.000), 73.94 (0.000), 64.70 (0.000). In all cases the null of an ordinary ordered logistic model is rejected against the multilevel mixed-effects ordered logistic model. ***, and ** denote statistical significance at the 0.01 and 0.05 levels, respectively; standard errors are given in parentheses.

TABLE 6
Establishment Performance, Employee (Representative) Trust, and Workplace Employee Representation Type, 2009 and 2013, Marginal Effects with an Endogenous Variable

			Outcome indicator (in ascending order)				
Year	Variable	Outcome (establishment performance)	1	2	3	4	5
2009	Employee trust [ER151_3] (Instrumented by employee representation influence; ER207_8)	Economic situation	-.0100*** (.0038)	-.0215*** (.0074)	-.0197*** (.0069)	.0284*** (.0097)	.0227*** (.0082)
	Works council		-.0033 (.0092)	-.0073 (.0196)	-.0066 (.0177)	.0096 (.0259)	.0077 (.0205)
	Instrument relevance: Coefficient of the excluded instrument in the reduced-form equation for performance: 0.0811 (s.e.: 0.0327); statistically significant at the 0.05 level. Coefficient of the excluded instrument in the first-stage equation: 0.1210 (s.e.: 0.0170); statistically significant at the 0.01 level. Cross-equation correlation: -0.0991 (0.0184); 95% confidence interval: (-0.1351; -0.0629). N=4,416						
2009	Employee trust [ER151_3] (Instrumented by strikes)	Economic situation	-.02456*** (.0039)	-.0441*** (.0054)	-.0388*** (.0059)	.0550*** (.0065)	.0524*** (.0082)
	Works council		-.0058 (.0092)	-.0104 (.0165)	-.0091 (.0143)	.0130 (.0208)	.0123 (.0193)
	Instrument relevance: Coefficient of the excluded instrument in the reduced-form equation for performance: -0.1980 (s.e.: 0.0934); statistically significant at the 0.05 level. Coefficient of the excluded instrument in the first-stage equation: -0.3688 (s.e.: 0.0466); statistically significant at the 0.01 level. Cross-equation correlation: -0.2540 (0.0172); 95% confidence interval: (-0.2875, -0.2198). N=4,578						
2009	Employee trust [ER151_3] (Instrumented by employee representation influence; ER207_8)	Relative labour productivity	-.0182*** (.0043)	-.0892*** (.0141)	.0440*** (.0069)	.0634*** (.0123)	
	Works council		-.0049 (.0076)	-.0240 (.0373)	.0118 (.0184)	.0170 (.0266)	
	Instrument relevance: Coefficient of the excluded instrument in the reduced-form equation for performance: 0.1095 (0.0344); statistically significant at the 0.01 level. Coefficient of the excluded instrument in the first-stage equation: 0.1168 (s.e.: 0.0167); statistically significant at the 0.01 level. Cross-equation correlation: -0.2180 (0.0191); 95% confidence interval: (-0.2553; -0.1801). N=4,749						

TABLE 6

Continued

			Outcome indicator (in ascending order)				
Year	Variable	Outcome (establishment performance)	1	2	3	4	5
2013	Employee trust [q42a_c] (Instrumented by employee representation influence; q38)	Financial situation	-.0086** (.0034)	-.0252*** (.0087)	-.0429*** (.0143)	.0339*** (.0125)	.0428*** (.0147)
	Works council		-.0026 (.0051)	-.0076 (.0150)	-.0129 (.0257)	.0102 (.0202)	.0129 (.0257)
	Instrument relevance: Coefficient of the excluded instrument in the reduced-form equation for performance: 0.1899 (s.e.: 0.0711); statistically significant at the 0.01 level. Coefficient of the excluded instrument in the first-stage equation: 0.2278 (s.e.: 0.0240); statistically significant at the 0.01 level. Cross-equation correlation: -0.0630 (0.0273); 95% confidence interval: -0.1163, -0.0094). N=1,643						

Notes: See notes to Tables 4 and 5. The model is estimated using CMP in Stata 15. ***, and ** denote statistical significance at the 0.01 and 0.05 levels, respectively; standard errors are given in parentheses.

