IAW DISCUSSION PAPERS

iaw@iaw.edu | www.iaw.edu

IAW Diskussionspapiere Nr. 107 August 2014 | No. 107 August 2014

Sickness Absence and Works Councils

Evidence from German Individual and Linked Employer-Employee Data

Daniel Arnold
Tobias Brändle
Laszlo Goerke

Institut für Angewandte Wirtschaftsforschung e.V.
Ob dem Himmelreich 1 | 72074 Tübingen | Germany
Tel.: +49 7071 98960 | Fax: +49 7071 989699

ISSN: 1617-5654

IAW-Diskussionspapiere

Das Institut für Angewandte Wirtschaftsforschung (IAW) Tübingen ist ein unabhängiges außeruniversitäres Forschungsinstitut, das am 17. Juli 1957 auf Initiative von Professor Dr. Hans Peter gegründet wurde. Es hat die Aufgabe, Forschungsergebnisse aus dem Gebiet der Wirtschafts- und Sozialwissenschaften auf Fragen der Wirtschaft anzuwenden. Die Tätigkeit des Instituts konzentriert sich auf empirische Wirtschaftsforschung und Politikberatung.

Dieses IAW-Diskussionspapier können Sie auch von der IAW-Website als pdf-Datei herunterladen:

http://www.iaw.edu/index.php/IAW-Diskussionspapiere

ISSN 1617-5654

Weitere Publikationen des IAW:

- IAW News (erscheinen 4x jährlich)
- IAW Impulse
- IAW Forschungsberichte

Möchten Sie regelmäßig eine unserer Publikationen erhalten? Dann wenden Sie sich bitte an uns:

IAW e.V. Tübingen, Ob dem Himmelreich 1, 72074 Tübingen,
Telefon +49 7071 98 96-0
Fax +49 7071 98 96-99
E-Mail: iaw@iaw.edu

Aktuelle Informationen finden Sie auch im Internet unter:

http://www.iaw.edu

Sickness Absence and Works Councils *

Evidence from German Individual and Linked Employer-Employee Data

Daniel Arnold

IAAEU - University Trier
Campus II, D – 54286 Trier, Germany
E-mail: arnold(at)iaaeu.de

Tobias Brändle

IAW at University of Tübingen
Ob dem Himmelreich 1, D – 72074 Tübingen, Germany
E-mail: tobias.braendle(at)iaw.edu

Laszlo Goerke

IAAEU - University Trier,[+] IZA Bonn, and CESifo München
[+] Campus II, D – 54286 Trier, Germany
E-mail: goerke(at)iaaeu.de

This version: August 25, 2014

Abstract

Using both household and linked employer-employee data for Germany, we assess the effects of non-union representation in the form of works councils on (1) individual sickness absence rates and (2) a subjective measure of personnel problems due to sickness absence as perceived by a firm's management. We find that the existence of a works council is positively correlated with the incidence and the annual duration of absence. We observe a more pronounced correlation in western Germany which can also be interpreted causally. Further, personnel problems due to absence are more likely to occur in plants with a works council.

JEL Classification: J53, I18, M54

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

* We are grateful for helpful comments on previous versions of this paper by Martin Behrens, Thomas Beissinger, Adrian Chadi, Christian Grund, Boris Hirsch, Thomas Leoni, Jens Mohrenweiser, Steffen Mueller, Markus Pannenberg, Christian Pfeifer, Nadine Riedel, Claus Schnabel and Nicolas Ziebarth, as well as participants of the 'THE' Workshop in Hohenheim, the 16th Colloquium on Personnel Economics in Tübingen, the annual conferences of the Verein für Socialpolitik (VfS) in Düsseldorf, the German Academic Association for Business Research (VHB) in Leipzig, the European Society for Population Economics (ESPE) in Åarhus, European Association of Labour Economists (EALE) in Torino, and the World Congress of the International Economic Association (IEA), Dead Sea (Jordan). This study uses the Cross-sectional model of the Linked Employer-Employee Data from the IAB (LIAB) (Version QM2 0310, years 2000-2010). We thank the employees of the Research Data Centre (FDZ) of the German Federal Employment Agency (BA) at the Institute for Employment Research (IAB) for being able to access the data by remote data access.

1. Introduction

In Germany, non-union workforce representation by works councils is widespread. Works councils have wide-ranging information, consultation and codetermination rights and their effects on wages, productivity, employment and profitability have been studied intensively. In contrast, the relationship between works councils and sickness-related absence has not been thoroughly considered. This is surprising because absence in Germany is relatively high in international comparison (OECD 2007, p. 95) and causes substantial output losses. Furthermore, works councils have considerable impact on the determinants of sickness-related absence and on the means available to firms to respond to such employee behaviour. The direction of the impact is, however, ambiguous. On the one hand, works councils may prevent firms from monitoring absence behaviour and from imposing sanctions for illness-related absence. In this case, they are likely to increase absence. On the other hand, works councils can act as the employees' voice and help to improve working conditions and productivity. In this latter case, they presumably reduce absence.

Besides a study considering the specific case of apprentices, there is – to the best of our knowledge – no general investigation of the relationship between works councils and absence for Germany. More specifically, Pfeifer (2014a) combines firm data for 2007 from the Federal Institute for Vocational Education and Training with administrative employee data. He finds absence rates to be lower in the presence of a works council for apprentices, i.e. a subgroup of mostly very young employees who have fixed-term contracts. Moreover, they are subject to different legal regulations than regular employees. Therefore, and because of the specific role works councils play in the German apprenticeship system, Pfeifer's findings cannot easily be generalised. Furthermore, some analyses focussing on related issues suggest a positive relationship between works councils and absence of employees. Ziebarth and Karlsson (2014) use data from the German Socio-Economic Panel to investigate the effects of an increase in statutory sick pay in 1999. They show in one robustness check that employees working in firms without a works council in 2001 were absent for fewer days between 1997 and 2000. Pfeifer (2014b) focusses on various aspects of human resource management using data from the Institute for Employment Research Establishment Panel for the year 2006. One of the relevant questions relates to work absence. He finds the existence of a works council to be positively correlated with expected absence problems. Moreover, Heywood and Jirjahn (2004) use firm-level data from the 1996 wave of the Hannover Firm Panel to investigate the relationship between teamwork and absence. They show that the existence of a works council

is positively associated with a firm's absence rate. Finally, Berger et al. (2011) employ a dataset of 305 firms from 2006 to analyse the impact of incentive schemes on cooperation among employees. They show that the average number of missed work days is higher in firms with a works council.

In Germany, collective bargaining mainly takes place at the industry level. Therefore, the plant-level representation of employees heavily rests on the shoulders of works councils. Our analysis is, hence, also related to contributions which indicate a positive relationship between firm-level collective bargaining and absence for Spain (García-Serrano and Malo 2009), Canada (Dionne and Dostie 2007), and the United States (Allen 1981, 1984; Leigh 1981, 1985). In partial contrast, centralised collective bargaining seems to have no impact on sickness absence in Britain (Heywood et al. 2008) and Germany (Heywood and Jirjahn 2004), and union density does not appear to affect absence rates in Norway (Mastekaasa 2013).

In sum, the literature suggests a positive impact of employee representation at the plant level on absence. However, a systematic investigation of works councils and absence behaviour and of its consequences for firms is not available. Hence, in this paper we, first of all, use the German Socio-Economic Panel (SOEP) to investigate the effects of the presence of a works council on individual absence behaviour. 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 three and a half percentage points more likely to be absent at least one day in a given calendar year than an otherwise similar employee who is not represented by a council. The corresponding difference in the annual duration of absence amounts to more than one day. These effects are quantitatively sizeable, given an average incidence (duration) of about 58% (9 days). Using a difference-in-differences approach, we obtain evidence which is compatible with a causal interpretation of the positive correlation for western Germany. Second, we use linked employer-employee data (LIAB). We exploit a unique variable which is derived from questions directed at plant managers or high-ranking personnel staff, inquiring whether they expect personnel problems due to high absence rates. We show that the existence of a works council is associated with an increase in the likelihood of such problems by about three percentage points. This is also an economically sizeable impact, given an average probability of 12%.

The remainder of the paper develops as follows. Section 2 outlines the institutional set-up and its consequences for absence behaviour, while Section 3 provides detailed descriptions of the data and the econometric methodology. In Section 4 we present and discuss our main results. Section 5 reports various robustness checks, subsample-specific effects and results from a difference-in-differences approach. Finally, Section 6 summarises.

2. Institutional Set-up

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; WCA) explicitly removes from their realm (see, e.g., Addison et al. 2010). Consequently, we take a wider perspective in the last part of this section.

2.1 The Legal Setting

The German system of industrial relations is characterised by a dual structure: Collective bargaining, mainly at the industry level, determines wages and overall working conditions, while works councils constitute a codetermination body at the plant level (see Addison 2009). The WCA establishes information, consultation and codetermination rights, which become more extensive the larger the firm. Although the law states that works councils are to be set up in private sector plants with at least five permanent employees, in 2011 (2001) they existed only in about 10% (12%) of eligible plants, which employed 44% (50%) of the eligible employees in western Germany and 36% (41%) in the eastern part of the country. Since their incidence rises along with firm size, about 90% of plants with a workforce exceeding 500 persons have a works council (Ellguth and Kohaut 2012).

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, so that trade unions can only affect them directly by getting their members elected as councillors. In recent years, this type of influence has declined, since union membership of works councillors has fallen to below 60% (Goerke and Pannenberg 2007, Behrens 2009).

