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Absenteeism in Apprenticeships: What Role Do Works Councils Play?

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Absenteeism in Apprenticeships: What Role Do Works Councils Play?

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Abstract

This paper examines the influence of works councils on apprentices' absence from the workplace in Germany. The analysis draws on merged administrative and survey data that includes information about the cumulated days apprentices are absent from work due to sickness reasons. On average, apprentices report sick on nine working days per year, whereas strong differences exist with respect to the training occupation and firm size. Regression results imply that the existence of a works council in a firm significantly reduces apprentices' absence. The results suggest that works councils effectively exercise their legally anchored 'voice' function in the German apprenticeship system.

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1 Introduction

Absenteeism has received increasing attention in recent years, mainly because of the rising awareness that work-place absence is costly for the individual, the firm and the society. Whereas several studies analyze 'regular' worker absence, the absenteeism of apprentices has not been discussed in the literature. And yet, also the absence of apprentices from the training firm can have severe consequences. For the individual apprentice, absenteeism increases the risk of failing to attain the vocational qualification needed for a successful integration into the German labor market. For training firms, absenteeism increases the costs of training because apprentices usually work productively in the firm during their training and this work compensates for a large share of the training costs (Schönfeld et al., 2010).

In Germany, works councils have the legal obligation to monitor the training activities in the firm and to intervene in the event of an inappropriate treatment of apprentices. Works councils further have a consultation function in the firm and thus give apprentices a 'voice' in case of conflicts with the firms' management (Hirschman, 1970). Interpreting absenteeism as a form of 'exit', one could expect that works council presence reduces the absence of apprentices in the training firm, thus making the training more cost efficient

from the firm's perspective. Despite the large interest in both the economic consequences of works councils and the functioning of the German apprenticeship training system, the relation between works councils and apprentices' absenteeism has not yet been studied empirically.

The present paper aims to close this gap using firm-level data from the BIBB Cost-Benefit Survey (BIBB CBS) of 2007. The BIBB CBS provides detailed information on the organization of apprenticeship training in the firm, including an indicator on the average number of days apprentices remain absent from the firm due to sickness reasons. With the help of a firm identifier, the survey data is merged with administrative records of those apprentices that have been trained in the surveyed firm. The additional person-level information in the data allows for the control of apprentices' socio-demographic background, education, labor market history and training wage in the regression models.

The analysis implies that the existence of works councils reduces the number of apprentices' absence days. This result contrasts research showing an absence-increasing effect of unionism for regular workers in other countries. The findings suggest that works councils are effective as a 'collective voice' institution in the German apprenticeship system, thereby increasing both

firm-level and person-level benefits. However, a robustness analysis shows that the absence-reducing influence is concentrated among firms with high absence levels. For firms with already low absence levels, the works council influence is insignificant.

The remainder of the paper is structured as follows. Section 2 describes the specific case of the German institutional system with respect to the apprenticeship training system and works councils. Section 3 then discusses relevant literature in the field. Section 4 elaborates on the data sources and describes the variables used for the analysis. Section 5 presents results of the regression analysis and discusses measurement and identification issues, and Section 6 concludes the paper.

2 Institutions in Germany

2.1 Apprenticeship training

In Germany, the apprenticeship training system is the most important institution for young workers' transition from the education system to the labor market. Each year, approximately 550,000 school leavers (more than half of a cohort) enroll in the system (BIBB, 2013). Although German firms are not

legally obliged to train apprentices, about 22 percent of all firms participate in the system (BIBB, 2013). The apprentice and the training firm sign a formal contract, in which the training modalities and the monthly apprentice pay are fixed for the entire training period. Training usually lasts 3 years, whereas a number of occupations are trained in 2 and others in 3.5 years. By signing the contract, the firm commits to the provision of training as defined in the national, occupation-specific training regulations, which, in Germany, have the status of a law.

Typically, apprenticeships combine work practice in the firm and learning in the vocational school in one educational program, whereas most of the training (two-thirds) takes place in the firm. Thus, apprentices learn their trade mainly on the job and obtain skills closely linked to the requirements of private sector economy. With their productive work, apprentices re-finance part of the firm's training costs, because the firm would need to hire additional workers to substitute for this work. On average, apprentices are involved in production for approximately 100 working days per year (see Figure A1 in the appendix) and thereby generate average revenues of more than 11,500 Euro in a given training year (Schönfeld et al., 2010). Considering the value of apprentices' work, their absence from the workplace reduces

revenue and thereby increases the training costs of the firm.

