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Sickness Absence, Works Councils, and Personnel Problems. Evidence from German Individual and Linked Employer-Employee Data

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Sickness Absence, Works Councils, and Personnel Problems*

Evidence from German Individual and Linked Employer-Employee Data

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Abstract

Using both household and linked-employer-employee data we empirically assess the effects of works councils on individual sickness absence rates and a subjective measure of personnel problems due to absenteeism in Germany. We find that the existence of a works council is positively correlated with the incidence of absence and the amount of days being absent. Further, personnel problems due to absenteeism are more likely to occur in plants with a works council. We also obtain weak evidence of a causal relationship between the existence of a works council and the incidence of absenteeism in Western Germany.

JEL Classification: J53, I18, M54

Keywords: Absenteeism, LIAB, personnel problems, sickness absence, SOEP, works councils

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1. Introduction

Works councils have wide-ranging information, consultation and codetermination rights in Germany. Whether these rights allow works councils to enhance efficiency or, rather, to redistribute rents, is a hotly debated issue. In accordance, their effects on wages, productivity, employment, turnover and profitability have been looked at intensively. Despite the ensuing plethora of studies, the relationship between works councils and (illness-related) absenteeism has not been considered yet. This is surprising because, first, illness-related absence in Germany is relatively high in international comparison (OECD 2007, p. 95) and causes substantial output losses.¹ Second, works councils have substantial impact on the determinants of sickness-related absence and on the means available to firms to respond to such employee behaviour. Nonetheless, the direction of the impact is ambiguous. Suppose that works councils primarily prevent firms from monitoring absence behaviour and imposing sanctions for illness-related absence. In this case, they are likely to increase illness-related absence. Assume, to the contrary, that works councils act as the employees' voice and help to improve working conditions and productivity. In this latter case, they presumably reduce absenteeism.

While we are not aware of any study explicitly investigating the effects of works councils on absenteeism in Germany, the analysis by Ziebarth and Karlsson (2013) on the impact of an increase in statutory sick pay in 1999 suggests a positive correlation. Furthermore, there are a number of contributions for other countries which indicate a positive relationship between worker representation and absenteeism. Collective bargaining at the firm level raises involuntary absences in Spain (García-Serrano and Malo 2009), while being covered by a collective bargaining contract increases absenteeism in Canada (Dionne and Dostie 2007). For the United States, Allen (1981, 1984) and Leigh (1981, 1985) find a positive correlation between absence rates and a plant's union status. However, the findings summarised above cannot predict the effects of works councils on absence in Germany. This is the case for a number of reasons. First, while works councils are often closely linked to trade unions, the existence of a works council is not tantamount to being covered by a collective bargaining contract, and vice versa (see, e.g., Huebler und Jirjahn, 2003). Second, works councils have particular rights and obligations derived from the law (the Works Constitution Act, WCA) which differ from those of trade unions in the context of collective bargaining. Finally, the

¹ In 2010, at any given day 3.5% of all dependent employees were not working because of illness-related absence and the resulting loss of production was estimated at about 1.7% of GDP (Badura et al. 2011, p. 224).

financial consequences of sickness-related absence in Germany can differ substantially from those in other countries. Consequently, the incentives of workforce representatives to affect absence are likely to differ across countries.

In this paper, first, we use the German Socio-Economic Panel (SOEP) to investigate whether individual absence behaviour depends on the presence of a works council. The SOEP contains information on the incidence and the duration of sickness absence on an annual basis, as well as, for some years, on the existence of a works council. The estimates from pooled cross-sectional models suggest that an employee working in a plant with a works council is about two and a half percentage points more likely to be absent at least one day in a given calendar year than an otherwise identical employee who is not represented by a works council. The corresponding difference in annual sickness absence days amounts to almost one day. While these effects are quantitatively sizeable, given an average incidence (duration per annum) of about 57% (9 days), they might not be sufficient indicators with regard to the impact on firm performance. Therefore, second, we analyse the relationship between works councils and the consequences of absenteeism, using linked employer-employee data (LIAB). We use a unique variable in the LIAB which is derived from questions directed at plant managers or high personnel staff, inquiring whether they expect personnel problems due to the absence of employees. We show that the existence of a works council is associated with an increase in the likelihood that such problems exist by about three percentage points. This is also a quantitatively sizeable impact, given an average probability of such problems of 13%.

We begin our empirical analyses with an encompassing sample and show that our findings exist for representative and comparable household and plant data in Germany. Furthermore, we show that the results do not depend on the specification of the sample and investigate whether the effects of works councils differ across employees and plants in Western Germany and for females, where and for whom we find much stronger effects. Finally, by focussing on individuals moving from a firm without a works council to one in which such an institution exists, we can establish a causal impact of works councils on the incidence of absenteeism for Western Germany.

The further paper develops as follows. Section 2 outlines the institutional set-up and its consequences for absence behaviour. Section 3 provides detailed descriptions of the data and the econometric methodology. In Section 4 we present and discuss the results of our general

empirical investigation. Section 5 reports on the findings for robustness checks, effect heterogeneity and causal analyses. Finally, Section 6 summarises.

2. Institutional Set-up: Works Councils in Germany and Absenteeism

Initially, we describe the legal framework relating to works councils and sickness absence in Germany. However, such a legal perspective may not be sufficient, since works councils have been shown to affect economic outcomes, such as wages, which the relevant law (the Works Constitution Act, or WCA for short) explicitly removes from their realm (see, e.g., Addison et al., 2010). Consequently, we subsequently take a wider, complementary perspective and relate absence behaviour to the role of works councils as creators of rents or as redistributive institutions (Freeman and Lazear, 1995). In addition, we establish the possibility of various indirect channels of influence because absence behaviour and the presence of a works council have both been shown to be correlated with the same individual- or firm-specific characteristics.

2.1 The Legal Setting

The German system of industrial relations is characterised by a dual structure: Collective bargaining agreements, mainly at the industry level, determine wages and overall working conditions, while works councils constitute a participatory body at the plant level. The WCA, last amended in 2001, establishes information, consultation and codetermination rights, which become more extensive with firm size. The law states that works councils can be set up in private sector plants with at least five permanent employees. Although works councils are mandatory, in 2011 they existed only in about 10% of all eligible plants, employing about 44% (36%) of all employees in Western (Eastern) Germany.²

Works councils are closely linked to trade unions in Germany, but cannot and do not act as agents of unions within plants per se. This is the case because works councils are legally obliged to cooperate with management to the advantage of the workforce and the firm (WCA § 2). Moreover, a works council is made up exclusively of employees of the plant and union membership of works councillors has fallen over time to about 50% in recent years (Goerke and Pannenberg 2007, Behrens 2009).

² Since the incidence of works councils rises with firm size, about 90% of all plants with a labour force exceeding 500 persons have a works council (Ellguth and Kohaut 2012).

Turning to the rights of the works council detailed in the WCA, they are more pronounced with regard to personnel policy and social affairs and weaker with respect to financial and economic aspects. As a general entitlement, the plant's management has to provide the council with information it needs to perform its legal duties. More specifically, the WCA establishes consultation rights of the works council, which require its information and (weak forms of) consent, in particular with respect to personnel policy, changes in the organisation of the work process, the work environment and the treatment of apprentices. Additionally, in establishments with more than 20 employees, the consultation requirements with respect to personnel policy are expanded substantially (WCA § 99). Moreover, codetermination rights exist in particular with respect to what the law calls 'social matters' (WCA § 87). They include vacation arrangements, principles of remuneration, though not its level and precautions in order to prevent workplace accidents. Note, finally, that works councils are explicitly forbidden to organise strikes (WCA § 74(2)) and to bargain with the plant's management over issues commonly dealt with in collective bargaining agreements between a trade union and an employer association (or a firm in the case of firm-specific negotiations) unless explicitly allowed to do so in the respective agreement. This restriction contained in WCA (§ 77(3)) is most relevant with respect to wages.