The rights of works councils as detailed in the WCA are more extensive with regard to personnel policy and social affairs and less pronounced with respect to financial and

economic aspects. As a general entitlement, the management has to provide the council with the information it needs to perform its legal duties. 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); for example, the works council has to consent to all job-to-job transfers of employees within an establishment. 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 health and safety regulations. Note, finally, that works councils are explicitly forbidden to organise strikes (WCA § 74(2)) and to negotiate over issues commonly dealt with in collective bargaining, unless explicitly allowed to do so in the respective contract. This restriction contained in WCA § 77(3) is most relevant with respect to wages.

The most important regulations concerning illness-related absence result from the Continued Remuneration Act ('Entgeltfortzahlungsgesetz'). During the period relevant for our analysis, this law obliged employers to pay absent workers their full wage for the first six weeks of sickness if they have been employed for more than four weeks. Employees who are continuously absent for more than six weeks (referred to as ‘long-term ill’) receive 70% of their gross or, at most, 90% of their net 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 have to present their employer with a doctor’s certificate that confirms the temporary inability to attend work 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, a number of provisions pertaining to personnel policy can have an impact. § 87 WCA, for example, furnishes 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 have an impact on the causes of sickness absence 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, thus making them more costly.

Moving beyond the WCA, dismissals in firms with fewer than ten employees are subject to general civil law. However, larger firms are additionally subject to the Protection Against Dismissal Act (PADA). It establishes illness to be one valid justification for an individual's dismissal (PADA § 1(2)). Furthermore, a works council's objection to a dismissal creates additional rights for dismissed employees if the PADA is applicable. Accordingly, a works council can severely restrict a firm's possibilities to terminate employment contracts.[1] This suggests a positive impact on absence, given the substantial evidence that employment protection fosters absence (Ichino and Riphahn 2005, Olsson 2009, Scoppa and Vuri 2014).

2.3 Beyond the Works Constitution Act

Although the WCA does not mention illness-related absence, as detailed above, there are a number of further channels through which works councils can affect absence behaviour. § 80(1) WCA, for example, states that the main obligation of a works council is to ensure that regulations and laws beneficial to the workforce are actually applied. Therefore, working conditions in plants in which a works council exists are likely to be better than in plants without such institutions (cf. Heywood and Jirjahn 2009 with respect to family-friendly policies). Better working conditions, in turn, can reduce the incidence of illnesses, improve the motivation of employees and reduce absenteeism (cf. Afsa and Givord 2014). However, better working conditions may also imply that employees are less likely to attend work when ill (i.e. reduce sickness presenteeism) and –potentially– increase absence. Furthermore, works councils can act as a collective voice (Freeman and Lazear 1995) and reduce exit behaviour. While exit is usually associated with permanently leaving the firm, a more short-term interpretation suggests that exit could also be represented by absence behaviour. Viewed from this perspective, works councils could mitigate sickness absence as a form of short-run exit behaviour. Moreover, works councils have been shown to affect various economic outcomes which, in turn, are related to absence behaviour. For example, although works councils are

[1] However, the evidence that works councils actually reduce dismissals is limited. Höland (1985, pp. 97 ff.) finds that councils did not object to dismissals in 70% to 80% of all cases in the 1980's. Frick and Sadowski (1995), using different data, report even higher percentages. While Sadowski et al. (1995) and Frick (1996) argue that dismissal rates are lower in plants with a council, Kraft (2006) questions this claim. Hirsch et al. (2010) further show that works councils are associated with lower separation rates, but cannot clearly identify dismissals.

explicitly forbidden to negotiate over issues bargained in collective contracts, they have been observed to increase wages through various indirect channels (Addison et al. 2001, Hübler and Jirjahn 2003, Addison et al. 2010). Moreover, higher wages tend to reduce absence in Germany (Puhani and Sonderhoff 2010, Ziebarth and Karlsson 2009). These relationships may result in a negative correlation between the presence of a works council and absence. In addition to wages, the existence of a works council is positively correlated with tenure of employees, temporary contracts, and firm size, inter alia.[2] Since all of these features can also have an impact on absence behaviour, works councils may, hence, affect sickness absence via the composition of the workforce and firm characteristics.

The considerations above imply that the direction of the impact of works councils on absence behaviour, and on its consequences from a firm's perspective, are theoretically ambiguous and ultimately an empirical issue, to which we now turn.

3. Data and Empirical Specification

3.1 SOEP

To empirically investigate whether the existence of a works council is systematically associated with individual absence behaviour, we use the German Socio-Economic Panel (SOEP), a representative longitudinal dataset for Germany.[3] We exclude the self-employed, civil servants (‘Beamte’) and employees working either in public administration or in plants with fewer than five employees, since these individuals, by law, cannot be represented by works councils (cf. Section 2). Furthermore, our sample is restricted to employees who work in energy, mining, manufacturing, construction, and service industries. Finally, we focus on respondents aged 18 to 65. In consequence, there is a maximum of 15,778 observations of 10,147 individuals. Note, finally, that we apply survey weights for the descriptive statistics, but not for the regression analyses.

The SOEP regularly contains information on the self-reported number of working days missed due to sickness in the previous calendar year. The item reads: “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

[2] For example, Boockmann and Hagen (2003) establish a connection between works councils and temporary employment, while Engellandt and Riphahn (2005) find lower absence for temporary workers.

[3] More specifically, we use the SOEP long v29 dataset. For a general in-depth discussion of the SOEP see Wagner et al. (2007). Additional information can be found at: http://www.diw.de/english/soep/29012.html.

consider two dimensions of absence: first, whether an employee was absent at all in the previous calendar year, i.e. the *incidence of sickness absence*, and second, the *annual duration of absence* measured in days. There is also an item which asks whether the respondent was continuously absent for more than six weeks ('long-term illness'), but the information is not detailed enough to separate short- and long-term absence spells and their respective durations. Unfortunately, there is no data on work accidents in the relevant time period.

Turning to works councils, the SOEP contains information which indicates the existence of such an institution at the workplace of the individual (1 = yes; 0 = no) in the years (waves) 2001, 2006 and 2011. We associate the works council status and the controls with the absence data from the subsequent wave, because the question on absence is retrospective.

In our sample, 58.2% of the observations miss at least one day of work due to illness per year. On average, sickness absence amounts to 9.24 days per year in the full sample and drops to 6.48 days when excluding the long-term ill. More than 62% of respondents work in a plant with a works council. This percentage shrinks to about 50% when we additionally exclude the vaguely-defined public sector ('öffentlicher Dienst').[4]

Turning to the control variables, we take standard confounding factors into account (Ziebarth and Karlsson 2009, 2010, Puhani and Sonderhof 2010, Goerke and Pannenberg 2012). Accordingly, we control for personal characteristics such as disability status, being female, marital status, living with a partner, being of foreign nationality, having a foreign background (immigrant), subjective general health status (good, bad), having children under the age of 14, age, educational attainment, satisfaction with current health status, and 12 regional dummies.[5] Furthermore, we include job characteristics such as working part-time, being an apprentice, a blue collar worker, or working in the public sector,[6] having a temporary or marginal employment contract, the size of the plant, log gross monthly earnings, tenure categories, a work autonomy scale, and seven industry codes (energy/ mining, manufacturing, construction,

[4] This number is broadly comparable to the percentage reported by Ellguth and Kohaut (2012) for the first decade of this millennium and consistent with the percentages calculated by Jirjahn and Lange (2011) and Gralla et al. (2012) on the basis of SOEP data.

[5] 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.

[6] Since we think our argumentation holds in publicly-owned private firms, i.e. those in a competitive environment, we exclude only those employees who work in the public administration but not those who claim to work in the vaguely-defined public sector ('öffentlicher Dienst'). In Germany, a number of firms are owned by the state but are legally private enterprises and may, hence, have a works council. Our results are robust to the (inclusion and) exclusion of employees working in the widely-defined public sector.

trade, transport/ information/ communication technology, banking/ insurance, other services). This division guarantees similar classifications across the SOEP and the LIAB data, described below. Regrettably, the SOEP contains no information on collective bargaining coverage in the period under investigation. However, we can indirectly capture a potential coverage effect because it varies systematically across industries and with firm size. Additionally, we include the unemployment rate measured at the level of the respective federal state (provided by the Federal Employment Agency), as well as general time dummies. Descriptive statistics are provided in Table A1.

3.2 LIAB

To investigate the impact of works councils on absence-related personnel problems, we use the LIAB Cross-sectional Model 2 1993-2010 from the Institute for Employment Research (IAB) in Nuremberg. 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 by employees working in these plants (see Jacobebbinghaus and Seth (2010) for an overview). The IAB Establishment Panel is a representative sample of about 1% of German plants which 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. To use a comparable sample to the SOEP, we restrict our data to plants from mining, energy, manufacturing, construction and service industries with at least five employees, one of whom must be subject to social security in order to be included in the sample in the first place. This results in a maximum of 42,444 observations in 21,453 plants (theoretically covering over 4 million employees). The descriptive statistics are weighted at the individual level. For the regression analysis, however, we present unweighted estimates.[7]

Most importantly, the LIAB dataset contains a unique set of variables, namely responses to a series of questions directed at plant managers or high-ranking personnel staff on the existence of personnel problems: “What kind of problems with human resources management do you expect for your plant during the next two years?“. Subsequently, replies with respect to various topics are requested, inter alia: “High rate of lost working time and absence due to

[7] 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.

illness". This information particularly suits the investigation of the relationship between works councils and the economic consequences of sickness absence, because the response reflects an evaluation of those individuals who determine a plant's adjustment behaviour to absence. Our data covers the years 2000, 2004, 2006, 2008, and 2010, as plant managers have been asked about personnel problems in 2000 and every other year since 2004 and, because prior to 2000, changes were made in the questionnaire regarding several variables we employ in the empirical investigation. Information on the existence of a works council is provided for every year. As a robustness check we also include an indicator of the degree of cooperation between management and works council which, however, is only available for 2006 and has also been used by Pfeifer (2014b).