2.2 Works councils

In general, German works councils have extensive rights and duties, which are defined in the Works Constitution Act (*Betriebsverfassungsgesetz* 1972). Works councils can object to a firm's hiring and firing decisions of employees if social criteria (age, family status and tenure) are not accounted for. They also monitor safety standards and are responsible for the enforcement of collective bargaining agreements on the firm level. Although the staff in each firm with more than five employees has the legal right to establish a works council, this institution only exist in approximately 10 percent of private sector firms (Ellguth and Kohaut, 2010). Because the likelihood of firms implementing works councils increases with the number of employees, over 40 percent of all employees are covered by works council presence (Ellguth and Kohaut, 2012).

Concerning apprenticeships, works councils have to ensure that the content and the process of training are in line with the national training regulations. In the event that the person in charge of training does not fully comply with the training curricula, the works council has the right to call for

a replacement.[1] Considering these extensive legal rights and duties with respect to firm training, one could expect lower absence levels in firms in which a works council is present. An absence-reducing effect of works councils can thereby occur through at least two different mechanisms. First, works councils increase the quality of training and improve the working conditions of apprentices in a firm, which may lead to fewer open or hidden conflicts between an apprentice and the firm's management.[2] Second, should a conflict occur in the firm, works councils act as a reconciliation institution. Apprentices and the management can call upon the council to resolve the conflict. Both of the described mechanisms reduce the probability that (potential) conflicts lead to the absence of the apprentice in a firm. Consequently, I expect works councils to have a negative effect on the number of absence days of apprentices.

[1] The respective conditions are defined in §98 of the Works Constitution Act.

[2] Kriechel et al. (2014) show that works council firms invest more into the training of their apprentices than do firms without a works council.

3 Relevant literature

3.1 Literature on worker absenteeism

A number of studies approache the topic from a labor market theory perspective. These studies often use an individual utility maximization setting and model the absence from work as a rational decision of the individual (e.g. Barmby and Treble, 1989, Barmby et al., 1991, Brown and Sessions, 1996). In addition, recent studies assume that the absence of workers from the workplace is a matter of individual choice (Jacob, 2010. Johns (2001) describes these approaches to absenteeism as "withdrawal models", in which absence is a consequence of unfavorable job or work attitudes. Nagin et al. (2002) introduces the concept of the "rational cheater" implying that workers may behave rationally when taking the decision to stay away from work.

Several studies focus on the demand side of the labor market and argue that firm characteristics and workplace arrangements affect the absence of workers. Heywood and Jirjahn (2004) and Heywood et al. (2008) find that firms organizing production in teams have lower absence rates than other firms, because the absence of workers in these firms is related to higher costs. Dionne and Dostie (2007) find that a number of specific workplace

arrangements, e.g., standard working hours, work-at-home options and reduced workweeks, significantly reduce the absenteeism of workers. Deery et al. (1995) show that the routinization of work increases the absence of Australian blue-collar workers. They further find that the existence of supervisory support in a firm significantly reduces worker absenteeism. Barmby et al. (1995) provide panel data results indicating that terms of employment contracts, such as wage payments or sick pay schemes, impact on the absence behavior of workers.

With respect to the role of labor market institutions in influencing workers' absence behavior, Osterkamp and Röhn (2007) find a positive effect of a strict employment protection on absence rates. Frick and Malo (2008) analyze the relation between the institutional framework and worker absenteeism in several European countries. Although the authors find no direct impact of the strictness of employment protection on the number of absence days, elaborate sickness benefit systems increase worker absence. Ichino and Riphahn (2005) analyze the impact of being eligible for employment protection after the end of a probation period in an Italian bank. They find that employment protection significantly increases the absence of (male) employees in the firm.

3.2 From worker to apprentice absenteeism

For an analysis of the relationship between works councils and the sickness-related absence of apprentices, the 'exit-voice' hypothesis (Hirschman, 1970) is a common starting point. At the core of the hypothesis is that citizens of states or members of organizations have two options when they perceive a decrease in their benefit situation. They can either leave ('exit') their organization or 'voice' their dissatisfaction with the situation to repair or improve the relationship.