The most important regulations concerning the consequences of illness-related absence in Germany result from the Continued Remuneration Act ('Entgeltfortzahlungsgesetz'). According to this law, employers are obliged to pay employees the full wage during the first six weeks of sickness if the contract has lasted longer than four weeks. Hence, employers bear a substantial part of the costs resulting from illness-related absence in Germany. Employees, who are continuously absent for more than six weeks (referred to as 'long-term ill'), receive 70% of their wage. Such payments are financed by a mandatory health insurance to which virtually all employees in our sample belong. Generally, employees missing work due to illness-related reasons have to present their employer a certificate issued by a doctor from the third day of illness onwards.

2.2 The Works Constitution Act and Absence Behaviour

When looking for explicit regulations with respect to employee absence, one will search the WCA in vain. However, we argue that a number of paragraphs pertaining to personnel policy can have an impact on absence behaviour. § 87 WCA, for example, provides the works council with codetermination rights relating to working time arrangements and overtime. Furthermore, the use of technical devices to control the behaviour and performance of

employees requires the councils' approval. Finally, this paragraph and § 89 (2) WCA establish codetermination and information rights with respect to workplace safety, a driving factor of workplace-related injuries. All these regulations can impact on the causes of absenteeism and its monitoring. Nonetheless, they do not provide a clear indication of the direction of the effect a works council may have on absence behaviour and resulting personnel problems.

In addition, § 102 WCA states that the works council has to be consulted prior to a dismissal and that any dismissal without such consultation is void. Moreover, a works council can object to dismissals and can effectively delay them and make them more costly. While firms with less than ten employees are only bound by general civil law in their dismissal behaviour, larger firms are subject to the Protection Against Dismissal Act (PADA). It establishes illness to be one valid justification for an individual dismissal (PADA § 1(2)). Furthermore, a works council's objection to a dismissal creates additional rights to dismissed employees if the PADA is applicable. Accordingly, a works council can severely restrict a firm's possibilities to terminate employment contracts.³ This suggests a positive impact on absenteeism, given the substantial evidence that stronger employment protection fosters absenteeism (see, for example, Ichino and Riphahn 2005 and Olsson 2009).

2.3 Rent-Creation versus Rent-Sharing

In their seminal article, Freeman and Lazear (1995) attribute a dual role to works councils. On the one hand, they can act as the workforce's collective voice and contribute to an increase of productivity and, hence, the surplus generated within a firm. On the other hand, they enhance the bargaining power of the workforce so that employees can appropriate a larger share of the surplus created by production. This latter role can be particularly pronounced in Germany, since the WCA establishes extensive consultation requirements and rights which raise the workforce's bargaining power. A large number of empirical studies have focussed on overall proxies of rents, such as productivity or profits, and have usually found no or positive correlations. However, works council existence also seems to be positively correlated to the redistribution of rents, i.e. higher wages or labour shares (Addison, 2009, Addison et al., 2010).

³ However, the evidence that works councils actually reduce dismissals is not very strong. Höland (1985, pp. 97 ff) finds that works councils did not object to dismissals in 70% to 80% of all cases in the 1980s. Frick and Sadowski (1995), using different data, report even higher percentages. While Sadowski et al. (1995) and Frick (1996) provide evidence that dismissal rates are lower in firms with a works council, Kraft (2006) questions this claim.

If days of absence make employees better off, *ceteris paribus*, a works council can help employees to appropriate rents. This could be achieved, for example, by denying the firm more extensive monitoring of absent employees or by protecting them from a dismissal. Accordingly, a positive relationship between works councils and illness-related absence can be interpreted as an indication of rent-sharing behaviour. A negative correlation could be commensurate with works councils helping to create rents if absence reduces output. Furthermore, looking both at individual data on actual absence (originating from the SOEP) and plant-level information on the consequences of absence behaviour in the form of personnel problems (derived from the LIAB) may provide further means of disentangling the rent-creation from the rent-sharing effect of works councils.

2.4 Indirect Effects

Works councils have been shown to affect various economic outcomes which, in turn, are related to absence behaviour. For example, although works councils are explicitly forbidden to negotiate over issues bargained in collective contracts – unless explicitly allowed to do so – (cf. WCA § 77), they have been observed to raise wages (Addison et al. 2001, Hübler and Jirjahn 2003, Addison et al. 2010). Moreover, higher wages tend to reduce absenteeism in Germany (Puhani and Sonderhoff 2010, Pfeifer 2010, Ziebarth and Karlsson 2009). These relationships may result in a negative correlation between the presence of a works council and absenteeism. Empirically, we can cater for such a relationship by including appropriate wage variables as covariates. However, it may not always be possible to take into account such indirect effects and, more importantly, the causality may be different from what is usually assumed. If, for example, works councils affect absence behaviour positively, and higher wages are used by firms to restrict absence periods in the context of an efficiency-wage setting (cf. Barmby et al. 1994, Dale-Olsen 2012), the positive wage effect of works councils would not be the cause for but the consequence of a positive correlation between the presence of works councils and absenteeism. In addition to wages, further indirect effects may relate to tenure and firm size, *inter alia* (Boockmann and Steffes 2010, Addison et al. 2003).

These indirect effects have consequences for our empirical analyses. First, in order to distinguish a genuine works council effect on absence, we will need to control for the affected variables. Second, we will estimate specifications with and without control variables. This will allow us to evaluate how much of the raw difference in absence behaviour between plants with and without a works council is captured by differences in other variables, be they influenced by works councils or not.

3. Data and Empirical Specification

3.1 SOEP

To investigate whether the existence of a works council is systematically associated with individual absence behaviour, we use the German Socio-Economic Panel data set (SOEP), a representative longitudinal data set for Germany.⁴ We exclude self-employed, civil servants and employees working in plants with less than five employees, since these individuals can by law not be represented by works councils (cf. Section 2). To guarantee comparability to the LIAB data set, we consider employees aged 18 to 65 working in manufacturing and service industries.⁵ We can employ a maximum of 14,994 observations of 10,721 individuals and apply survey weights for the descriptive statistics.

The SOEP contains information on the self-reported number of working days missed due to sickness in the previous calendar year. The item reads as follows: “How many days were you not able to work in 20XX because of illness? Please state all the days, not just those for which you had an official note from your doctor. (a) None; (b) A total of X days”. We consider two dimensions of absence behaviour. First, whether an employee was absent at all in the last calendar year, i.e. the *incidence of sickness absence*. Second, we look at the *number of days* the employee was absent. There is also an additional item asking whether the respondent was continuously absent for more than six weeks (‘long-term illness’). While information on sickness-related absence is available annually, questions relating to the existence of a works council at the place of work were asked only in the years (waves) 2001, 2006 and 2011, thus restricting our analysis to these waves. We associate the data on absence behaviour in the calendar year t , which is collected in wave $t + 1$ because the respective question is retrospective, with the works council status and controls from wave t as long as the respondent was interviewed in both periods. Following Ziebarth and Karlsson (2010), we use information regarding sickness absence and covariates from the same wave t , in case the respondent was not interviewed in both waves t and $t + 1$, if there has been no change in job during this period. We present robustness tests to show that the results do not depend on the

⁴ More specifically, we use the SOEP long V28.1 dataset with the corrected marital status variable. For a general in-depth discussion of the SOEP panel data set see Wagner, Frick, and Schupp (2007). Additional information can be found at: <http://www.diw.de/english/soep/29012.html>.

⁵ In detail, we disregard employees working in agriculture, forestry, and fishing; the public administration, as well as in (non-profit) membership associations, and in private households.

inclusion of these observations (referred to as 'exact timing'). Note, finally that for the causal models (Section 5.3) that make use of the longitudinal dimension of the dataset we use the information on absence for 2009 (wave 2010) and impute the works council status from 2011 if the respondent was interviewed in both waves and did not change the job, since the sickness absence items were only included into the 2011 questionnaire for a small subsample of which the majority was interviewed for the first time.