Regarding our dependent variable, a total of 4,952 plants (6.92% of all plants employing 13.71% of all employees) state that they expect personnel problems caused by high absence rates during the following two years. Such personnel problems appear to be temporary, since managers in only 2.31% of all plants (in which 5.77% of all employees work) expect problems more than once during the observation period. Furthermore, 16,346 plants (14.31% of all plants employing 49.87% of all employees) are covered by a works council.[8]

To account for confounding factors, we control for firm size and a large number of other covariates. Based on individual-level data, we incorporate plant-specific means of employee characteristics with respect to sex, nationality, tenure, age, qualification, occupational status (blue collar worker), working time (part-time) and daily wages.[9] Using plant-level information, we control for collective bargaining status (including orientation, i.e. a firm's voluntary application of the terms of collective agreements, and the existence of wage cushions), the share of vacancies and of workers with temporary contracts, the churning rate, investment activity, firm age, foreign and public ownership, modern technical assets, status as a single plant, status as limited firm, and the existence of (other) human resource management problems. Moreover, we include industry, region, firm size and year dummy variables comparable to the ones used in the SOEP as well as the unemployment rate at the regional level ('Landkreis'). Furthermore, there exist additional variables which might influence our

[8] The numbers are somewhat higher than those provided by Ellguth and Kohaut (2012), because we only use plants with at least five observations in the personnel records and exclude some industries with low works council incidence.

[9] 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 which reflects the share of employees with censored earnings. Regressions on median or imputed wage levels or using the per employee pay bill yield very similar estimates.

dependent variable, but which have a significant share of item-non-response. Therefore, we include them in some specifications, but only after controlling for sample selection bias by estimating the restricted model on the restricted sample. These variables consist of the natural logarithm of total investments, the share of expansion investments, standard weekly working time, the share of exports, the existence of overtime, firm-sponsored training and of performance-related pay, and expectations with respect to rising turnover and employment levels. Using these additional variables decreases our sample by about 40% to 23,916 observations in 12,744 plants. A full description of all variables can be found in Table A3.

3.3 Empirical Strategy

When analysing absence behaviour and expectations regarding future personnel problems, the stylized estimation equation for the different models reads as follows:

$$F(\mathrm{Y_{it}})^{-1} = \beta_1 + \beta_2 \mathrm{workscouncil_{it}} + \mathbf{X_{it}}'\boldsymbol{\gamma} + \delta\, \mathrm{year_t} + \varepsilon_{it} \qquad (1)$$

Here, $\mathrm{Y_{it}}$ represents the dependent variable. We estimate pooled Probit models, given the binary nature of the dependent variables. For the duration of sickness absence, which includes the observations with zero days of absence, we estimate pooled OLS models (F = a linear function) and additionally present results from count data models in Section 5.1. The subscript i represents individuals (plants) at time t when using SOEP (LIAB) data. The dummy variable $\mathrm{workscouncil_{it}}$ indicates the existence of a works council, while the vector $\mathbf{X_{it}}$ contains confounding factors, $\mathrm{year_t}$ 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 cluster-robust standard errors. As regards the Probit models, we additionally present the marginal effect for our variable of interest, evaluated as a discrete change from zero to one.

Estimating equation (1) allows us to establish a correlation between works council status and sickness absence. However, such a relationship can not only arise because works councils affect absence behaviour or resulting future personnel problems, but also because of selection of employees or the endogeneity of the existence of a works council. To get closer to a causal interpretation, we use information with respect to changes in works council status in the longitudinal dimension. We expect different effects for changes into and out of council status. This is the case because anecdotal evidence suggests that works councils are usually not abolished actively but cease to exist when no new councillors are elected in the regular elections taking place every four years. This is likely to be the case in plants in which works councils have already ceased to operate properly. Hence, we primarily expect the adoption of

a works council to affect absence. Using individual data, we can furthermore distinguish between stayers (in a plant) and movers (across plants).[10] With regard to stayers, a change in works council status can come about because a council is established or dissolved. Hence, we expect the impact for stayers to be similar to the effects observed in plant-level data.

Since we anticipate different effects for changes into and out of works council status, and because of the small panel dimension in our datasets, we estimate difference-in-differences (DiD) models (cf. Grund and Schmitt 2013, Gralla and Kraft 2012a). Moreover, we present separate models for a change into works council status where the control group is defined by never being covered by a works council, and for a change out of works council status for which the control group consists of employees or plants which are covered by a works council throughout the observation period. Our estimation equation reads:

$$F(\mathrm{Y_{it}})^{-1} = \beta_1 + \beta_2 \mathrm{treatmentgroup_i} + \beta_3 (\mathrm{no})\mathrm{workscouncil_{it}} + \mathbf{X_{it}}'\boldsymbol{\gamma} + \delta\, \mathrm{year}_t + \varepsilon_{\mathrm{it}} \quad (2)$$

As the 'treatment' does not occur at the same moment in time, but throughout the observation period, we follow Imbens and Wooldridge (2009) to discern two effects. The time-invariant dummy variable $\mathrm{treatmentgroup_i}$ captures the selection effect of plants and individuals into the treatment and control group. It is set equal to one only if the employee or plant changes works council status at some point in time. This allows us to see whether works councils are introduced in plants experiencing different absence rates, or levels of personnel problems due to absence, before its adoption (reversed causality) and whether individuals with different absence behaviour sort themselves into plants with a council (selection effect).[11] When looking at changes into works council coverage, the variable $\mathrm{workscouncil_{it}}$ captures the exposure to the 'treatment', indicating whether a plant or individual i is covered by a works council in period t (treatment or DiD effect). In contrast, when looking at changes out of works council coverage, the treatment effect is captured by the variable $\mathrm{noworkscouncil_{it}}$ which is set equal to one if a plant or individual i is not covered. We present the results of the DiD models in Section 5.3.

[10] We define stayers to have at least 5.5 (10.5) years of tenure in 2006 (2011), which indicates that they have not changed their employer since 2001. Accordingly, an employee, first observed in 2006, must have at least 5.5 years of tenure in 2011 to be classified as a stayer.

[11] Jirjahn (2009) finds that works councils are more likely to be adopted in plants experiencing economic distress. In our case, high absence rates and ensuing problems could be characteristics that are associated with the introduction of a works council.

4. Results

4.1 Absence Behaviour

The subsequent 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 least once a year than those who are employed in a plant without a council. On average, that is, including observations from individuals who are never absent, employees in a plant without a works council report 7.67 days of absence per annum, while those represented by a works council miss 10.18 days. When looking at a sample without those respondents who state that they have been long-term ill at least once, the difference is almost halved, to 5.60 days without and 7.01 days with works council coverage. The incidence of sickness absence (without long-term ill employees) amounts to 60.7% (58.8%) for respondents who work in a plant in which a works council exists and to 53.9% (52.0%) for those not represented by such an institution.

The results of the regression models based on the pooled dataset are summarised in Table 1. We successively add control variables, but only depict the estimated coefficients (and marginal effects) of interest. Full results for specifications (3) and (6) are contained in Table A2 (in the Appendix). Specifications (1) and (4) in Table 1, relating to the incidence of absence and its annual duration, respectively, contain 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).

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

	Absence Incidence			Absence Annual Duration		
	(1)	(2)	(3)	(4)	(5)	(6)
Works Council Existence	0.1733***	0.1152***	0.0987***	2.011***	1.899***	1.227**
	(0.0223)	(0.0282)	(0.0299)	(0.390)	(0.488)	(0.479)
Marginal Effect	0.0677***	0.0446***	0.0363***			
Dummy Variables		Yes	Yes		Yes	Yes
Individual-Level Control Variables			Yes			Yes
N. of Obs.	15,778	15,778	15,778	15,778	15,778	15,778
Pseudo-R^2 / R^2	0.003	0.012	0.058	0.002	0.006	0.110

Source: Own calculations from SOEP long v29. 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: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

In the absence incidence model with the full set of control variables, the coefficient remains highly statistically significant and the marginal effect still maintains a value of more than 3.6 percentage points (specification 3). This difference is economically sizeable, given an absence incidence of 58% in our sample. Since the raw difference in the incidence observed between employees working in a firm with and without a works council is about 6.8% (see above), more than 50% of this difference (3.6/6.8) is actually associated with a council's presence.

Turning to the annual duration of absence, the works council coefficients are sizeable and highly significant (p-value in the full model at 0.01). Given an average annual duration of slightly more than nine days in our sample, the implied difference of almost 1.2 days when including the full set of control variables (specification 6) is also quantitatively sizeable. It translates – if taken at face value – into a reduction in GDP of more than 0.22%, given that the total loss of production due to absence is estimated to be about 1.7% of GDP in 2010 (Badura et al. 2011, p. 224). Almost 50% of the raw difference between individuals working in a plant with and without a works council (of two and a half days; 10.18 – 7.67) is accounted for by the existence of a works council.