Freeman (1976, 1980) applies these concepts to employee representation. Unionized workers express their discontent to the unions, which take up this information to confront the management on behalf of the worker. Empirically, Freeman analyzes the effect of unions on labor market mobility and provides evidence that the union 'voice' reduces the 'exit' propensity of workers. In line with this finding, a large number of more recent studies find evidence that works councils in Germany reduce employee turnover (Addison, 2001, Hübler and Jirjahn, 2003, Boockmann and Steffes, 2010), voluntary quits (Hirsch et al., 2010; Pfeifer, 2011) or lay-off rates (Frick, 1996; Bellmann et al., 2011).

Following Allen (1984), the absence of workers from the workplace can

be interpreted as a weaker form of 'exit', if quitting is not considered an option by the worker. Hence, one would expect that a 'voice institution' at the firm level reduces the absence of workers. In contrast to this expectation, empirical studies for the US find that union-covered workers have higher absence rates than non-covered workers in the same firm (Leigh, 1981; Allen, 1984; Chaudhury and Ng, 1992). Also newer studies for unionized workers in the United Kingdom (Veliziotis, 2010), Canada (Tompa et al., 2011) and Norway (Mastekaasa, 2013) confirm an absence increasing union effect.

One underlying reason for the negative effect is a potential 'politicization effect', meaning that union membership results in a more critical attitude towards the firms' management (Freeman and Medoff, 1984). Another reason discussed in the literature is that a higher level of worker protection through unionism leads to higher absent rates, because covered workers are less likely to experience sanctions imposed by the firm's management.

Considering this empirical evidence against the 'exit-voice' hypothesis, the case of German apprentices may yield different results due to at least two reasons. First, the cited studies presume that the higher absence rates for unionized workers are partly due to lower penalties for unionized workers in the firm. In Germany, however, sickness benefits and employment protec-

tion are regulated at the national, and not on the firm level. The Continued Remuneration Act (*Entgeltfortzahlungsgesetz* 1996) defines the conditions of sick-pay for all workers and apprentices in Germany. According to this Act, apprentices are not panelized in the form of pay cuts for their sickness-related absence. Further, the German Vocational Training Act (*Berufsbildungsgesetz* 2005) restricts the laying off of apprentices by firms after the probation period.[3] Thus, compared to US workers, German apprentices are by law eligible for the same level of sickness benefits and employment protection, regardless of whether they are trained in a firm with or without a works council.

Second, works councils in Germany may behave differently from the firm-level unions discussed in the context of other countries. The 'voice' obligation of works councils is explicitly defined in the respective legal framework and may therefore be enforced more rigorously than by unions facing a potentially different legislative setting. Adding to that, works council members often have been apprentices themselves early in their occupational career and thus view the 'protection' of apprentices as a relatively important part of their work (Berger, 2013). Consequently, German works councils may, compared to unions, be more engaged and thus be more active and effective in reducing

[3]The probation period for apprentices is up to four months. Beyond this threshold apprentices can only be laid off due to "exceptional reasons".

apprentices' absence rates.

4 Data sources and variable construction

4.1 Data sources

The data for the analysis stems from two different sources. The first source is the BIBB Cost-Benefit Survey (BIBB CBS) for the reference year 2007. The survey provides detailed information about firms' training behavior. Especially the costs and benefits involved in training, but also a large set of additional firm characteristics is surveyed. It is representative for all German training firms, because the addresses were drawn from the firm register of the Federal Employment Agency, where all firms with at least one employee subject to social security contributions are listed. The interviewers visited the firm in person and made use of computer laptops during their interview (CAPI). The regions, in which the survey was conducted, were drawn randomly. The survey information is specific to one training occupation that the firm trained in the reference year. Respondents were those persons that were responsible for the training of apprentices in the respective occupation. In large firms, the respondent was the training organizer or personnel man-

ager. In smaller firms, the owner of the firm answered the questions in the questionnaire. The BIBB CBS data set provides information for 2,986 firms in all economic sectors of the German economy.