In our sample 57.1% of the observations claim to miss at least one day of work due to illness per year. On average, sickness absence amounts to 9.36 days per year in the full sample and declines to 5.68 days when excluding all the long-term ill. The median respondent misses two days per year. While the number of sickness days declines from 9.59 days in 2001 and 9.39 in 2006 to 8.42 in 2011, sickness incidence remains at 56.8% between 2001 and 2006 and increases to 58.6% in 2011. The works council information is a binary variable (1 = yes; 0 = no). Almost 63% of the respondents work in a plant with a works council. The works council coverage remains around 62.5% between 2001 and 2006 and slightly declines to 61% in 2011.

Turning to the control variables, we take standard confounding factors into account (Ziebarth and Karlsson 2010, Puhani and Sonderhof 2010, Goerke and Pannenberg 2012). Accordingly, we control for personal characteristics such as disability status, sex (female = 1), marital status, living in a relationship, being of foreign nationality, having a foreign background (immigrant), the subjective general health status (good, bad), having children under age 14 (and interacted with sex), age, (age²), educational attainment ('Abitur', apprenticeship certificate, university certificate), satisfaction with current health status, and 12 regional dummies.⁶ Furthermore, we include job characteristics such as working part-time, being an apprentice, a blue collar worker, or working in the public sector,⁷ having a temporary or marginal employment contract, the size of the plant, log gross monthly earnings, tenure categories (< 1 year, 1-3 years, 3-5 years, 5-10 years, 10-15 years, 15-20 years, > 20 years), a work autonomy scale, and industry codes. Additionally, we include the unemployment rate

⁶ We use the regional categories common for LIAB data that guarantee a sufficient number of observations per region. The federal states are grouped into regions as follows: Hamburg and Schleswig-Holstein; Lower Saxony and Bremen; North Rhine-Westphalia; Hesse; Rhineland-Palatinate and Saarland; Baden-Württemberg; Berlin; Brandenburg and Mecklenburg-West Pomerania; Saxony; Saxony-Anhalt; Thuringia.

⁷ Since we include publicly owned private firms in the LIAB sample, for the SOEP we exclude those employees who work in the public administration but not those who claim working in the vaguely defined public sector ('öffentlicher Dienst'). In Germany, a bulk of firms are owned by the state but are legally private enterprises. A third of the employees in the SOEP claim to work in the public sector which fits to the contention that this public sector not only comprises administrative tasks in a strict sense of term but also a bulk of other services such as public transport, energy, health and education. The relevant firms may have a works council. Our results are robust to the (in- and) exclusion of employees working in the public sector widely defined.

measured at the level of the respective federal state as well as general time dummies. Descriptive statistics are provided in Table A1.

3.2 LIAB

To investigate the impact of works councils on firm performance related to absence behaviour, we use the LIAB dataset from the Institute for Employment Research (IAB) in Nuremberg, more precisely the LIAB cross-sectional Model 2 1993-2008. It is a linked employer-employee dataset with rich information based on a representative annual plant-level survey (the IAB Establishment Panel), together with personal data generated in the labour administration and social security records from almost all employees working in these plants.⁸ The IAB Establishment Panel is a representative sample of about 1% of German plants that is stratified over industries and firm size classes. Hence, large plants are slightly overrepresented, such that the data covers about 7% of all German employees. The individual data (the Integrated Employment Biographies, IEB) is drawn from official registers and is of very high quality, but the number of individual variables observed is limited. Therefore, in contrast to the SOEP, the LIAB does not contain information on individual absence behaviour. To use a comparable sample to the SOEP, we restrict our data to plants from manufacturing and service industries with at least five employees, resulting in a maximum of 34,303 observations in 19,016 plants (theoretically covering over 4 million employees).⁹ Using the linked-employer-employee characteristics of our data, we can make use of the sample weights on the plant level that are available from the IAB as well as provide for representative results at the individual level. For the regression analysis, however, we present unweighted estimates.¹⁰ Most importantly, from our perspective, the LIAB dataset contains a unique set of variables, namely responses to a series of questions directed at plant managers or high personnel staff on the existence of personal problems. In detail, the relevant item reads: “What kind of problems with human resources management do you expect for your plant during the next two years: ... [H] High rate of lost working time and absence due to illness”. This information particularly suits the investigation of the relationship between works councils and the economic consequences of absenteeism, because the response reflects an evaluation of those individuals who determine a plant’s adjustment behaviour to

⁸ For an overview of the data see Jacobebbinghaus and Seth (2010).

⁹ Technically, one of those five employees must be subject to social security, as we only observe a plant if there is at least one observation in the official registers.

¹⁰ While most of the results are robust against the use of sample weights, their inclusion could bias the results if the effect of works councils on our dependent variable differs by firm size.

absenteeism.¹¹ Moreover, using the subjective evaluation of the economic effects of absenteeism avoids associating a given level of absence days with output losses or labour costs. We measure the influence of works councils on personnel problems caused by high absence rates using a dummy variable which indicates whether a works council exists in a plant. Our data covers the years 2000, 2004, 2006 and 2008, as only in those years plant managers have been asked about personnel problems and because prior to 2000 there have been changes in the questionnaire regarding several variables we employ in the empirical investigation. As a robustness check we also control for the political stance of the works council using data available for 2006 only.

Regarding our dependent variable, a total of 3,784 plants, (6.38% of all plants employing 12.51% of all employees) state that there exist personnel problems caused by high absence rates. The share declines over time, from 8.24% of all plants (14.46% of all employees) in 2000 to 6.08% (12.51%) in 2008. Note, that personnel problems due to high absence appear to be temporary, since only 2.35% of all plants (in which 6.64% of all employees work) have such problems more than once during the observation period. Furthermore, 14,185 plants (14.82% of all plants employing 50.90% of all employees) are covered by a works council. Works council coverage has declined strongly in the early 2000s from 18.29% (54.02%) to 13.57% (48.39%) of the plants (employees) in 2008.

To account for confounding factors both influencing the existence of personnel problems and the coverage by a works council, we control for firm size¹² and a large number of further covariates. Based on individual-level data, we incorporate plant-specific means of employee characteristics with respect to sex, nationality, tenure, age, qualification (apprenticeship, having completed an apprenticeship, and university education), occupational status (blue collar worker), working time (part-time) and daily wages.¹³ Using plant-level information, we control for collective bargaining status (including orientation and the existence of wage cushions), the share of vacancies, the share of workers with temporary contracts, the churning rate, investment activity, firm age, foreign and public ownership, modern technical assets,

¹¹ Similar questions have recently been picked up in the works of Pfeifer (2012) and Gralla and Kraft (2012a) regarding the effects of works councils on human resource management and on overstaffing, respectively.

¹² While only one in 20 plants with up to 19 employees state that they have personnel problems, this figure is one in five for plants with over 2000 employees. Comparably, only 7% of the small plants have a works council, while this is the case for 96% of the very large plants.

¹³ While being of high quality, the wage information in the LIAB is calculated from social security contributions and therefore censored at the contribution limit. This affects about 5.7% of all employees. We have controlled for this circumstance by including a variable additionally controlling for the share of employees with censored earnings.

status as a single plant, status as limited firm, the existence of human resource management problems, and industry, region, firm size and year dummy variables comparable to the ones used in the SOEP. Furthermore, there exist additional variables which might influence our dependent variable, but which have a significant share of item-non-response. Therefore, we include them in some specifications, but always control for sample selection bias estimating the restricted model on the restricted sample. These variables include the natural logarithm of total investments, the share of expansion investments, standard weekly working time, the share of exports, an overtime dummy, the existence of firm-sponsored training and performance-related pay, and expectations on rising turnover and employment levels. Using these additional variables decreases our sample by about 40% to 18,816 observations in 11,065 plants. A full description of all variables can be found in Table A3.