With regard to the control variables (see Table A2 in the Appendix), the estimated coefficients are generally in line with results based on SOEP data (Ziebarth and Karlsson 2009, Puhani and Sonderhof 2010, Goerke and Pannenberg 2012).[12] When interpreting the results shown in Table 1, it is important to note that we control for the health status of individuals in specifications (3) and (6). Thus, higher absence in plants with a works council is not due to employees having inferior health.

4.2 Personnel Problems due to High Absence Behaviour

In our sample based on the LIAB, there are 4,952 plants for which managers expect to face personnel problems due to high absence within the following two years; 2,735 of those have a works council, while 2,217 do not. Using representative sample weights, the plants with a works council account for 25.6% of all plants that expect personnel problems due to high absence, but cover 64.5% of employees. This can be explained by the oversampling of large

[12] In addition to the variables mentioned in Section 3.1, and following Goerke and Pannenberg (2012), we also included individual trade union membership as a covariate in specifications (3) and (6), which has to be imputed for 2006. While the size of the works council dummies is slightly reduced, they remain statistically highly significant. Individual trade union membership is associated with a higher incidence and greater duration of absence. Furthermore, our results are robust to the inclusion of several other control variables that are insignificantly related to the two dimensions of sickness absence behaviour: temporary agency contract, fear of job loss, or occupational categories (KLDB 1992 or ISCO-2). Substituting the part-time dummy with contractual or actual weekly working hours does not affect our results, either. Results are available upon request.

plants, which almost always have a works council. Comparing plants without a works council to those with such an institution, personnel problems due to high absence are expected to arise in only 6.0% of the former, while this number is 12.4% for the latter. A similar ratio at a higher level can be observed for the share of employees (9.7% versus 17.7%).

Table 2: Personnel Problems due to Absence and Works Councils: Pooled Probit Estimates

	(1)	(2)	(3)	(4)	(5)	(6)
Works Council Existence	0.3800***	0.1026***	0.1238***	0.1769***	0.1737***	0.1803***
	(0.0185)	(0.0238)	(0.0265)	(0.0279)	(0.0376)	(0.0379)
Marginal Effect	0.0740***	0.0191**	0.0212***	0.0294***	0.0284***	0.0295***
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.	42444	42444	42444	42444	23916	23916
N. of Clusters	21453	21453	21453	21453	12744	12744
Chi²	421.20	1505.61	3511.53	3794.27	2279.66	2285.62
Pseudo R 2	0.02	0.06	0.14	0.17	0.17	0.17

Source: LIAB QM2 9310 waves 2000, 2004, 2006, 2008 and 2010; 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: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

The results for the variables of interest from the pooled Probit estimates are summarised in Table 2. Again, we successively add control variables and depict full results in Table A4 (in the Appendix). Specification (1) in Table 2 only contains the works council status as an explanatory variable. The coefficient is highly significant and the marginal effect mirrors the (weighted) raw difference from the descriptive statistics of about seven percentage points. In specification (2), we include dummy variables for firm size classes, industries, regions and years. This reduces the size of the coefficient, but not its statistical significance. When adding plant-level control variables (specification 3), and covariates gathered from the individual level (specification 4), the coefficient becomes larger again. In the preferred specification (4), we find a highly significant estimated coefficient. The probability that personnel problems due to high absence arise is about three percentage points or 25% higher in a plant with a works council. Hence, the estimated marginal effect is considerably lower than the one obtained by Pfeifer (2014b) for the year 2006. Moreover, since it is less than half the difference found in the raw data, about 40% of it can be attributed to the existence of a works council. Observation-sensitive control variables are added in specification (6). Furthermore,

we check for sample selection bias in specification (5) by using the variables from the previous specification (4) in the smaller sample utilised in specification (6). The significance of the estimated 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.

Turning to the control variables (see Table A4 in the Appendix), the signs of most of the estimated coefficients are in line with expectations regarding personnel problems.[13] They are also consistent with the few existing analyses on human resource management problems using IAB EP data (Pfeifer 2014b, Gralla and Kraft 2012b). In addition, the estimated parameters of the variables measuring the impact of bargaining coverage are not significantly different from zero. Hence, we cannot discern an association between collective bargaining and expected personnel problems due to absence.

5. Robustness Checks, Effect Heterogeneity and DiD-Models

Having established a positive correlation between the existence of a works council and various indicators of sickness absence, the objective of this section is threefold. First, we analyse the robustness of the results concerning the annual duration of absence and present findings from count data models (Section 5.1). Second, we scrutinise whether the correlation between works councils and absence indicators varies across subgroups (Section 5.2). Finally, we present the findings from DiD models for the duration model in order to shed some light on (reversed) causality and selection issues (Section 5.3). The main results for the models presented in Sections 5.1 and 5.2 are summarised in Table A5 in the Appendix.

5.1 Count Data Models

Since the number of absence days has a count data structure, according models could be considered (see Cameron and Trivedi 1998, pp. 59 ff.). Applying a negative binomial model corroborates qualitatively and quantitatively the results from the OLS model, since we observe a highly significant difference of 1.14 days (p-value 0.013; Table A5) between employees who work in a plant in which a works councils exists and those in a plant without one. In order to take into account the excess number of zeroes (i.e. the fact that more than 40% of the respondents are not absent a single day in a calendar year), we additionally

[13] Controlling additionally for occupational group shares (KLDB 1992) – as with the SOEP data (see footnote 8) – does not affect our results. The coefficients of these share variables are insignificant. Similarly, the inclusion of temporary agency workers does not change the results. We would have to discard, however, the first wave of the LIAB when including this covariate. Results are available upon request.

estimate a zero inflated negative binomial model (ZINB). Again, the combined effect confirms the effect size and significance of the OLS model (p-value 0.008).

5.2 Group-specific Effect Heterogeneity

We also look at subgroups of plants or employees, in or for which works councils may play a different role. Following, for example, Addison et al. (2010) or Mueller (2012), we look at a subsample of medium-sized plants with 20 to 200 employees. This allows us to avoid extrapolation between small firms that usually do not have, and large firms that generally do have, a works council. Furthermore, in this subsample we can keep constant (1) the intensity of employment protection legislation (PADA) and (2) the intensity of codetermination rights that increase together with plant size, according to the WCA. The significant and positive relationship between works councils and absence is affirmed with respect to the incidence measure, which becomes slightly more pronounced with a difference of 3.8 percentage points, as well as for expected personnel problems (marginal effect of 4.0 percentage points). In contrast, the estimated coefficient of the works council dummy becomes insignificant when looking at the annual duration of absence. When probing deeper into the relationship between firm size, works councils and absence, we find the incidence of absence to be higher only in firms with fewer than 200 employees, while the annual duration is affected if there are 200 or more employees. With respect to expected personnel problems no such size effects can be discerned. Since our data does not allow us to differentiate between alternative channels by which works councils affect absence behaviour and its consequences, the issue of whether the relationship varies systematically with firm size remains a topic for future research.

Because the WCA has been in force in western Germany since 1952 and only became applicable to the eastern part of the country after re-unification (in 1990), we also split our sample along this regional dimension. For both components of absence behaviour – incidence and annual duration – we find quantitatively stronger effects in western Germany than for the whole of the country. For eastern Germany, the estimated coefficients of interest are insignificant. As regards expected personnel problems due to absence, the estimated marginal effect for the eastern German sample is about 20% smaller than the effect for western Germany. These findings are consistent with results which document changes in the impact of works councils over the duration of a council's lifetime (cf. Jirjahn et al. 2011, Mueller and Stegmaier 2014) because works councils in East Germany may not have existed for long enough to fully unfold their properties. Since information on a works council's age is not available in the SOEP, and only for newly-founded councils in the LIAB in the period under

investigation, it is, however, impossible to analyse further the learning hypothesis with regard to the observed regional differences.

Our estimates presented thus far are based on a sample which excludes the public sector, when narrowly defined. We also consider samples with a more strictly defined private sector.[14] The results from the full sample (Tables 1 and 2) also hold in these subsamples (see Table A5). Hence, we can rule out the possibility that the council impact is actually a public sector effect.

Furthermore, we can look at a sample based on the SOEP data which does not include employees who are long-term ill and whose sick pay will therefore be financed by the mandatory health insurance. Hence, the financial consequences for firms are different for long-term than for shorter absence periods. Moreover, the same is true for employees because the level of sick pay is lower for long-term absentees. Finally, Ose (2005) hypothesises that short-term absences are more likely to be voluntary and responsive to economic incentives than longer periods of absence. These arguments indicate that the effects of works councils on absence behaviour may differ with the duration of absence. The estimated coefficient of the works council dummy in the incidence equation when excluding long-term ill becomes larger (not documented in Table A5), while the magnitude of the coefficient in the duration equation drops by about one-third, relative to the sample which includes the long-term ill. Both estimated coefficients remain highly significant. Hence, the works council effect is neither driven by nor systematically related to long-term absence periods.

With regard to expected personnel problems, in the wave 2006 of the LIAB we can differentiate between works councils that are characterised by the management 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 absence are more pronounced and larger for hostile or pragmatic works councils, while they are insignificant for management-friendly councils. Pfeifer (2014b) obtains comparable findings for the first type of council, but also observes a significantly positive effect for management-friendly works councils.