TABLE 7

Establishment Performance, Employee-Management Dissonance, and Workplace Employee Representation Type, 2009 and 2013, Marginal Effects

			Outcome indicator (by increasing order)				
Year	Variable	Outcome (establishment performance)	1	2	3	4	5
2009	Dissonance_1	Economic situation	.0018 (.0025)	.0057 (.0079)	.0068 (.0095)	-.0086 (.0119)	-.0058 (.0080)
	Dissonance_2		.0341*** (.0044)	.1071*** (.0086)	.1287*** (.0112)	-.1614*** (.0124)	-.1086*** (.0107)
	Works council		-.0014 (.0029)	-.0044 (.0091)	-.0053 (.0109)	.0067 (.0137)	.0045 (.0092)
2013	Dissonance_1	Financial situation	.0032 (.0028)	.0124 (.0106)	.0252 (.0216)	-.0189 (.0163)	-.0220 (.0189)
	Dissonance_2		.0229*** (.0042)	.0886*** (.0093)	.1808*** (.0127)	-.1351*** (.0169)	-.1573*** (.0159)
	Works council		-.0033* (.0019)	-.0128* (.0071)	-.0261* (.0143)	.0195* (.0108)	.0227* (.0126)
2009	Dissonance_1	Relative labour productivity	.0051** (.0021)	.0508** (.0199)	-.0272** (.0107)	-.0287** (.0114)	
	Dissonance_2		.0123*** (.0023)	.1219*** (.0174)	-.0654*** (.0101)	-.0689*** (.0107)	
	Works council		-.0020 (.0022)	-.0201 (.0221)	.0107 (.0118)	.0113 (.0125)	

Notes: See notes to Tables 4 and 5. Dissonance_1 and Dissonance_2 are based on raw variables MM701 and ER151_3 (for 2009) and KCLIMATE and q20_c (for 2013); see Appendix Table 1 for the definition of management-employee dissonance. The number of observations in the first, second, and third main rows is 4,292, 2,283, and 4,108, respectively. The corresponding log-likelihood ratio statistics, not reported in the table, are equal to 84.16 (p-value: 0.000), 48.28 (0.000), 60.91 (0.000). In all cases the null of an ordinary ordered logistic model is rejected against the multilevel mixed-effects ordered logistic model. ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.1 levels, respectively; standard errors are given in parentheses.

Appendix Table 1: Definition of Selected Establishment-Level Variables, 2009 and 2013

Variables			**Definition**
Performance:	2009	2013	
Economic (financial) situation: management view	MM500	KFINAN	1 to 5 scale: 1 is the lowest level. The variable indicates the economic (financial) situation in 2009 (2013).
Relative labour productivity: management view	MM501		1 to 4 scale: 1 is the lowest level. Labour productivity in the establishment is compared with other establishments in the same sector of activity. Only available in 2009.
Trust:			
Management trust: management view	MM702_1	er15e	1 to 5 scale: 1 is the lowest level. In 2009, it is extracted from the question on whether "The *employee representation* helps us to find ways to improve workplace performance"; in 2013, it is based on the question "The *employee representation* can be trusted?" The latter is only available in 2013.
Employee (representative) trust: workers' representative view	ER151_3	q42a_c	1 to 5 scale: 1 is the lowest level. In 2009, it is based on the question "The relationship between management and employee representation can best described as hostile"; in 2013, it is based on the question "Management can be trusted." The latter is only available in 2013.
Management-employee trust:	MM701_D (climate) minus ER151_3_D (hostile)	KCLIMATE minus q20_c_D (hostile)	Management-employee dissonance is based on the views of management and employee representative on the general work climate at the establishment. Their opinions are, respectively, coded as 1/0 dummies as follows: (IR_quality_MM): 1 if the general work climate in the establishment is very good or good; (IR_quality_ER): 1 if the relationship between management and employee representation can best be described as hostile (disagree or strongly disagree). IR_quality_MM is based on the raw variables MM701 and KCLIMATE in 2009 and 2013, respectively; IR_quality_ER is based on the raw variables ER151_3 and q20_c in 2009 and 2013, respectively.
Dissonance_1			1/0 dummy: 1 if IR_quality_MM = 1 and IR_quality_ER = 0
Dissonance_2			1/0 dummy: 1 if IR_quality_MM = 0 and IR_quality_ER = 1
Mutual distrust			*1/0 dummy: 1if IR_quality_MM = 0 and IR_quality_ER = 0*
(Reference category)			1/0 dummy: 1 if IR_quality_MM = 1 and IR_quality_ER = 1
Other selected characteristics:			
Workplace representation:			
Prevalent union			1/0 dummy: 1 if there is either a unique union agency at the workplace or where the union agency can be adjudged more influential than the corresponding works council agency where both entities are present.
Prevalent works council			1/0 dummy; 1 if there is either a unique works council agency at the workplace or where the works council agency can be adjudged more influential than the corresponding union agency where both entities are present.