The second source for data is the German Federal Employment Agency. Because the sample of training firms in the BIBB CBS was drawn from the firm register of the Federal Employment Agency, the survey data could be merged with employee records using a unique firm identifier. The administrative records not only contain information about additional firm characteristics (such as economic sector, size and regional information) but also information on the wage, qualification and socio-demographics of each apprentice in the firm. The merging with the administrative records thus adds person-level characteristics to the firm-level information. In case the firm only trains one apprentice in the respective occupation, the person-level characteristics are specific to this apprentice. In case the firm employs more than one apprentice, person-level information enter the data as firm-level averages.

Due to data protection issues, the merging of data could not be performed for all of the 2,986 firms. During the survey, the interviewer asked the firm for permission for the data merge. Of the 2,986 firms, 1,997 agreed to the merge. Due to the concern that firms permitting the merge could differ in terms of

observable and unobservable characteristics from firms declining the merge, Dietrich et al. (2014) perform a selectivity analysis. The authors come to the conclusion that the two samples of firms do not differ significantly in terms of observable structural variables. Of the 1,997 firms with the additional person-level information, I drop 345 cases with at least one missing value in one of the control variables. Furthermore, I exclude firms with fewer than five workers, because the staff of these firms is not legally entitled to elect a works council. After excluding another 150 firms that operate in the public sector, the final sample for the empirical analysis in Section 5 now consists of 1,255 firms.

4.2 Variable construction

The main dependent variable in the regression analysis is a count measure of the days apprentices are absent from the firm due to sickness. The distribution of the variable is presented in Figure A2 in the appendix. The main explanatory variable is a binary variable on the presence of a works council in the firm. In 14 percent of the training firms in the sample, a works council was present in the reference year of 2007.

With respect to control variables in the regression analysis, the models

contain a large set of variables stemming from the BIBB CBS firm-level survey. In addition to structural variables (firm size, economic sector, region, occupational field), the regression models include a measure of the firm's usual retention rate of apprentices. I assume that a firm with a higher retention rate is more willing to invest in the quality of training, independent on whether a works council is in the firm or not. Another control variable identifies whether the firm is covered by a collective bargaining agreement. The models also contain a measure of firm age (in years) and the average wage of skilled workers in the training occupation. An additional indicator controls for the competitive environment of the firm. The respective variable is equal to 1 if the firm reports to operate in a market segment of high competitive pressure, and 0 otherwise.

Moreover, the models control for indicators of recent re-organization events in the firm. I add dummies on whether the firm has recently introduced controlling instruments or has merged with another company to the set of control variables. These variables could be correlated with both the independent variable (works councils) and the dependent variable (sickness-related absence of apprentices), and thus are important controls in the regression models.

In addition to the firm characteristics, I include a set of person-level variables generated from the administrative records in the regression analysis. The models contain variables on socio-demographics, such as gender, age and nationality.

Furthermore, I add several variables to control for unobserved ability or motivation differences between apprentices to the models:

First, the regressions include the average daily pay for apprentices in the firm. Assuming that the between-firm variance of the last apprentice pay reflects upon the productivity differences stemming from a higher average motivation or ability, this variable should capture a part of the unobserved person-level heterogeneity.

Second, the models control for the time (days) the apprentice needs until his/her graduation from the apprenticeship. Although each apprenticeship has a predefined training period, apprentices may take a short cut and graduate from training up to one year prior to the end of the scheduled period.[4] The assumption is that apprentices taking the short cut are more motivated or have a higher level of innate ability than the average apprentice in the

[4]The possibility to take the short route depends on the examination results of an interim exam, on prior training experience or on the achievement of a formal school qualification ('Abitur').

occupation. Conversely, apprentices that need more than the predefined training period to graduate are assumed to be less motivated or have a lower level of innate ability than the average apprentice. The reason for this assumption is that an extention of the 'regular' training period is usally caused by failing the final exam and needing to be registered for another attampt. The respective control variable is constructed as the deviation from the occupational mean of training days needed for the graduation of the average apprentice in the firm.

Third, I include firm-level averages of apprentices' unemployment days before training and wether the apprentice makes use of support measures by the Federal Employment Agency during training. The latter variable is a scheme-based maesure that is offered to 'weak performers' and consequently may be correlated with the ability of apprentices. Fourth, the qualification level of the apprentices in the firm is controlled for by using a dummy variable on the share of apprentices with an university access qualification ('Abitur').