[14] In particular, in the SOEP, we also exclude the employees claiming to work in the somewhat vaguely-defined ‘public sector’ and not only those respondents who state that they are members of the public administration or civil servants ('Beamte'). In the LIAB data, we identify the public sector (apart from the industry classifications) using information on whether at least one civil 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.

Finally, we look at potential gender differences (cf. Leigh 1983, Vistnes 1997, Ose 2005). Using SOEP data, we observe that both the marginal effect and the level of significance are higher for females than for males with regard to absence incidence. In contrast, the size of the effect for the annual duration of absence is similar for males and females with reduced significance, mostly due to the smaller sample sizes. Similarly, in the LIAB, an increase in the share of female employees does not affect the marginal effect of the works council variable along its distribution. Consequently, the relationship between works councils and sickness absence does not exhibit a clear-cut gender-specific component.

5.3 Difference-in-Differences Models

To get closer to a causal interpretation and to shed some light on reversed causality and selection issues, we subsequently present the findings from DiD models (cf. equation (2)). Using individual data (SOEP), we obtain significant effects with respect to the incidence of absence for western Germany (see Table 3).[15] We observe 326 changes into (159 movers, 167 stayers) and 288 changes out of works council coverage (161 movers, 127 stayers). Both DiD samples are reasonably representative of the full sample with respect to covariates.

Table 3: DiD-Models of Absence Incidence for western Germany (Pooled Probit)

	Stayer and Mover		Stayer		Mover	
	In	Out	In	Out	In	Out
	(1)	(2)	(3)	(4)	(5)	(6)
Treatment Group	0.121	0.023	0.064	-0.117	0.211#	0.194
	(0.085)	(0.085)	(0.119)	(0.123)	(0.129)	(0.135)
Marginal Effect	0.044	0.008	0.023	-0.042	0.072#	0.068
Works Council	0.171#		0.27**		-0.065	
	(0.010)		(0.137)		(0 .173)	
No Works Council		-0.174*		-0.084		-0.296*
		(0.10)		(0.139)		(0.156)
Marginal Effect	0.061#	-0.063*	0.097**	-0.030	-0.022	-0.103*
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
N. of Obs.	2,530	5,133	1,652	4,053	878	1,080
Pseudo-R^2	0.074	0.061	0.088	0.062	0.110	0.100

Source: Own calculations from SOEP long v29. Note: Standard errors clustered at the individual level in parentheses. Control variables: as in Table A2; Significance levels: # $p < 0.15$, * $p < 0.10$, ** $p < 0.05$.

[15] We find qualitatively similar yet slightly less statistically significant results for the annual duration of absence which are, however, sensitive to the exclusion of outliers.

As regards changes into the council status, the estimated parameter is at the edge of significance in the full sample (combining movers and stayers) with a p-value of 0.100 (column 1). This change comes along with an increase in absence incidence of about six percentage points. When focussing on changes out of works council status in the full sample (column 2) we obtain a similarly-sized, significant marginal effect (6.3 percentage points). A more detailed look at separate stayer and mover subsamples offers additional insights. We find a highly significant works council effect for the introduction of a works council (stayer, into works council) of almost ten percentage points (column 3). In contrast, there is no evidence for reversed causality, since employees in plants in which a works council is introduced (treatment group) are not characterised by a significantly higher sickness incidence before its introduction. As regards the dissolution of a works council (stayer, out of works council), we neither find a significant treatment effect (no works council), nor evidence indicating reversed causality (column 4). These results are consistent with our expectations that there will only be an effect due to the introduction, but not because of the abolition, of a works council. Turning to the smaller mover sample, we do not find a significant works council effect for those respondents coming to a plant with a works council (column 5). Moreover, there is some evidence that absence-prone individuals select themselves into plants with works councils (p-value 0.102). Finally, looking at those employees who leave a plant with a works council (mover, out of works council), we observe a significant treatment effect (no works council) amounting to more than ten percentage points (column 6), while the selection effect is positive yet insignificant.

Taken together, there is some evidence for treatment effects from works councils on individual sickness absence incidence for western Germany. Hence, our results can, with due care, be interpreted causally. A caveat is that the applied DiD models can only wipe out group-specific time invariant heterogeneity between the treatment and control group, while individual heterogeneity is not accounted for. But the fact that we observe a strong effect for the introduction, but not for the abolition of a works council, makes us quite confident that we capture a genuine works council effect. Furthermore, there are weak signs of selection by more absence-prone employees into plants with a works council and no evidence of reversed causality for the introduction (abolition) of works councils in firms with already high (low) absence incidence. We interpret this as evidence that the positive correlation in the pooled models is neither fully driven by self-selection, nor by reversed causality. However, these findings are restricted to western Germany and individual data. With regard to the expectation of personnel problems due to high absence within the following two years, we do not find

evidence that the adoption of a works council alters these perceptions. This might, inter alia, be due to the small number of cases in which works council are adopted or abolished (234 (0.48%) adoptions and 241 (0.45%) abolitions of works councils in our sample).

6. Summary

We have identified a gap in the literature on the economic effects of non-union representation in Germany, namely the impact of works councils on sickness-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 three and a half percentage points more likely to be absent and to miss over one day per year more than those working in a plant without such an institution. Furthermore, the probability that personnel problems due to high absence are expected is approximately three percentage points higher in plants in which a works council exists. When looking at various subgroups, these findings can basically be confirmed. As an exception, both individual-level and linked employer-employee data suggest that the relationship between works councils and absence is stronger in the western part of Germany. Consistent with these results, we also obtain some evidence which allows us to interpret the correlation between works councils and the incidence of absence causally for western Germany using the SOEP data.

We can tentatively conclude that works councils increase sickness absence. In addition, the findings with regards to personnel problems suggest that works councils neither reduce presenteeism nor improve the working conditions that affect absence behaviour. Consequently, non-union representation of employees in Germany via works councils does not appear to benefit firms via its impact on sickness-related absence, but rather seems to help employees at the expense of their employers. However, our data does not allow us to determine how this effect comes about. The scrutiny of the channels by which works councils influence absence behaviour and resulting personnel problems remains a topic for future research.

7. References

Addison, John T. (2009), *The Economics of Codetermination. Lessons from the German Experience*, Palgrave Macmillan.

Addison, John T., Schnabel, Claus and Joachim Wagner (2001), Works Councils in Germany: Their Effects on Establishment Performance, *Oxford Economic Papers* 53(4), 659-694.

Addison, John T., Teixeira, Paulino and Thomas Zwick (2010), German Works Councils and the Anatomy of Wages, *Industrial and Labor Relations Review* 63(2), 247-270.

Afsa, Cédric and Pauline Givord (2014), The Impact of Working Conditions on Sickness Absence: A Theoretical Model and an Empirical Application to Work Schedules, *Empirical Economics* 46(1), 285-305.

Allen, Steven G. (1981), An Empirical Model of Work Attendance, *The Review of Economics and Statistics* 63(1), 77-87.

Allen, Steven G. (1984), Trade Unions, Absenteeism, and Exit-Voice, *Industrial and Labor Relations Review* 37(3), 331-345.

Badura, Bernhard, Ducki, Antje, Schröder, Helmut, Klose, Joachim and Katrin Macco (2011), *Fehlzeitenreport 2011*, Springer-Verlag.

Behrens, Martin (2009), Still Married after all these Years? Union Organizing and the Role of Works Councils in German Industrial Relations, *Industrial and Labor Relations Review* 62(3), 275-293.

Berger, Johannes, Herbertz, Claus and Dirk Sliwka (2011), Incentives and Cooperation in Firms: Field Evidence, *IZA Discussion Paper* No. 5618.

Boockmann, Bernhard and Tobias Hagen (2003), Works Councils and Fixed-Term Employment: Evidence from West German Establishments, *Journal of Applied Social Science Studies* 123(3), 359-381.

Cameron, A. Colin and Pravin K. Trivedi (1998), *Regression Analysis of Count Data*, Cambridge University Press.

Dionne, Georges and Benoit Dostie (2007), New Evidence on the Determinants of Absenteeism using Linked Employer-Employee Data, *Industrial and Labor Relations Review* 61(1), 108-120.

Ellguth, Peter and Susanne Kohaut (2012), Tarifbindung und betriebliche Interessenvertretung: Aktuelle Ergebnisse aus dem IAB-Betriebspanel 2011, *WSI-Mitteilungen* 4/2012, 297-305.

Engellandt, Axel and Regina T. Riphahn (2005), Temporary Contracts and Employee Effort, *Labour Economics* 12(3), 281-299.

Freeman, Richard B. and Edward P. Lazear (1995), An Economic Analysis of Works Councils, 27-50, in: Rogers, Joel and Wolfgang Streeck (eds), *Works Councils: Consultation, Representation, and Cooperation in Industrial Relations*, University of Chicago Press.

Frick, Bernd (1996), Codetermination and Personnel Turnover: The German Experience, *Labour* 10(2), 407-430.

Frick, Bernd and Dieter Sadowski (1995), Works Councils, Unions and Firm Performance: the Impact of Workers' Participation in Germany, 46-81, in: Buttler, Friedrich, Franz, Wolfgang, Schettkat, Ronald and David Soskice (eds), *Institutional Frameworks and Labor Market Performance*, Routledge.

García-Serrano, Carlo and Miguel A. Malo (2009), The Impact of Union Direct Voice on Voluntary and Involuntary Absenteeism, *The Journal of Socio-Economics* 38(2), 372-383.