Union organization:			
Union density	ER107	q4_rec	Union density at the establishment (in percent). Available only in establishments with a valid employee representative response.
Collective agreement:	MM451	Er12	
No collective agreement			Individual agreement (i.e. no collective agreement)
Company level			Company level agreement
Higher than company level			Higher than company level agreement
Mixed level			Mixed-level agreement (i.e. company level and higher than company level).
Labour productivity growth	MM502	KLABPRCH	1 to 4 scale: 1 is the lowest level. Establishment's current labour productivity is compared to the situation three years earlier. In 2013, the variable is given for a 1-3 scale.
Workforce composition:			
Workers with an OEC	N.A.?	q33perm_g	Percentage of employees who have an open-ended contract (OEC). Only available in 2013.
Female workers	MM550	q33wom_g	Percentage of employees who are female
Workers with a university degree	MM553 High-skill	q33univ	Percentage of employees who have a university degree in 2013; percentage of employees with a high-skill job in 2009.
Part-time workers	MM250	q33pt_g	Percentage of employees who work part-time (i.e. less than the usual full-time arrangement)
Training:			
Paid on- and off-the-job training	N.A.	qh13	Percentage of employees who in the past 12 months received paid time-off from their normal duties to undertake training, either off or on the job.
On-the-job training	N.A.	qh15	Percentage of employees who in the past 12 months received on-the-job training.
Performance-based pay:			Performance-based pay variables are only available in 2013, with the exception of profit sharing which is also available in 2009.
Payment by results	ER350	HVPBRES	1/0 dummy: 1 if payment by results, for example piece rates, provisions, brokerages or commissions
Extra pay linked to the individual performance	N.A.	HVPINPER	1/0 dummy: 1 if variable extra pay linked to the individual performance following management appraisal
Extra pay linked to the performance of the group	N.A.	HVPGRPE	1/0 dummy: 1 if extra pay linked to the performance of the team, working group or department
Extra pay linked to the results of the company or establishment/profit sharing	MM460	HVPPRSH	1/0 dummy: 1 if variable extra pay linked to the results of the company or establishment/profit sharing scheme.
Extra pay in form of share ownership scheme	N.A.	HVPSHOW	1/0 dummy: 1 if variable extra pay in form of share ownership scheme offered by the company.

Changes in organization:			
Changes in the remuneration system	MM602_1	EOA_A	1/0 dummy: 1 if major changes in the remuneration system were introduced in the past three years. In 2013 the variable is defined simply as 'changes' in the remuneration system
Changes in the work process	MM602_2	EOA_B	1/0 dummy: 1 if changes in the organization of the work process were introduced in the past three years. In 2013 the variable is defined as changes in 'ways to coordinate and allocate the work to employees'
Changes in the working time	MM602_3	EOA_C	1/0 dummy: 1 if changes in the working time arrangements were introduced in the past three years
Restructuring measures	MM602_4	EOA_D	1/0 dummy: 1 if restructuring measures were introduced in the past three years. In 2013 the variable is defined as changes in the 'use of technology'
Changes in recruitment policies	N.A.	EOA_E	1/0 dummy: 1 if changes in recruitment policies. This variable is not available in 2009
Single establishment	MM100	ASINGLE	1/0 dummy: 1 if single independent company or organization
Public services/public sector	MM104	APRIVATE	1/0 dummy: 1 if establishment belongs to the public services sector. Note that this includes private and public schools and private and public hospitals, for example. In 2013, a public sector organization is defined as either wholly owned by the public authorities or they own more than 50%.
(Excluded) instruments:			
Strike incidence	ER260 ER261a ER261b	q46	1/0 dummy: 1 if there has been a stoppage or strike in the establishment in the last 12 months
Influence of employee representation on management decisions	ER207_8	q38	1 to 5 scale: 1 is the lowest level. The variable indicates the influence of the formal employee representation body on management decisions. Specifically, in 2009, the management decisions pertain to career development (selection, appraisal, training), while for 2013 they include decisions in the following areas: organization of work processes; recruitment and dismissals; occupational health and safety; training and career development; working time arrangements; and restructuring measures

Notes: The dataset also comprises eleven (ten) distinct sectors in 2009 (2013). The corresponding number of establishment size groups is six and three, respectively. Survey variable question identifiers from the corresponding raw datasets are given in the second and third columns of the table.