3.3 Empirical Strategy

When analysing the incidence of absence behaviour and the existence of personnel problems we estimate pooled Probit models, given the binary nature of the dependent variables. For the duration of sickness absence we estimate pooled OLS models.¹⁴ The stylized estimation equation for the different models reads as follows:

$$Y_{it} = \beta_1 + \beta_2 \text{workscouncil}_{it} + \boldsymbol{\gamma} \mathbf{X}_{it} + \delta \text{year}_t + \varepsilon_{it} \quad (1)$$

Here, Y_{it} represents the dependent variable, and the subscript i represents individuals when using SOEP data, while it indicates plants when employing the LIAB, at time t respectively. The dummy variable workscouncil_{it} indicates the existence of a works council, while the vector \mathbf{X}_{it} contains confounding factors, year_t represents year dummies, and ε_{it} is the error term. In order to account for multiple observations of individuals or plants over time we use clustered standard errors. As regards the Probit models, we present the estimated coefficients as well as marginal effects for our variable of interest.

Besides correlations in pooled samples we also present models that infer causality based on changes of the works council status in the longitudinal dimension. This endeavour is particularly cumbersome since these changes have (especially on the plant level) been shown to be rare, highly endogenous, and can depend on time-invariant unobserved heterogeneity as well (see, e.g. Kraft and Lang, 2008; Jirjahn, 2009; and Mohrenweiser et. al., 2012). In our

¹⁴ We report the findings from count data models in Section 5.1.

case these problems are further exacerbated by the small numbers of waves contained in our data (three in the SOEP and four in the LIAB). With two very short panels and very few plants that abolish a works council we choose to employ a difference-in-differences (DiD) approach in order to control for plant respectively individual selectivity (cf. Gralla and Kraft 2012b, Grund and Schmitt 2013). In this approach we disregard changes out of works council coverage which avoids putting the introduction and the abolishment of a works council quantitatively on the same level. The stylized estimation equation reads:

$$Y_{it} = \beta_1 + \beta_2 \text{treatmentgroup}_i + \beta_3 \text{workscouncil}_{it} + \boldsymbol{\gamma} \mathbf{X}_{it} + \delta \text{year}_t + \varepsilon_{it} \quad (2)$$

In this setup the ‘treatment’ does not occur at the same moment in time for all employees and all plants. Therefore, we follow Imbens and Wooldridge (2009) to discern two effects. The time-invariant dummy variable treatmentgroup_i captures the selection (treatment group effect) of plants and individuals into the treatment group which changes its works council status from zero to one at some point in time and into the control group of those plants and individuals that never have a works council throughout the observation period. In the SOEP this treatment might come about either if the employee changes the employer (mover), or if a works council is newly established in the same plant (stayer). We present separate estimations in these two subsamples (cf. Grund and Schmitt 2013). Accordingly, we disregard all plants and individuals that are covered by works councils throughout the entire observation period. The variable of interest workscouncil_{it} captures the exposure to the ‘treatment’ indicating whether plant or individual i was covered by a works council in period t (treatment effect). As in the pooled models, the vector \mathbf{X}_{it} contains confounding factors, year_t represents year dummies, and ε_{it} is the error term. Again, we use Probit models to estimate the difference-in-differences models for sickness absence incidence and personnel problems while we use OLS models for the number of absence days.

4. Results

4.1 Absence Behaviour

Descriptive statistics of the weighted raw data from the German Socio Economic Panel (SOEP) suggest that employees who work in a plant with a works council exhibit more sickness absence days and are more likely to be absent at all. Employees in a plant without a works council report 7.98 days of absence per year on average, while those represented by a

works council miss 10.19 days, annually. Looking at the median values of the two groups, the difference reduces to one day, three days with and two days without works council. This difference between mean and median suggests that the number of absence days differs more strongly between the two groups in the upper part of its distribution. Looking at a sample without long-term ill employees supports this conjecture. Here, the difference in the average (median) number of absence days shrinks to one (one) day, 5.07 (one) days without and 6.06 (two) days with works council coverage. The incidence of sickness absence (without long-term ill employees) amounts to 59% (56%) for respondents who work in a plant in which a works council exists and to 53% (51%) for those not represented by such an institution.

The results of the pooled regression models for sickness absence incidence and duration are summarised in Table 1. We successively add further control variables but only depict the estimated coefficients (and marginal effects) of interest. A full set of results for specifications (3) and (6) is contained in Table A2. Specifications (1) and (4), relating to the incidence of absence and its duration, respectively, contain the works council status as sole explanatory variable. Here, the coefficients of interest are positive, statistically highly significant and mirror the differences from the (weighted) raw data. Adding dummy variables for firm size classes, industries, regions and years reduces the size of the works council effect for both dimensions but not its significance (specifications 2 and 5). In the absence incidence model with the full set of control variables the marginal effect remains highly statistically significant and still values more than 2.6 percentage points (specification 3). With an absence incidence of 57% in our sample this difference is economically sizeable and amounts to a little less than five per cent. Since the marginal effect shrinks to about 40% of the value obtained in specification (1) without control variables (26/65), indirect effects of works councils account for about 60% of the raw differential in the incidence of absence.

Turning to the annual duration of absence, the works council coefficient is significant at the 10% level when including the full set of control variables (specification 6). Given that sickness absence amounts to slightly more than nine days per year on average in our sample, the implied difference of almost one day is also quantitatively sizeable. Once again, indirect effects explain about 60% of the raw differential. The direct works council effect, hence, translates – if taken at face value – into an estimated production cost loss of more than 0.15% of GDP, given that the total loss of production is estimated to be about 1.7% of GDP in 2010 (Badura et al. 2011, p. 224).

Table 1: Absence Incidence (Pooled Probit Estimates) and Absence Duration (Pooled OLS Estimates)

	Absence Incidence			Absence Duration		
	(1)	(2)	(3)	(4)	(5)	(6)
Works Council Existence	0.1655*** (0.0224)	0.0862*** (0.0282)	0.0713** (0.0299)	1.989*** (0.402)	1.690*** (0.525)	0.8402* (0.508)
Marginal Effect	0.0649***	0.0336***	0.0264**			
Dummy Variables		Yes	Yes		Yes	Yes
Individual-Level Control Variables			Yes			Yes
N. of Obs.	14994	14994	14994	14994	14994	14994
Pseudo-R ² / R ²	0.003	0.010	0.057	0.002	0.005	0.131

Source: Own calculations from SOEP long V28.1. Note: Standard errors clustered at the individual level in parentheses. Dummy variables: firm size classes, industries, regions and years. Individual level control variables: as in Table A2; Significance levels: * p < 0.10, ** p < 0.05, *** p < 0.01.

When focussing on the control variables (see Table A2 in the Appendix), we note that disabled and female employees as well as employees having a bad health status, working in the public sector or in larger plants (with some exceptions) exhibit a significantly higher absence incidence and duration. Having a partner, children and earning higher wages comes along with a higher incidence of absence, but is not correlated with absence duration. In contrast, age (at a diminishing rate), general good health, satisfaction with current health status, working part time or having a marginal work contract as well as higher job autonomy significantly decreases absence incidence and duration. 13 years of schooling ('Abitur') and, less significantly, having a university degree as well as working as a blue collar worker is negatively correlated with the absence duration while it is insignificant in the incidence model. In general, the estimated coefficients of these control variables are in line with results from the literature on sickness absence that uses SOEP data, such as Goerke and Pannenberg (2012), and Puhani and Sonderhof (2010).¹⁵

Since we control for health status of individuals in specifications (3) and (6), higher values of the absence indicators do not indicate a worse health status, but are likely to depict an improvement of the employees' payoff. Without further information on how profits change,

¹⁵ When including individual trade union membership as covariate into specifications (3) and (6), which has to be imputed for 2006 from the subsequent wave, the estimated coefficients are positive (p-values: incidence 0.199; duration 0.107), while the works councils dummy is basically unaffected for the incidence and marginally insignificant for the number of days (p-value: 0.135). Goerke and Pannenberg (2012) also find a positive correlation between absence behavior and trade union membership in Germany for the late 1990ies.

our findings are hence compatible with both interpretations of works councils, namely as being creators or redistributors of rents.