Goerke, Laszlo and Markus Pannenberg (2007), Trade Union Membership and Works Councils in West Germany, *Industrielle Beziehungen* 14(2), 154-175.

Goerke, Laszlo and Markus Pannenberg (2012), Trade Union Membership and Sickness Absence: Evidence from a Sick Pay Reform, *IZA Discussion Paper* No. 6777 & *CESifo Working Paper* No. 3909.

Gralla, Rafael and Kornelius Kraft (2012a), Separating Introduction Effects from Selectivity Effects: The Differences in Employment Patterns of Co-Determined Firms, *IZA Discussion Paper* No. 7022.

Gralla, Rafael and Kornelius Kraft (2012b), Higher Wages, Overstaffing or Both? The Employer's Assessment of Problems Regarding Wage Costs and Staff Level in Co-Determined Establishments, *IZA Discussion Paper* No. 7021.

Gralla, Rafael, Kraft, Kornelius and Julia Lang (2012), Let's call it a Day – The Effect of Works Councils on Working Hours Constraints in German Establishments, *SFB 823 Discussion Paper* 36/2012.

Grund, Christian and Andreas Schmitt (2013), Works Councils, Wages, and Job Satisfaction, *Applied Economics* 45(3), 299-310.

Heywood, John S. and Uwe Jirjahn (2004), Teams, Teamwork and Absence, *The Scandinavian Journal of Economics* 106(4), 765-782.

Heywood, John S. and Uwe Jirjahn (2009), Family-friendly Practices and Worker Representation in Germany, *Industrial Relations* 48(1), 121-145.

Heywood, John S., Jirjahn, Uwe and Xiangdong Wei (2008), Teamwork, Monitoring and Absence, *Journal of Economic Behavior & Organization* 68(3-4), 676-690.

Hirsch, Boris, Schank, Thorsten and Claus Schnabel (2010), Works Councils and Separations: Voice, Monopoly, and Insurance Effects, *Industrial Relations* 49(4), 566-592.

Höland, Armin (1985), *Das Verhalten von Betriebsräten bei Kündigungen*, Campus Verlag.

Hübler, Olaf and Uwe Jirjahn (2003), Works Councils and Collective Bargaining in Germany: The Impact on Productivity and Wages, *Scottish Journal of Political Economy* 50(4), 471-491.

Ichino, Andrea and Regina T. Riphahn (2005), The Effect of Employment Protection on Worker Effort: Absenteeism During and After Probation, *Journal of the European Economic Association* 3(1), 120-143.

Imbens, Guido and Jeffrey M. Wooldridge (2009), Recent Developments in the Econometrics of Program Evaluation, *Journal of Economic Literature* 47(1), 5-86.

Jacobebbinghaus, Peter and Stefan Seth (2010), Linked Employer-Employee Data from the IAB: LIAB Cross-sectional Model 2 1993-2008 (LIAB QM2 9308), *FDZ Data Report* 05/2010, Nürnberg.

Jirjahn, Uwe (2009), The Introduction of Works Councils in German Establishments – Rent Seeking or Rent Protection?, *British Journal of Industrial Relations* 47(3), 521-545.

Jirjahn, Uwe and Vanessa Lange (2011), Reciprocity and Workers' Tastes for Representation, *SOEP Papers* 402.

Jirjahn, Uwe, Mohrenweiser, Jan and Uschi Backes-Gellner (2011). Works Councils and Learning: On the Dynamic Dimension of Codetermination, *Kyklos* 64(3), 427–447.

Kraft, Kornelius (2006), On Estimating the Effect of Co-Determination on Personnel Turnover, *Schmollers Jahrbuch* 126(2), 287-305.

Leigh, J. Paul (1981), The Effects of Union Membership on Absence from Work Due to Illness, *Journal of Labor Research* 2(2), 329-336.

Leigh, J. Paul (1983), Sex Differences in Absenteeism, *Industrial Relations* 22(3), 349-361.

Leigh, J. Paul (1985), The Effects of Unemployment and the Business Cycle on Absenteeism, *Journal of Economics and Business* 37(2), 159-170.

Mastekaasa, Arne (2013), Unionization and Certified Sickness Absence: Norwegian Evidence, *Industrial and Labor Relations Review* 66(1), 117-141.

Mueller, Steffen (2012), Works Councils and Establishment Productivity, *Industrial and Labor Relations Review* 65(4), 880-898.

Mueller, Steffen and Jens Stegmaier (2014), The Dynamic Effects of Works Councils on Labor Productivity: First Evidence From Panel Data, LASER Discussion Paper No. 78.

OECD (2007), *Society at a Glance – 2006 Edition*.

Olsson, Martin (2009), Employment Protection and Sickness Absence, *Labour Economics* 16(2), 208-214.

Ose, Solveig Osborg (2005), Working Conditions, Compensation and Absenteeism, *Journal of Health Economics* 24(1), 161-188.

Pfeifer, Christian (2014b), Works Councils and the Management of Human Resources, *Economic and Industrial Democracy* 35(1), 143-163.

Pfeifer, Harald (2014a), Absenteeism in Apprenticeships: What Role Do Works Councils Play?, Universität Zürich, Swiss Leading House "Economic of Education", Working Paper No. 98.

Puhani, Patrick A. and Katja Sonderhof (2010), The Effects of a Sick Pay Reform on Absence and on Health-Related Outcomes, *Journal of Health Economics* 29(2), 285-302.

Sadowski, Dieter, Backes-Gellner, Uschi and Bernd Frick (1995), Works Councils: Barriers or Boosts for the Competitiveness of German Firms?, *British Journal of Industrial Relations* 33(3), 493-513.

Scoppa, Vincenzo and Daniela Vuri (2014), Absenteeism, Unemployment and Employment Protection Legislation: Evidence from Italy, *IZA Journal of Labor Economics* 3:3.

Vistnes, Jessica Primoff (1997), Gender Differences in Days Lost from Work due to Illness, *Industrial and Labor Relations Review* 50(2), 304-323.

Wagner, Gerd G., Frick, Joachim R. and Jürgen Schupp (2007), The German Socio-Economic Panel Study (SOEP) – Scope, Evolution, and Enhancements, *Schmollers Jahrbuch* 127(1), 139-169.

Ziebarth, Nicolas R. and Martin Karlsson (2009), A Natural Experiment on Sick Pay Cuts, Sickness Absence, and Labor Costs, *SOEP Papers* 244.

Ziebarth, Nicolas R. and Martin Karlsson (2010), A Natural Experiment on Sick Pay Cuts, Sickness Absence, and Labor Costs, *Journal of Public Economics* 94(11-12), 1108-1122.

Ziebarth, Nicolas R. and Martin Karlsson (2014), The Effects of Expanding the Generosity of the Statutory Sickness Insurance System, *Journal of Applied Econometrics* 29(2), 208-230.

Table A1: Descriptive Statistics (SOEP)

Variable	Mean	Standard deviation	Min.	Max.
Sickness Absence (Incidence)	0.582	0.493	0	1
Sickness Absence (Annual Duration)	9.236	23.998	0	365
Works Council	0.624	0. 484	0	1
Age	41.254	10.802	18	65
Disabled	0.059	0.236	0	1
Female	0.438	0.496	0	1
Foreigner	0.090	0.286	0	1
Married	0.583	0.493	0	1
Partner	0.228	0.420	0	1
Immigrant	0.182	0.386	0	1
Bad Health	0.105	0.306	0	1
Good Health	0.587	0.492	0	1
Apprentice Certificate	0.734	0.442	0	1
'Abitur'	0.267	0.442	0	1
University Degree	0.198	0.399	0	1
Children	0.306	0.461	0	1
Satisfaction with Health	7.02	2.004	0	10
Log Gross Monthly Income	7.615	0.700	3.448	10.161
Part-Time	0.173	0.378	0	1
Temporary Contract	0.120	0.326	0	1
Apprentice	0.040	0.197	0	1
Marginally Employed	0.029	0.169	0	1
Autonomy in Job	2.524	1.152	0	5
Blue Collar Worker	0.345	0.475	0	1
Public Sector	0.185	0.388	0	1
5-19 Employees	0.169	0.375	0	1
20-99 Employees	0.217	0.412	0	1
100-199 Employees	0.112	0.316	0	1
200-1999 Employees	0.258	0.438	0	1
≥ 2000 Employees	0.243	0.429	0	1
Tenure (< 1 Year)	0.114	0.317	0	1
Tenure (≥ 1 & < 3 Years)	0.154	0.361	0	1
Tenure (≥ 3 & < 5 Years)	0.118	0.322	0	1
Tenure (≥ 5 & < 10 Years)	0.194	0.395	0	1
Tenure (≥ 10 & < 15 Years)	0.144	0.351	0	1
Tenure (≥ 15 & < 20 Years)	0.100	0.300	0	1
Tenure (≥ 20 Years)	0.177	0.382	0	1
Unempl. Rate in Federal State	8.921	3.980	3.8	19.7

Note: Each variable has 15,778 observations from 10,147 individuals in 2001, 2006 and 2011
Source: Own Calculations from SOEP long v29; Survey weights are used.