Finally, a variable reflecting upon the demand-supply relation in the local training market is added. It is calculated by dividing the number of offered apprenticeship positions by the number of applicants in the local area. The variable ranges from 76 percent to 108 percent. The former value describes a

situation of local excess supply, in which 100 candidates apply for 76 vacancies. Vice versa, the latter number mirrors an excess demand, in which 108 vacancies could be filled, but only 100 apllicants are available in that region. The reasoning for including this variable is that an excess demand forces firms to take in apprentices that are not necessarily the best match. In a situation of excess supply, however, firms may choose among more applicants and more easily find a good match. The expectation is that apprentices' absence is higher in regions with an excess demand for apprentices, because more conflicts arise due to the lower match quality.

Taken together, the availability of rich data allows to control for many aspects of firm and apprentice heterogeneity, which reduces the risk of an omitted variable bias in the estimates.

5 Empirical analysis

5.1 Descriptives

Table B1 supplies descriptive information about all variables used in the regression analysis. The table shows the means for the samples of firms with and without works councils.

Comparing firms with and without a works council, differences emerge for several of the characteristics. The number of absence days is lower in firms *with* a works council than in firms *without* a works council. In addition, apprentices in firms with a works council have a lower average number of (prior) unemployment days, are more often qualified for universities, receive a higher training wage and stay in the firm more often after the training, when compared to apprentices in other firms. Furthermore, firms with a works council more often operate in the export sector, have signed collective agreements and pay higher skilled-worker wages. However, many of these differences exist because the likelihood of having a works council is strongly correlated with the size of a firm (the herewith related consequences for the regression analysis are discussed in Section 5.4).

Table B2 presents the mean of absence days by structural characteristics. The table illustrates that absence days differ according to firm size, whereas there appears to be no clear pattern of large firms having more or fewer absence days than small firms. With respect to occupational field, absence days in construction occupations are almost three times as high as in health occupations. With respect to the broad economic sector (NACE in five categories) and region (West and East Germany), the differences are considerably

smaller.

To summarize, the descriptive tables show a considerable heterogeneity in absence days across structural variables. Moreover, the differentiation by works councils already suggests that the number of absence days is lower in firms with this institution. The following section analyzes the importance of works councils using a count data regression framework.

5.2 Estimation strategy

The econometric approach chosen in this paper is contingent upon the measurement of the main dependent variable, i.e. the average number of sickness-related absence days of apprentices. Because the variable is a count measure, I assume a Poisson distribution of the dependent variable. However, because a simple Poisson model only includes one free parameter, it does not allow for the variance to be adjusted independently of the mean. In case the variance is larger than the mean (i.e. in the case of over-dispersion), a model with an additional free parameter provides a better fit. To test for over-dispersion, I perform a test that compares the mean with the variance of absence days for the independent (dummy) variable of works councils. The test reveals that the variance is several times larger than the mean. In this case, the litera-

ture suggests the use of a negative binomial regression model (Goodman and Atkin, 1984, Delgado and Kniesner, 1997, Vistnes, 1997).[5]

The negative binomial model has the form

$$\log absdays = intercept + b_1 woco \tag{1}$$

with *absdays* being the average number of sickness-absence days in a training year and *woco* being the main independent variable of works council. The empirical model has the form

$$\log absdays = \alpha + +\beta_1 woco_i + \beta_2 Xfirm_i + \beta_3 Xind_i \tag{2}$$

with the additional term $Xind$ representing a vector for the aggregated person-specific information and $Xfirm$ representing a vector for the firm-level variables in firm i.

This implies that

$$absdays = exp(\alpha) * exp(\beta_1 woco_i) * exp(\beta_2 Xfirm_i) * exp(\beta_3 Xind_i). \tag{3}$$

[5]The paper refrains from using a zero-inflated regression model because the zeros in the absence days measure are 'true' zeros. In the presence of uncertainty of whether the zero codes also contain 'untrue' zeros, the estimation approach would require a separate modeling of the zero-values. See Cameron and Trivedi (2005) for a detailed discussion of count data models.

5.3 Regression results

Table 1 reports the result of the absence days regression analysis.[6] The three columns show (i) the baseline model including the main explanatory variable but no other control variables, (ii) the baseline model plus the firm-level explanatory variables and (iii) the full model including the (aggregated) person-specific variables.