4.2 Personnel Problems due to High Absence Behaviour

In our sample based on the LIAB, there are 3,784 plants for which managers state that they will face personnel problems due to high absence; 2,129 of those have a works council, while 1,655 do not. Using representative sample weights the plants with a works council only account for 25% of all plants that have personnel problems due to high absence, but cover 65% of all employees in such plants. This can be explained by the oversampling of large plants, which almost always have a works council. Comparing plants with a works council to those without such an institution, personnel problems due to absenteeism exist in only 5.62% of the former, while this number is 10.79% for the latter. An even greater ratio can be observed for the share of employees (8.86% in plants without a works council versus 16.04%).

The results from the pooled Probit estimates are summarised in Table 2. Again, we successively add control variables. Specification (1) only contains the works council status as explanatory variable. The coefficient is highly significant and the marginal effect mirrors the (weighted) raw difference from the descriptive statistics of about six percentage points. In specification (2), we include dummy variables for different firm size classes, industries, regions and years. This reduces the size of the coefficient substantially, but not its significance. However, when successively adding plant-level control variables (specification 3), and covariates gathered from the individual information (specification 4), the coefficient becomes larger again. We find highly significant coefficients and marginal effects that are about half as large as in specification (1). Hence, the indirect effects account for somewhat less than 60% of the total effect ($1-28/67$). The probability that personnel problems due to absenteeism exist is about three percentage points or 25% higher in a plant in which there is a works council. Observation-sensitive control variables are included in specification (6), after a check for sample selection bias in specification (5), where only the variables from the previous specification are applied on the smaller sample of the next specification. The significance of the coefficient does not change when adding all covariates and neither does the size of the marginal effect. Also, there is no indication of sample selection bias.

Table 2: Existence of Personnel Problems due to high Absence and Works Council Existence: Pooled Probit Estimates

	(1)	(2)	(3)	(4)	(5)	(6)
Works Council Existence	0.3609*** (0.0204)	0.0786*** (0.0265)	0.1057*** (0.0293)	0.1740*** (0.0308)	0.1802*** (0.0422)	0.1875*** (0.0426)
Marginal Effect	0.0666***	0.0139**	0.0174***	0.0276***	0.0280***	0.0291***
Dummy Variables		Yes	Yes	Yes	Yes	Yes
Plant-Level Control Variables			Some	Some	Some	All
Individual-Level Control Variables				Yes	Yes	Yes
N. of Obs.	34303	34303	34303	34303	18816	18816
N. of Clusters	19016.00	19016.00	19016.00	19016.00	11065.00	11065.00
Chi ²	313.85	1087.65	2539.57	2810.96	1669.42	1673.55
Pseudo R 2	0.02	0.06	0.12	0.16	0.16	0.16

Source: LIAB QM2 9308 waves 2000, 2004, 2006 and 2008; own calculations (controlled remote data access via FDZ). Note: Standard errors clustered at the plant level in parentheses. Dummy variables: firm size classes, industries, regions and years. Other control variables: as in Table A4; Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

If we interpret more pronounced personnel problems as a fall in the firms' payoff, the above findings suggest that works councils do not create rents via alterations in the employees' absence behaviour. Rather, they seem to redistribute rents.

Turning to control variables (see Table A4 in the appendix) the signs of most of the estimated coefficients are in line with expectations regarding the existence of personnel problems or with the few existent analyses (Pfeifer, 2012, Gralla and Kraft, 2012a). Personal problems due to absenteeism are positively correlated with the churning rate, other human resource management problems, tenure, and the shares of female, foreign, blue collar and part-time employees, while they are negatively correlated with firm age, foreign ownership, a high wage cushion, modern technical assets, the shares of flexible and skilled employees and apprentices, as well as with the share of wages at the social security contribution limit and a positive employment outlook.

5. Robustness Checks, Effect Heterogeneity and Causal Inference

Having established a positive correlation between the existence of a works council and various indicators of absenteeism, the objective of this section is threefold: First, we aim to

establish the robustness of the results reported in Section 4 with regard to data issues, more narrowly defined samples, and the empirical method employed for the analysis of the number of absence days (Section 5.1). Second, we desire to find out whether the correlation between works councils and absence indicators varies across subgroups (Section 5.2). In particular, we distinguish between Eastern and Western Germany and differentiate according to gender. Finally, we focus on individuals and plants which change their 'works council status', in order to assess whether the positive correlation between works councils and absenteeism can also be interpreted causally (Section 5.3). The main results for the models presented in Section 5.1 and 5.2 are summarised in Table A5.

5.1 Sample Specification and Empirical Issues

Following the literature on the economic effects of works councils, we look at subsamples of medium-sized plants with 20 to 200 employees to avoid extrapolation between small firms that usually do not have and large firms that usually have a works council. The significant and positive relationship between works councils and absenteeism is affirmed in these subsamples with respect to the incidence measure, which becomes more pronounced with a difference of 3.3 percentage points, as well as for personnel problems (marginal effect of 3.1 percentage points). In contrast, the estimated coefficient of the works council dummy turns insignificant in a subsample of medium-sized plants when looking at the annual duration of absence. In order to reduce the likelihood that we include observations from the public administration, we look at samples with a more narrowly defined private sector.¹⁶ Once again, the results hold in these subsamples with respect to sickness incidence and personnel problems.

For the SOEP data we can undertake additional robustness checks. First, when only including observations for which the control variables are measured in the same calendar year as the absence behaviour (exact timing), the works council coefficients become larger in the incidence and the duration model, while the significance level rises for the latter (p-value: 0.02).

Second, we re-examine more closely the results for the annual duration of absence. Since the number of sickness absence days has a count data structure, according models could be considered (see Cameron and Trivedi 1998). Applying a negative binomial model

¹⁶ In the SOEP we exclude the employees claiming to work in the somewhat vaguely defined 'public sector'. In the LIAB data, we identify the public sector (apart from the industry classifications) using information on whether at least one public servant ('Beamter') works in the plant, whether it is publicly owned, whether the budget volume is stated instead of turnover, and whether the legal form of the plant is a public corporation.

corroborates the results from the OLS model, since we observe a significant difference between employees who work in a plant in which a works council exists and those in a plant without a works council amounting to 0.8 days (p-value 0.064). In order to take into account the excess number of zeros (i. e. the absence of absence days), we additionally estimate a zero inflated negative binomial model (ZINB). Here the combined effect turns marginally insignificant (p-value 0.115). With a highly significant coefficient in the inflate part and an insignificant coefficient in the count part of the model, our results support the general picture that the impact of works councils on absence behaviour is much stronger at the extensive than at the intensive margin.

Finally, we look at the absence day model and exclude employees who are long-term ill, since their sick pay is financed by the mandatory health insurance. The magnitude of the estimated coefficient drops by about 50%, relative to the sample which includes the long-term ill, while being significant at the ten per cent level. Hence, the works council effect on sickness duration is not qualitatively driven by the long term absent employees, albeit having a strong impact on the effect size.

5.2 Group-specific Effect Heterogeneity

In this section we look at subgroups of plants or employees, in or for which works councils may play a different role. Specifically, we look separately at Eastern and Western Germany, since the WCA has a long tradition in Western Germany since 1952 and only became applicable to the eastern part of the country after re-unification (in 1990). For both dimensions of absence behaviour – incidence and duration – we find quantitatively stronger effects in the Western German subsample. In contrast, for Eastern Germany the estimated coefficients of interest are insignificant. As regards personnel problems due to absenteeism the size of the effect in Eastern Germany is only half the size as in Western Germany but still significant at the five per cent level.

For personnel problems we can also distinguish in the wave 2006 between works councils that are characterized by the management of the respective plant as either hostile or pragmatic on the one hand or as management-friendly on the other hand. We find that the effects on personnel problems due to absenteeism are more pronounced and larger for hostile or pragmatic works councils, while they are insignificant for management-friendly councils, which is in line with the cited studies (e.g. Pfeifer, 2011).