Table A2: Pooled Sickness Absence Estimations (SOEP)

	Sickness Incidence Probit		Sickness days OLS	
	Coeff.	SE	Coeff.	SE
Works Council	0.099***	0.030	1.227**	0.479
Age	-0.038***	0.008	-0.299*	0.168
Age^2	0.0002***	0.0001	0.004*	0.002
Disabled	0.282***	0.053	6.534***	1.574
Female	0.232***	0.031	1.228**	0.517
Foreigner	0.047	0.056	1.598*	0.918
Married	0.069**	0.034	0.179	0.650
Partner	0.101***	0.035	0.079	0.582
Immigrant	-0.003	0.039	-0.019	0.647
Bad Health	0.291***	0.047	12.494***	1.385
Good Health	-0.172***	0.028	-2.061***	0.403
Apprentice Certificate	0.005	0.031	0.335	0.489
'Abitur'	0.079**	0.033	-1.048**	0.492
University Degree	-0.067*	0.039	-1.163*	0.595
Children	0.064*	0.033	-0.077	0.542
Children*Female	-0.025	0.048	0.157	0.809
Satisfaction with Health 0-2	(base)		(base)	
Satisfaction with Health 3-4	-0.034	0.087	-20.958***	3.923
Satisfaction with Health 5-6	-0.15*	0.086	-21.695***	3.887
Satisfaction with Health 7-8	-0.232***	0.087	-23.671***	3.825
Satisfaction with Health 9-10	-0.455***	0.090	-24.747***	3.814
Log Gross Monthly Income	0.128***	0.029	-0.399	0.543
Part-Time	-0.142**	0.038	-1.706**	0.743
Temporary Contract	-0.016	0.045	-1.468**	0.639
Apprentice	0.044	0.091	0.474	1.251
Marginally Employed	-0.698***	0.083	-6.894***	1.480
Autonomy in Job	-0.081***	0.018	-0.521	0.351
Blue Collar Worker	-0.013	0.035	1.773***	0.681
Public Sector	0.108***	0.033	1.519***	0.577
5-19 Employees	(base)		(base)	
20-99 Employees	-0.004	0.036	0.975*	0.574
100-199 Employees	-0.05	0.045	0.924	0.773
200-1999 Employees	0.011	0.040	0.884	0.636
≥ 2000 Employees	0.044	0.042	1.452**	0.672
Tenure (< 1 Year)	(base)		(base)	
Tenure (≥ 1 & < 3 Years)	0.079	0.042	0.019	0.693
Tenure (≥ 3 & < 5 Years)	0.094	0.046	0.555	0.797
Tenure (≥ 5 & < 10 Years)	0.091	0.043	-0.005	0.784
Tenure (≥ 10 & < 15 Years)	0.115	0.046	0.860	0.868
Tenure (≥ 15 & < 20 Years)	0.029	0.051	0.987	1.010
Tenure (≥ 20 Years)	0.062	0.051	0.065	1.005
Unemployment Rate in Fed. State	-0.016	0.009	-0.17	0.23
Regional Dummies	Yes		Yes	
Industry Dummies	Yes		Yes	
Year Dummies	Yes		Yes	
N. of Obs.	15,778		15,778	
N. of Clusters	10,147		10,147	
Pseudo-R^2 / R^2	0.0580		0.1095	

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 v29.

Table A3: Descriptive Statistics (LIAB)

Variable	Mean	Std. Dev.	Min	Max
Personnel Problems due to High Absence	0.14	0.33	0	1
Works Council	0.50	0.50	0	1
Type of Works Council: Hostile or Pragmatic**	0.37	0.51	0	1
Type of Works Council: Management-friendly **	0.10	0.27	0	1
Collective Bargaining Agreement (CBA)	0.57	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& $< 3, \geq 3$ & $< 5, \geq 5$ & $< 10, \geq 10$ & $< 15, \geq 15$ & $< 20, \geq 20$)				
Mean Employee Age	40.75	4.61	19.01	62.75
Std. Deviation Employee Age	10.82	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 (censored)	72.85	31.81	1.19	178.04
Share of Employees at Social Security Contribution Limit	0.06	0.11	0	1
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 (Hires and Quits over Growth)	0.05	0.17	0	13.01
Any Investment Activity in the last year	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 (0: Private Partnership 1: Limited Firm 2: Other Type)	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 (5-19, 20-99, 100-199, 200-1999, 2000+)
Year Dummies

Source: LIAB QM2 9310, Waves 2000, 2004, 2006, 2008, 2010, own calculations using controlled remote data access (FDZ). Note: 43,444 observations in 21,453 plants; * 23,916 observations in 12,744 plants; ** 8,711 observations and plants in 2006. Means and standard deviations weighted by employee-representative weights.

Table A4: Personnel Problems due to Absence and Works Councils: Pooled Probit Estimates, Full Table

	(1)	(2)	(3)	(4)	(5)	(6)
Works Council	0.3800***	0.1026***	0.1238***	0.1769***	0.1737***	0.1803***
	(0.0185)	(0.0238)	(0.0265)	(0.0279)	(0.0376)	(0.0379)
Collective Bargaining Agreement			0.1079***	0.0194	0.0049	0.0098
			(0.0307)	(0.0315)	(0.0417)	(0.0421)
Firm-Level Contract			0.1107***	0.0407	-0.0337	-0.0308
			(0.0405)	(0.0411)	(0.0548)	(0.0550)
Orientation to a CBA			0.0565*	0.0206	0.0079	0.0093
			(0.0297)	(0.0301)	(0.0393)	(0.0395)
Wage Cushion, weighted			-0.0426	-0.0331	-0.0548	-0.0494
			(0.0261)	(0.0266)	(0.0351)	(0.0352)
Share of Vacancies			-0.0610	-0.0020	-0.2565	-0.1336
			(0.1598)	(0.1616)	(0.2342)	(0.2374)
Share of Temporary Workers			0.1157*	0.0635	0.0975	0.0899
			(0.0680)	(0.0728)	(0.1178)	(0.1177)
Churning Rate			0.1894***	0.1249**	0.1477**	0.1524**
			(0.0559)	(0.0508)	(0.0727)	(0.0728)
Any Investment Activity in the Last Year			0.0334	0.0799***	0.0282	0.1007
			(0.0221)	(0.0226)	(0.0303)	(0.1030)
Modern Technical Assets			-0.1390***	-0.0978***	-0.0991***	-0.0950***
			(0.0199)	(0.0202)	(0.0271)	(0.0273)
New Firm (after 1990)			-0.0073**	-0.0081**	-0.0117***	-0.0117***
			(0.0029)	(0.0033)	(0.0045)	(0.0045)
Firm Age (up to 1990)			-0.0301	-0.0282	-0.0549	-0.0493
			(0.0398)	(0.0416)	(0.0537)	(0.0538)
Public Ownership			0.0371	0.0946**	0.1977**	0.1941**
			(0.0433)	(0.0432)	(0.0786)	(0.0789)
Foreign Ownership			-0.1319***	-0.0528	-0.0554	-0.0575
			(0.0389)	(0.0406)	(0.0511)	(0.0515)
Single Firm			-0.0026	-0.0341	-0.0049	-0.0118
			(0.0216)	(0.0219)	(0.0301)	(0.0304)
Limited Firm			0.0121	0.0302	0.0845***	0.0859***
			(0.0233)	(0.0240)	(0.0326)	(0.0326)
Public Sector			-0.0624	-0.0280	0.1105	0.0945
			(0.0415)	(0.0429)	(0.1003)	(0.1006)
Multiple Personnel Problems			0.2795***	0.2793***	0.2856***	0.2866***
			(0.0065)	(0.0066)	(0.0089)	(0.0089)
Share of Female Employees				0.2433***	0.2317***	0.2439***
				(0.0571)	(0.0745)	(0.0747)
Share of Foreign Employees				0.6917***	0.6260***	0.6335***
				(0.1035)	(0.1420)	(0.1425)
Share of Emp. with Tenure 1-3 Years				0.2429**	0.2685*	0.2594*
				(0.1015)	(0.1491)	(0.1493)
Share of Emp. with Tenure 3-5 Years				0.3397***	0.3971***	0.3893***
				(0.1043)	(0.1457)	(0.1463)
Share of Emp. with Tenure 5-10 Years				0.3736***	0.4078***	0.4011***
				(0.0967)	(0.1338)	(0.1345)
Share of Emp. with Tenure 10-15 Years				0.4012***	0.4315***	0.4331***
				(0.1100)	(0.1492)	(0.1499)
Share of Emp. with Tenure 15-20 Years				0.4527***	0.5791***	0.5852***
				(0.1245)	(0.1647)	(0.1655)
Share of Emp. with Tenure over 20 Years				0.2689*	0.2951	0.3185*
				(0.1421)	(0.1875)	(0.1889)
Mean Employee Age				0.0013	-0.0045	-0.0056
				(0.0027)	(0.0038)	(0.0038)
Std.Dev Employee Age				-0.0065	0.0052	0.0061
				(0.0053)	(0.0074)	(0.0074)
Share of non-Soc.Sec. Employees				-0.5097***	-0.5967***	-0.5744***
				(0.1036)	(0.1416)	(0.1432)
Share of Trainees				-0.2629*	-0.4930**	-0.4938**
				(0.1585)	(0.2237)	(0.2246)
Share of Qualification: Skilled				-0.1321***	-0.1852***	-0.1853***
				(0.0420)	(0.0552)	(0.0553)
Share of Qualification: High-skilled				-0.9888***	-1.1272***	-1.1077***
				(0.1233)	(0.2021)	(0.2020)