Concerning the main explanatory variable, the coefficient of works councils shows the expected sign and is significant in all three of the displayed models: Works council firms are associated with a significantly lower number of average absence days than firms without such an institution.

Table 2 calculates the predicted number of absence days for firms with and without a works council, holding all other control variables at their mean. Similar to the differences given in Table B1, the margins show lower levels of absence days for firms with a works council.

With respect to the other control variables in the regression model, the results imply that a higher retention rate, and thus an investment-oriented strategy of training, reduces the number of absence days of apprentices. This

[6]Note that the post-estimation test performed by stata confirms the existence of over-dispersion in the data and thus justifies the use of a negative binomial regression model. Results are available upon request.

Table 1: Negative binomial regression: Days of sickness absence

	(i): baseline	(ii): (i)+Xfirm	(iii): (ii)+Xind
Works council in firm	-0.213**	-0.259**	-0.251**
	(0.090)	(0.106)	(0.105)
Share of apprentices retained		-0.002**	-0.002**
		(0.001)	(0.001)
Number of apprentices in firm		-0.000	-0.001
		(0.003)	(0.003)
Local demand-supply ratio (percent)		0.020**	0.020**
		(0.008)	(0.008)
Firm merged with other firm		0.312***	0.286***
		(0.121)	(0.106)
Firm introduced cost controlling		0.168*	0.168*
		(0.090)	(0.086)
Covered by collective agreements		0.046	0.047
		(0.081)	(0.076)
Age of firm (years)		-0.000	-0.001
		(0.001)	(0.001)
High competitive pressure		0.231**	0.220**
		(0.090)	(0.089)
Firm in export sector		-0.134	-0.142*
		(0.084)	(0.086)
Male apprentices			-0.044
			(0.136)
Non-German apprentices			-0.341
			(0.242)
Social aid during apprenticeship			0.292
			(0.237)
Unemployment days before training			-0.000
			(0.000)
Training duration (deviation from mean)			-0.038
			(0.073)
Last daily apprentice pay (Euro)			0.001
			(0.006)
Age at time of graduation (years)			-0.006
			(0.018)
Obtained university access ('Abitur')			0.160
			(0.171)
Constant	2.202***	0.693	0.785
	(0.073)	(0.807)	(0.952)
Observations	1255	1255	1255

Robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.
Additional control variables: Occupational field (12), firm size (7), sector (5), region (2).

Table 2: Marginal effects of works council on the number of sickness days

Delta-method	Margin	Std. Err.	z	P>z	[95% Conf.	Interval]
No Works council	8.46	0.39	21.77	0.00	7.70	9.22
Works council	6.52	0.61	10.75	0.00	5.33	7.71

result seems plausible considering that firms interested in the post-training employment of apprentices offer a better training quality than firms without this interest. This better training quality reduces potential conflicts and thus the 'exit' of apprentices through absenteeism.

In contrast, the measures for organizational change (i.e. firm mergers and the introduction of cost controlling) lead to higher number of absence days of apprentices. This result is in line with findings that firm reorganization may have adverse effects on the health of workers (Quinlan and Bohle, 2009; Egan et al., 2007). The coefficients on the local demand-supply relationship imply that tight labor markets lead to a higher number of absence days of apprentices. One possible interpretation of this result is that excess demand for apprentices leads to a lower match quality, which in turn increases the 'exit' of apprentices in terms of absence from the firm.

Furthermore, the coefficient for highly competitive pressure in the training firm is positive and significant. Thus, in line with the literature cited in Section 3, competitive pressure in a firm could result in a higher work

pressure, which in turn increases the potential for conflicts and therefore the voluntary or involuntary absence of apprentices. It should also be noted, however, that the degree of competitive pressure is self-reported and thus a subjective measure. Still, due to the lack of exogenous competition indicators, the result is in line with the above-cited literature on the negative effect of poor working conditions and work pressure on workers' health.

Concerning the (aggregated) person-specific variables, the estimates imply a somewhat lower absence of male apprentices compared to female apprentices, which is a result observed in the literature (Vistnes, 1997, Dionne and Dostie, 2007). However, the respective coefficient is not significant.