Gender differences in absence behaviour are well documented (Leigh 1983, Vistnes 1997). Therefore, we look at male and female subsamples (SOEP) and at the interaction of the works council variable with the share of female workers in a plant (LIAB). The works council effect on sickness absence incidence seems to be driven by the behaviour of females. In the SOEP we only observe significant estimated coefficients in the female subsample, and the effects are also larger in size than in the male subsample. As regards the absence duration the estimated coefficients are slightly larger in the male than in the female subsample, but do not reach significance in neither of the two subsamples. In the LIAB, however, an increased share of female employees reduces the marginal effect of the works council variable (by 0.14 percentage points for every 10% higher shares of female employees).

Consequently, works councils appear to redistribute rents via adjustments in absenteeism foremost in West Germany. For females, the picture is unclear, with increased absence incidence, but less severe consequences on the plant level.

5.3 Causal Inferences

In order to infer causal relationships between works councils and absence behaviour and ensuing personnel problems we subsequently present the findings from difference-in-differences models. The main results are summarised in Table 3. Regarding sickness absence behaviour we do not find significant results in the full sample. Yet, the estimated coefficient is at the edge of significance in the subsample including only employees from Western Germany with respect to the incidence of absence (p-value 0.11). Here we end up with 1,657 observations from 765 individuals of which 644 belong to the control and 121 to the treatment group. When looking only at the group of ‘movers’ who switch from a plant without a works council to one with such an institution, we find a positive and significant works council effect for the incidence amounting to twelve percentage points.¹⁷ However, the estimated coefficient for the works council dummy in the DiD specification with regard to the duration of absence is not significantly different from zero. Lastly, with respect to personnel problems due to absenteeism we do not find any significant treatment effect of works councils in the DiD models.¹⁸ Instead, there is a significant treatment group effect, suggesting that employees in

¹⁷ The mover sample consists of 335 individuals with 241 (94) belong to the control (treatment) group.

¹⁸ All the DiD results remain basically the same when additionally including observations that are covered by a works council throughout the panel. In order to do so, we include a third dummy variable which indicates the existence of a works council throughout the entire observation period (cf. Gralla and Kraft 2012b). Due to the bigger and more representative sample the coefficient of interest turns significant in the Western subsample for incidence (p-value 0.087) and amounts to an effect of 7.8 percentage points. All the other results are qualitatively unchanged. Regression results are available upon request.

plants with existing personal problems due to high absence press for works council introduction. In sum, we obtain some evidence that the incidence of illness-related absence is not only correlated with but caused by the existence of a works council, at least in the western part of Germany. As regards the consequences for firm performance, we find weak evidence that the effect of works councils is not causal, but caused by selectivity.

Table 3: Causal Inference in Western Germany for Sickness Absence Behaviour and Personnel Problems due to Absenteeism (Difference-in-Differences)

	DiD (West)			DiD (West Mover)		
	Incidence	Duration	Personnel Probl.	Incidence	Duration	
Works Council Status	0.209# (0.131)	-1.66 (2.83)	-0.020 (0.137)	0.349* (0.197)	1.41 (1.93)	
Marginal Effect	0.076 (0.046)		-0.003 (0.019)	0.076 (0.046)		
Treatment Group	0.055 (0.110)	4.1* (2.44)	0.230** (0.103)	-0.115 (0.153)	0.836 (2.43)	
N	1,657	1,657	12,393	718	718	
Pseudo-R ² / R ²	0.083	0.097	0.164	0.100	0.114	

Source (Incidence and Duration): SOEP long V28.1; own calculations. Note: Standard errors clustered on the individual level. All estimated coefficients rely on control variables used in Table A2.

Source (Personnel Problems): LIAB QM2 9308 waves 2000, 2004, 2006 and 2008; own calculations (controlled remote data access via FDZ). Note: All estimated coefficients rely on control variables used in specification (4) from Table A4; Standard errors clustered at the plant level in parentheses.

Significance levels: # $p < 0.15$, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

6. Summary

We have identified a gap in the literature on the economic effects of plant-level codetermination, namely the impact of works councils on illness-related absence and its consequences for plants. Using individual and linked employer-employee data we find that employees working in a plant with a works council are more than two and a half percentage points more likely to be absent and miss almost one day per year more than those working in an establishment without such an institution. Furthermore, the probability of personnel problems due to absenteeism is approximately three percentage points higher in plants in which a works council exists. These results are quantitatively sizeable and can be obtained for various subsamples. Moreover, we obtain some evidence for the Western part of the country that the existence of a works council in a plant is indeed the cause of a higher incidence of absence.

Our findings can shed light on new and so far in the literature ignored ways through which works councils can redistribute rents or help to enhance overall efficiency. The results we obtain from using a combination of household and plant data are consistent with a redistributive impact that works councils exert via a change in the absence behaviour of employees. The findings do not support the view that works council play an efficiency-enhancing role as long as higher absenteeism and more pronounced personal problems do not indicate rent-creating activities. When interpreting the overall impact of works councils on rents – re-distribution versus creation – one has to acknowledge that it consists of the effects on the various components of rents, of which absenteeism and resulting personnel problems are but one element. Accordingly, the relative contribution of absence behaviour to the total effect of works councils certainly is a topic worth looking at more closely in future research. Moreover, our data does not allow us to determine why the effects are most pronounced for Western Germany and for females. The resulting question of whether the rent-creating and rent-distributing activities of works councils differ across subgroups of employees represents an exciting issue for impending work.

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Table A1: Descriptive Statistics (SOEP)

Variable	Mean	Standard deviation	Min.	Max.
Sickness Absence (Incidence)	0.57	0.49	0	1
Sickness Absence (Days)	9.36	23.83	0	365
Works Council	0.62	0.48	0	1
Age	41.20	10.88	18	65
Disabled	0.06	0.24	0	1
Female	0.43	0.50	0	1
Foreigner	0.09	0.29	0	1
Married	0.60	0.49	0	1
Partner	0.22	0.41	0	1
Immigrant	0.18	0.38	0	1
Bad Health	0.10	0.30	0	1
Good Health	0.59	0.49	0	1
Apprentice Certificate	0.73	0.44	0	1
'Abitur'	0.25	0.43	0	1
University Degree	0.18	0.39	0	1
Children	0.31	0.46	0	1
Satisfaction with Health	2.78	0.98	0	4
Log Gross Monthly Income	7.61	0.70	3.477	11.47
Part Time	0.17	0.38	0	1
Temporary Contract	0.11	0.31	0	1
Apprentice	0.04	0.20	0	1
Marginally Employed	0.03	0.16	0	1
Autonomy in Job	2.50	1.15	0	5
Blue Collar Worker	0.36	0.48	0	1
Public Sector	0.19	0.39	0	1
5-20 Employees	0.18	0.38	0	1
20-100 Employees	0.22	0.41	0	1
100-200 Employees	0.11	0.31	0	1
200-2000 Employees	0.26	0.44	0	1
>2000 Employees	0.24	0.43	0	1
Tenure (<1 Year)	0.10	0.30	0	1
Tenure (1-3 Years)	0.16	0.37	0	1
Tenure (3-5 Years)	0.12	0.32	0	1
Tenure (5-10 Years)	0.21	0.41	0	1
Tenure (10-15 Years)	0.14	0.35	0	1
Tenure (15-20 Years)	0.10	0.30	0	1
Tenure (>20 Years)	0.17	0.38	0	1
Unempl. Rate in Fed. State	9.47	4.1	3.8	19.7

Note: Each variable has 14,994 observations from 10,721 individuals in 2001, 2006 and 2011
Source: Own Calculations from SOEP long v 28. Survey weights are used.