Share of Blue Collar Worker				0.5469***	0.5141***	0.5087***
				(0.0643)	(0.0851)	(0.0855)
Share of Part-Time Employees				0.3483***	0.3857***	0.3851***
				(0.0764)	(0.1121)	(0.1130)
Mean of Gross Daily Wages				0.0003	-0.0000	0.0004
				(0.0009)	(0.0013)	(0.0013)
Employees at Soc. Sec. Contribution Limit				-1.6072***	-1.3555***	-1.3348***
				(0.2475)	(0.3284)	(0.3273)
Std. Weekly Working Time						0.0124*
						(0.0068)
Log. of Total Investments						-0.0069
						(0.0088)
Share of Exports						0.0122
						(0.0384)
Share of Expansion Investments						0.0266
						(0.0631)
Firm-Sponsored Training						-0.0129
						(0.0318)
Overtime Dummy						0.0744**
						(0.0317)
Good Business Outlook						-0.0206
						(0.0277)
Good Employment Outlook						-0.0533
						(0.0346)
Performance-Related Pay exists						-0.0641**
						(0.0311)
Dummy Variables		Yes	Yes	Yes	Yes	Yes
Constant	-1.3547***	-1.5216***	-1.8202***	-2.4266***	-2.2141***	-2.7131***
	(0.0127)	(0.0492)	(0.0842)	(0.1856)	(0.2580)	(0.3725)
N. of Obs.	42444	42444	42444	42444	23916	23916
N. of Clusters	21453	21453	21453	21453	12744	12744
Chi²	421.20	1505.61	3511.53	3794.27	2279.66	2285.62
Pseudo R^2	0.02	0.06	0.14	0.17	0.17	0.17

Source: LIAB QM2 9310 waves 2000, 2004, 2006, 2008, and 2010; 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. Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A5: Overview of Robustness Checks and Effect Heterogeneity

	NegBin	ZINB			20-200 employees	
	Duration	Duration		Incidence	Duration	Personnel Probl.
Works Council	0.122**	0.071		0.103***	0.789	0.217***
	(0.049)	(0.047)		(0.042)	(0.736)	(0.032)
Works Council		-0.175***				
(Inflate Equation)		(0.060)				
Marginal Effect	1.141**	1.134***		0.038***		0.040***
	(0.462)	(0.426)		(0.155)		(0.006)
N	15,778	15,778		5,154	5,154	20,500
	West Germany			East Germany		
	Incidence	Duration	Personnel Probl.	Incidence	Duration	Personnel Probl.
Works Council	0.131***	1.67***	0.291***	0.022	0.122	0.278**
	(0.035)	(0.569)	(0.031)	(0.059)	(0.863)	(0.048)
Marginal Effect	0.048***		0.052***	0.008		0.039**
	(0.127)		(0.006)	(0.022)		(0.006)
N	12,091	12,091	27,599	3,687	3,687	14,845
	More Strictly Defined Private Sector			Non-longterm ill	WC-Management Relation	
	Incidence	Duration	Personnel Probl.	Duration	Coeff.	Marg. Eff.
Works Council	0.108***	1.329***	0.296***	0.784***		
	(0.032)	(0.512)	(0.029)	(0.273)		
Marginal Effect	0.040***		0.048***			
	(0.012)		(0.005)			
Hostile or Pragmatic WC					0.3288***	0.0480***
					(0.0635)	(0.0096)
Management-Friendly WC					0.1005	0.0127
					(0.0809)	(0.0106)
N	12,724	12,724	34,922	15,778	8,711	
	Females		Males			Share of Females
	Incidence	Duration	Incidence	Duration		Personnel. Probl.
Works Council	0.132***	1.173*	0.064	1.142*		0.323***
	(0.044)	(0.684)	(0.041)	(0.663)		(0.0400)
Marginal Effect	0.046***		0.024			
	(0.015)		(0.015)			
Share of Female Employees						0.296***
						(0.0648)
Interaction Effect						-0.079
						(0.0715)
N	7,062	7,062	8,716	8,716		42,444

Source (Incidence and Duration): SOEP long v29; 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 9310 waves 2000, 2004, 2006, 2008, and 2010 (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: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

IAW-Diskussionspapiere

Die IAW-Diskussionspapiere erscheinen seit September 2001. Die vollständige Liste der IAW-Diskussionspapiere von 2001 bis 2011 (Nr. 1-77) finden Sie auf der IAW-Internetseite http://www.iaw.edu/index.php/IAW-Diskussionspapiere.

IAW-Diskussionspapiere seit 2011:

Nr. 78 (Februar 2012)
The Role of Employees for Post-Entry Firm Growth
Andreas Koch / Jochen Späth / Harald Strotmann

Nr. 79 (Februar 2012)
Nationality Matters: The Geographic Origin of Multinationals and the Productivity of their Foreign Affiliates
Christian Arndt / Julia Spies

Nr. 80 (März 2012)
All You Need Is Trade: On the In(ter)dependence of Trade and Asset Holdings in Gravity Equations
Jörn Kleinert / Katja Neugebauer

Nr. 81 (März 2012)
The Tradeoff between Redistribution and Effort: Evidence from the Field and from the Lab
Claudia M. Buch / Christoph Engel

Nr. 82 (Mai 2012)
Factor Shares and Income Inequality – Empirical Evidence from Germany 2002-2008
Martin Adler / Kai Daniel Schmid

Nr. 83 (Mai 2012)
Network and Selection in International Migration to Spain
Nina Neubecker, Marcel Smolka, Anne Steinbacher

Nr. 84 (Mai 2012)
Do Better Capitalized Banks Lend Less? Long-Run Panel Evidence from Germany
Claudia M. Buch / Esteban Prieto

Nr. 85 (Juni 2012)
From the Stability Pact to ESM – What next?
Claudia M. Buch

Nr. 86 (Juni 2012)
The Connection between Imported Intermediate Inputs and Exports: Evidence from Chinese Firms
Ling Feng / Zhiyuan Li / Deborah L. Swenson

Nr. 87 (August 2012)
EMU and the Renaissance of Sovereign Credit Risk Perception
Kai Daniel Schmid / Michael Schmidt

Nr. 88 (September 2012)
The Impact of Random Help on the Dynamics of Indirect Reciprocity
Charlotte Klempt

Nr. 89 (Oktober 2012)
Specific Measures for Older Employees and Late Career Employment
Bernhard Boockmann / Jan Fries / Christian Göbel

Nr. 90 (Oktober 2012)
The Determinants of Service Imports: The Role of Cost Pressure and Financial Constraints
Elena Biewen / Daniela Harsch / Julia Spies

Nr. 91 (Oktober 2012)
Mindestlohnregelungen im Maler- und Lackiererhandwerk: eine Wirkungsanalyse
Bernhard Boockmann / Michael Neumann / Pia Rattenhuber

Nr. 92 (Dezember 2012)
Turning the Switch: An Evaluation of the Minimum Wage in the German Electrical Trade Using Repeated Natural Experiments
Bernhard Boockmann / Raimund Krumm / Michael Neumann / Pia Rattenhuber

IAW-Diskussionspapiere

Nr. 93 (Januar 2013)
Outsourcing Potentials and International Tradability of Jobs
Evidence from German Micro-Level Data
Tobias Brändle / Andreas Koch

Nr. 94 (Februar 2013)
Firm Age and the Demand for Marginal Employment in Germany
Jochen Späth

Nr. 95 (Juli 2013)
Messung von Ausmaß, Intensität und Konzentration des Einkommens- und
Vermögensreichtums in Deutschland
Martin Rosemann / Anita Tiefensee

Nr. 96 (Oktober 2013)
Flexible Collective Bargaining Agreements: Still a Moderating Effect on Works Council Behaviour?
Tobias Brändle

Nr. 97 (Oktober 2013)
New Firms and New Forms of Work
Andreas Koch / Daniel Pastuh / Jochen Späth

Nr. 98 (November 2013)
Non-standard Employment, Working Time Arrangements, Establishment Entry and Exit
Jochen Späth

Nr. 99 (Dezember 2013)
Intraregionale Unterschiede in der Carsharing-Nachfrage – Eine GIS-basierte empirische Analyse
Andreas Braun / Volker Hochschild / Andreas Koch

Nr. 100 (Dezember 2013)
Changing Forces of Gravity: How the Crisis Affected International Banking
Claudia M. Buch / Katja Neugebauer / Christoph Schröder

Nr. 101 (Januar 2014)
Vertraulichkeit und Verfügbarkeit von Mikrodaten
Gerd Ronning

Nr. 102 (Januar 2014)
Vermittlerstrategien und Arbeitsmarkterfolg: Evidenz aus kombinierten Prozess- und Befragungsdaten
Bernhard Boockmann / Christopher Osiander / Michael Stops

Nr. 103 (April 2014)
Evidenzbasierte Wirtschaftspolitik in Deutschland: Defizite und Potentiale
Bernhard Boockmann / Claudia M. Buch / Monika Schnitzer

Nr. 104 (Mai 2014)
Does Innovation Affect Credit Access? New Empirical Evidence from Italian Small Business Lending
Andrea Bellucci / Ilario Favaretto / Germana Giombini

Nr. 105 (Juni 2014)
Ressourcenökonomische Konzepte zur Verbesserung der branchenbezogenen Datenlage
bei nicht-energetischen Rohstoffen
Raimund Krumm

Nr. 106 (Juni 2014)
Do multinational retailers affect the export competitiveness of host countries?
Angela Cheptea

Nr. 107 (August 2014)
Sickness Absence and Work Councils – Evidence from German Individual and
Linked Employer-Employee Data
Daniel Arnold / Tobias Brändle / Laszlo Goerke