In general, the results for the person-level characteristics suggest that controlling for training occupations and other firm characteristics in the regression model already captures a large part of the unobserved heterogeneity among apprentices.[7]

5.4 Measurement issues and robustness of results

A number of potential problems need to be discussed when interpreting the results obtained from the previous analysis. First, the measurement of the

[7]See, for example, Dolton et al. (1989) for a discussion on the role of unobserved heterogeneity in occupational sorting.

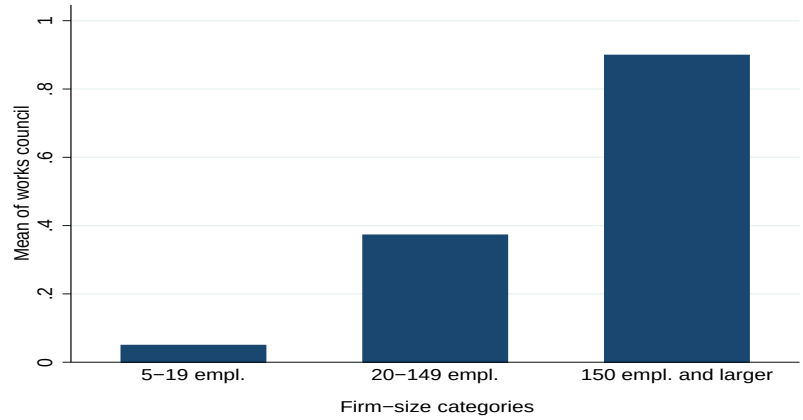
number of sickness-related absence days could be 'noisy' because the respective information is provided by the trainer or personnel manager in the firm and not by the individual apprentice. Hence, it is not possible to identify whether the absence from the firm is really sickness-related or if shirking plays a role (Cappelli and Chauvin, 1991). One could expect, however, that the presence of a works council reduces both the involuntary and the voluntary form of absence by providing a 'voice' for apprentices.

Second, Brown and Sessions (1996) discuss the possibility of presenteeism, meaning that workers (and in this paper apprentices) tend to come to work even when ill and entitled to sickness payments. Assuming that presenteeism plays a role in the measurement of absence days, one would expect that the 'voice' of works councils *increases* absenteeism among apprentices, because works councils would enforce apprentices' rights in cases of truly sickness-related absence. An analysis of the separate components of absenteeism is, however, not possible with the data at hand.

Third, despite the richness of the data and the measures for reducing apprentices' unobserved heterogeneity (see Section 4), I cannot entirely rule out the possibility that apprentices select themselves into certain firms on the basis of unobserved characteristics. Dionne and Dostie (2007) indicate

that unobserved heterogeneity at the person level could concern differences in the preferences, work ethics or motivation levels of apprentices. Since direct information on these differences is not available in the data, I cannot claim to fully control for all of the individual heterogeneity in the models.

Figure 1: Existence of works councils and firm size



Source: BIBB CBS 2007.

Finally, firms in which workers establish a works council could differ in their unobservable characteristics from firms, in which this is not the case. Although the problem is extensively discussed in the literature, solutions proposed to date do not solve all of the endogeneity issues. Even when using panel data, a problem could arise from the possibility that the implementation or the breakup of works councils is relatively rare and firms reporting a change may themselves have very specific unobserved attributes compared to firms that have already been working with or without a works council for