Table A2: Pooled Sickness absence estimation (SOEP)

	Sickness Incidence		Sickness days	
	Probit		OLS	
	Coeff.	SE	Coeff.	SE
Works Council	0.07**	0.03	0.84*	0.50
Age	-0.04***	0.01	-0.28*	0.16
Age ²	0.00***	0.00	0.00*	0.00
Disabled	0.33***	0.06	9.95***	1.76
Female	0.22***	0.03	1.37***	0.52
Foreigner	0.06	0.05	1.27	0.92
Married	0.04	0.04	0.64	0.65
Partner	0.10***	0.03	0.70	0.61
Immigrant	-0.04	0.04	-0.02	0.67
Bad Health	0.29***	0.05	13.85***	1.47
Good Health	-0.18***	0.03	-2.18***	0.39
Apprentice Certificate	0.00	0.03	0.01	0.53
'Abitur'	0.03	0.03	-1.45***	0.49
University Degree	-0.04	0.04	-1.07*	0.58
Children	0.08**	0.03	0.14	0.58
Children*Female	-0.04	0.05	0.41	0.83
Satisfaction with Health 0	(base)		(base)	
Satisfaction with Health 1	-0.02	0.09	-23.7***	4.35
Satisfaction with Health 2	-0.08	0.09	-24.1***	4.22
Satisfaction with Health 3	-0.19**	0.09	-26.0***	4.15
Satisfaction with Health 4	-0.40***	0.09	-26.7***	4.14
Log Gross Monthly Income	0.15***	0.03	-0.55	0.54
Part Time	-0.09**	0.04	-2.27***	0.75
Temporary Contract	-0.02	0.05	-1.17	0.72
Apprentice	0.09	0.09	-0.32	1.32
Marginally Employed	-0.70***	0.09	-9.39***	1.2
Autonomy in Job	-0.09***	0.02	-0.69**	0.32
Blue Collar Worker	-0.01	0.04	1.22*	0.66
Public Sector	0.12***	0.03	2.09***	0.58
5-20 Employees	(base)		(base)	
20-100 Employees	0.07*	0.04	1.39**	0.59
100-200 Employees	0.01	0.05	0.61	0.74
200-2000 Employees	0.10**	0.04	0.99	0.66
>2000 Employees	0.11***	0.04	2.11***	0.73
Tenure (<1 Year)	(base)		(base)	
Tenure (1-3 Years)	0.07	0.04	0.14	0.72
Tenure (3-5 Years)	0.08	0.05	0.12	0.82
Tenure (5-10 Years)	0.05	0.05	-0.25	0.77
Tenure (10-15 Years)	0.06	0.04	-0.68	0.83
Tenure (15-20 Years)	-0.03	0.05	-0.11	0.93
Tenure (>20 Years)	-0.01	0.05	0.80	1.01
Unemployment Rate in Fed. State	-0.01	0.01	-0.17	0.23
Regional Dummies	Yes		Yes	
Industry Dummies	Yes		Yes	
Year Dummies	Yes		Yes	
N	14,994		14,994	
n	10,721		10,721	
Pseudo-R ² / R ²	0.0565		0.1312	

Constant included but not shown. SE: Standard Errors clustered on the individual level. Significance levels: *** (0.01); ** (0.05); * (0.10). Source: Own calculations from SOEP long V28.1.

Table A3: Descriptive Statistics (LIAB)

Variable	Mean	Std. Dev.	Min	Max
Personnel Problems due to high Absence	0.13	0.33	0	1
Sum of Personnel Problems due to High Absence	0.31	0.65	0	4
Works Council	0.51	0.50	0	1
Type of Works Council (1 Cooperative 0 Management-friendly)	0.24	0.51	0	1
Always Works Council	0.47	0.50	0	1
Introduction of a Works Council	0.01	0.08	0	1
Ever Introduced a Works Council	0.04	0.19	0	1
Abolishment of Works Council	0.01	0.08	0	1
Ever Abolished a Works Council	0.05	0.21	0	1
Collective Bargaining Agreement (CBA)	0.58	0.49	0	1
Share of Female Employees	0.44	0.29	0	1
Share of Foreign Employees	0.07	0.10	0	1
Tenure Dummies (1-2, 3-5, 5-10, 10-15, 15-20, 20+)				
Mean Employee Age	40.51	4.61	19.01	60.14
Std. Dev Employee Age	10.77	1.93	0.95	20.03
Share of Non-Social Security Employees	0.14	0.18	0	1
Share of Apprentices	0.05	0.09	0	1
Share of Skilled Employees	0.59	0.26	0	1
Share of High-Skilled Employees	0.09	0.15	0	1
Share of Blue Collar Workers	0.35	0.31	0	1
Share of Part-Time Employees	0.25	0.25	0	1
Mean of Gross Daily Wages	72.05	31.81	2.53	172.21
Employees at Social Security Contribution Limit	0.06	0.11	0	0.92
Orientation to a CBA	0.18	0.38	0	1
Plants with a Wage Cushion	0.33	0.47	0	1
Share of Vacancies	0.02	0.05	0	1
Share of Temporary Workers	0.06	0.13	0	1
Churning Rate	0.05	0.17	0	13.01
Investment Activity	0.77	0.42	0	1
Modern Technical Assets	0.73	0.44	0	1
Firm Age (in Years up to 1990)	16.66	5.73	0	20
New Firm (after 1990)	0.27	0.45	0	1
Public Ownership	0.07	0.26	0	1
Foreign Ownership	0.08	0.27	0	1
Single Firm	0.59	0.49	0	1
Limited Firm (1 Limited Firm 2 Public Corporation)	0.96	0.58	0	2
Sum of all Personnel Problems	1.56	1.34	0	9
Standard Weekly Working Time*	38.55	2.29	4	66
Log. of Total Investments*	9.91	5.75	0	21.08
Share of Expansion Investments*	0.23	0.33	0	1
Share of Exports*	0.14	0.26	0	1
Firm-Sponsored Training*	0.77	0.42	0	1
Overtime Dummy*	0.77	0.42	0	1

Rising Turnover Outlook*	0.34	0.47	0	1
Rising Employment Outlook*	0.19	0.39	0	1
Performance Related Pay Exists*	0.28	0.45	0	1
Regional Unemployment Rate	9.89	4.51	1.64	31.33
Region Dummy Variables (10 Regions in Germany)				
Industry Classification (~Nace-1; 9 Industries)				
Firm Size Dummies (<20, 20-99, 100-199, 200-1999, 2000+)				
Year Dummies				

Source: LIAB QM2 9308, Waves 2000, 2004, 2006, 2008, own calculations using remote-controlled data access (FDZ). Note: 34,303 observations in 19,016 plants; * 18,816 observations in 11,065 plants; Means and standard deviations weighted by employee-representative weights.

Table A4: Existence of Personnel Problems due to Absenteeism and Works Council
Existence: Pooled Probit Estimates, Full Table

	(1)	(2)	(3)	(4)	(5)	(6)
Works Council	0.3609*** (0.0204)	0.0786*** (0.0265)	0.1057*** (0.0293)	0.1740*** (0.0308)	0.1802*** (0.0422)	0.1875*** (0.0426)
Collective Bargaining Agreement			0.0986*** (0.0327)	0.0037 (0.0338)	-0.0026 (0.0454)	0.0032 (0.0457)
Firm-Level Contract			0.0924** (0.0443)	0.0128 (0.0453)	-0.0543 (0.0613)	-0.0478 (0.0615)
Orientation to a CBA			0.0293 (0.0339)	-0.0095 (0.0345)	-0.0081 (0.0462)	-0.0035 (0.0462)
Share of Vacancies			-0.1259 (0.1860)	-0.1360 (0.1901)	-0.5327* (0.2799)	-0.3821 (0.2822)
Share of Temp Workers			0.1092 (0.0760)	0.0294 (0.0819)	-0.0404 (0.1355)	-0.0431 (0.1351)
Churning Rate			0.2131*** (0.0705)	0.1321** (0.0608)	0.1669* (0.0873)	0.1673* (0.0871)
Single Firm			-0.0001 (0.0239)	-0.0336 (0.0244)	-0.0062 (0.0342)	-0.0126 (0.0345)
Investment Activity			0.0261 (0.0252)	0.0699*** (0.0258)	0.0256 (0.0356)	0.1511 (0.1170)
New Firm (after 1990)			-0.0868* (0.0522)	-0.0960* (0.0552)	-0.1581** (0.0738)	-0.1540** (0.0738)
Firm Age (up to 1990)			-0.0126*** (0.0038)	-0.0131*** (0.0043)	-0.0181*** (0.0060)	-0.0181*** (0.0060)
Public Ownership			-0.0012 (0.0462)	0.0724 (0.0462)	0.2477*** (0.0848)	0.2442*** (0.0853)
Foreign Ownership			-0.1385*** (0.0426)	-0.0691 (0.0449)	-0.0994* (0.0580)	-0.1062* (0.0584)
Limited Firm			-0.0196 (0.0230)	0.0120 (0.0241)	0.0960*** (0.0355)	0.0963*** (0.0355)
Multiple Personnel Problems			0.2742*** (0.0075)	0.2748*** (0.0077)	0.2792*** (0.0104)	0.2810*** (0.0104)
Wage Cushion			-0.5465*** (0.1876)	-0.4468** (0.1962)	-0.5761** (0.2565)	-0.5406** (0.2554)
Modern Technical Assets			-0.1206*** (0.0223)	-0.0800*** (0.0227)	-0.0912*** (0.0311)	-0.0853*** (0.0312)
Share of Female Employees				0.2394*** (0.0636)	0.2267*** (0.0861)	0.2367*** (0.0863)
Share of Foreign Employees				0.8127*** (0.1114)	0.7791*** (0.1514)	0.7799*** (0.1519)
Share of Emp. with Tenure 1-3 Years				0.1699 (0.1146)	0.1688 (0.1639)	0.1721 (0.1638)
Share of Emp. with Tenure 3-5 Years				0.3278*** (0.1179)	0.3677** (0.1640)	0.3664** (0.1646)

Share of Emp. with Tenure 5-10 Years	0.3075*** (0.1078)	0.2729* (0.1469)	0.2715* (0.1477)
Share of Emp. with Tenure 10-15 Years	0.3380*** (0.1246)	0.2814* (0.1692)	0.2861* (0.1701)
Share of Emp. with Tenure 15-20 Years	0.2890** (0.1459)	0.3457* (0.1916)	0.3552* (0.1922)
Share of Emp. with Tenure over 20 Years	0.0434 (0.1634)	-0.0329 (0.2163)	-0.0311 (0.2186)
Mean Employee Age	0.0020 (0.0031)	-0.0059 (0.0043)	-0.0073* (0.0043)
Std. Dev. Employee Age	-0.0025 (0.0061)	0.0122 (0.0085)	0.0130 (0.0086)
Share of non-Social Security Employees	-0.5189*** (0.1155)	-0.5677*** (0.1608)	-0.5443*** (0.1621)
Share of Trainees	-0.2948* (0.1783)	-0.5702** (0.2694)	-0.5833** (0.2699)
Share of Qualification: Skilled	-0.1232*** (0.0463)	-0.1309** (0.0631)	-0.1310** (0.0631)
Share of Qualification: High-Skilled	-1.0524*** (0.1402)	-1.2657*** (0.2378)	-1.2438*** (0.2367)
Share of Blue Collar Worker	0.5584*** (0.0707)	0.5239*** (0.0948)	0.5180*** (0.0950)
Share of Part-Time Employees	0.3051*** (0.0862)	0.3386*** (0.1262)	0.3362*** (0.1268)
Mean of Gross Daily Wages	-0.0001 (0.0011)	0.0003 (0.0015)	0.0008 (0.0015)
Employees at Social Security Contribution Limit	-1.6371*** (0.2825)	-1.4538*** (0.3961)	-1.4478*** (0.3951)
Log. of Total Investments			-0.0111 (0.0100)
Standard Weekly Working Time			0.0088 (0.0075)
Share of Exports			0.0565 (0.0717)
Share of Expansion Investments			0.0100 (0.0435)
Firm-Sponsored Training			-0.0248 (0.0363)
Overtime Dummy			0.0516 (0.0373)
Rising Turnover			-0.0033 (0.0321)
Rising Employment			-0.0846** (0.0408)

Performance Related Pay Exists						-0.0514 (0.0355)
Regional Unemployment	-0.0007 (0.0041)	0.0011 (0.0041)	-0.0018 (0.0057)	-0.0018 (0.0057)		-0.0021 (0.0039)
Dummy Variables	Yes	Yes	Yes	Yes	Yes	Yes
Constant	-1.3949*** (0.0141)	-1.5021*** (0.0529)	-1.6770*** (0.1002)	-2.2778*** (0.2140)	-2.0257*** (0.3000)	-2.3817*** (0.4205)
N. of Obs.	34303	34303	34303	34303	18816	18816
N. of Clusters	19016.00	19016.00	19016.00	19016.00	11065.00	11065.00
Chi ²	313.85	1087.65	2539.57	2810.96	1669.42	1673.55
Aikaike Criterion	23345.28	22396.32	20856.92	20091.11	10886.13	10891.09

Source: LIAB QM2 9308 waves 2000, 2004, 2006 and 2008; own calculations (controlled remote data access via FDZ). Note: Standard errors clustered at the plant level in parentheses. Dummy variables: firm size classes, industries, regions and years. Other control variables: as in Table A3. Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A5: Overview of Robustness Checks and Effect Heterogeneity

	20-200 employees			Private Sector		
	Incidence	Duration	Personnel Probl.	Incidence	Duration	Personnel Probl.
Works Council Status	0.089** (0.042)	0.498 (0.706)	0.198*** (0.037)	0.084*** (0.033)	0.787 (0.549)	0.180*** (0.035)
Marginal Effect	0.033** (0.155)		0.034*** (0.01)	0.031*** (0.012)		0.028*** (0.005)
N	4,852	4,852	22,597	12,079	12,079	28,092
	Exact Timing			NegBin	ZINB	Non-longterm ill
	Incidence	Duration		Duration	Duration	Duration
Works Council Status	0.084** (0.035)	1.26** (0.539)		0.087* (0.047)	0.034 (0.046)	0.403* (0.217)
WCS (Inflate equation)					-0.124** (0.057)	
Marginal Effect	0.031** (0.013)			0.813* (0.438)	0.665# (0.421)	
N	11,639	11,639		14,994	14,994	12,655
	West-Germany			East-Germany		
	Incidence	Duration	Personnel Probl.	Incidence	Duration	Personnel Probl.
Works Council Status	0.112*** (0.034)	0.982* (0.571)	0.198*** (0.037)	-0.044 (0.062)	0.504 (1.066)	0.119** (0.057)
Marginal Effect	0.041*** (0.126)		0.034*** (0.006)	-0.016 (0.023)		0.016** (0.007)
N	11,639	11,639	22,597	3,355	3,355	11,706
	Friendly WC	Non-friendly WC				
	Personnel. Probl.	Personnel. Probl.				
Works Council Status	0.102 (0.082)	0.336*** (0.064)				
Marginal Effect	0.013 (0.011)	0.049*** (0.010)				
N	8,645	8,645				
	Females		Males		Share of Females	
	Incidence	Duration	Incidence	Duration	Personnel. Probl.	
Works Council Status	0.094** (0.044)	0.787 (0.695)	0.043 (0.041)	0.873 (0.725)	0.2324*** (0.0452)	
Marginal Effect	0.034** (0.016)		0.016 (0.015)			
Share of Female Employees					0.2880*** (0.0683)	
Interaction Effect					-0.1392* (0.0788)	
N	6,654	6,654	8,340	8,340	34,303	

Source (Incidence and Duration): SOEP long V28.1; own calculations. Note: Standard errors clustered on the individual level. All estimated coefficients rely on control variables used in Table A2.

Source (Personnel Problems): LIAB QM2 9308 waves 2000, 2004, 2006 and 2008 (2006 only for works council type); own calculations (controlled remote data access via FDZ). Note: All estimated coefficients rely on control variables used in specification (4) from Table A4; Standard errors clustered at the plant level in parentheses, where possible. Else: robust standard errors.

Significance levels: # $p < 0.15$, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.