Table 3: Negative binomial regression: Days of sickness absence

	Reduced sample 20 to 150 empl.	Absence <= 9 days	Absence > 9 days
Works council in firm	-0.215**	0.043	-0.285**
	(0.104)	(0.076)	(0.117)
Share of apprentices retained	0.000	-0.000	-0.001
	(0.001)	(0.001)	(0.001)
Number of apprentices in firm	-0.003	0.004*	-0.003
	(0.015)	(0.003)	(0.005)
Local demand-supply ratio (percent)	0.019*	0.015**	0.009
	(0.011)	(0.007)	(0.007)
Firm merged with other firm	0.125	0.171**	-0.053
	(0.137)	(0.068)	(0.092)
Firm introduced cost controlling	0.125	0.061	0.064
	(0.091)	(0.064)	(0.081)
Covered by collective agreements	0.093	-0.099	0.015
	(0.114)	(0.066)	(0.074)
Age of firm (years)	-0.000	0.001	0.001
	(0.001)	(0.001)	(0.001)
High competitive pressure	0.125	0.136	0.186**
	(0.181)	(0.083)	(0.094)
Firm in export sector	-0.059	-0.176**	-0.174**
	(0.109)	(0.075)	(0.081)
Male apprentices	0.410**	-0.200*	0.110
	(0.193)	(0.109)	(0.121)
Non-German apprentices	-0.310	-0.120	0.860
	(0.269)	(0.157)	(0.540)
Social aid during apprenticeship	-0.018	0.287***	-0.139
	(0.425)	(0.100)	(0.190)
Unemployment days before training	0.000	0.000	-0.000
	(0.001)	(0.000)	(0.000)
Training duration (deviation from mean)	-0.118	-0.011	-0.025
	(0.127)	(0.061)	(0.069)
Last daily apprentice pay (Euro)	0.010	0.000	0.005
	(0.008)	(0.005)	(0.007)
Age at time of graduation (years)	0.021	0.024*	0.009
	(0.027)	(0.015)	(0.019)
Obtained university access ('Abitur')	0.237	-0.028	0.537***
	(0.230)	(0.114)	(0.208)
Constant	-0.287	-0.656	2.229***
	(1.493)	(0.814)	(0.834)
Observations	495	793	462

Robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.
Additional control variables: Occupational field (12), firm size (7), sector (5), region (2).

a long time.

One approach to cope with this issue is to reduce the sample to a subgroup of firms that have a larger variation in the existence of a works council (Addison et al., 2010, Kriechel et al., 2014). As Figure 1 shows, firms with few employees have a very low likelihood of having a works council, whereas firms with many employees have a high likelihood. Therefore, I run the same regressions shown in Table 1 on the subgroup of firms with 20 to 150 employees. As the first column in Table 3 shows, this exercise yields a slightly smaller but still significant (at the 5 percent level) coefficient.

To gain further insight into the variance of the works council effect, Table 3 also presents separate estimates for firms with above average absence levels (i.e., with more than nine days of absence per year) and firms with below average absence levels (i.e., with fewer than nine days of absence per year).

The regression output in column 2 and 3 of the table shows that the influence of works councils in reducing sickness-related absence days of apprentices is greater in firms with high absence levels. In contrast, in firms with low levels of absence, the works council coefficient remains insignificant. This result suggests that firms with relatively high levels of absenteeism especially profit from a 'voice' institution, whereas in firms with low levels of

absenteeism, works councils cannot further reduce the number of absence days.

6 Concluding remarks

This paper analyzed the question regarding whether works councils reduce the sickness-related absence of apprentices from the training firm. The German legal framework defines an active role of works councils in monitoring the training quality and in resolving conflicts between apprentices and management at the firm level. Consequently, the hypothesis tested in this paper was that the 'voice' institution of works councils reduces the likelihood of an 'exit' in the form of (involuntary or voluntary) workplace absence.

In line with the hypothesis, count data regression results suggest that works councils are associated with fewer absence days. On the margin, works council firms have a 20 percent lower number of absence days than firms without a works council. The result remains robust even when reducing the sample to small and medium-sized firms, for which the presence of works councils is more evenly distributed than for the respective groups of very small and very large firms.

Splitting the sample into firms with absence days above and below the mean of nine days reveals that works councils are more effective for firms with a high levels of absence days. The works council coefficient for firms with low absence levels is no longer significant. This result suggests that the 'voice' for apprentices is not needed in firms, in which the level of absenteeism of apprentices is already relatively low.

With respect to the literature in the field, this paper provides empirical support for the 'exit-voice' hypothesis as discussed by Hirschman (1970). Considering studies with contrasting results for unionized workers, German works councils appear to be more effective in reducing worker absenteeism and therefore in reducing firms' costs in terms of forgone productivity. However, one reason for the absence-reducing effect could be the specific nature of German apprenticeship system and the explicit legal framework highlighting the monitoring function of works councils in the training firm.

Finally, considering literature on the effects of national labor market legislation on worker absence, the results of this paper underline the complexity of mechanisms at work. In Germany, the firm-level institution of works council appears to counteract the absence-increasing effect of national employment-protection and sickness-benefit legislation that has been identified in the lit-

erature. A comprehensive assessment of the absence of workers thus must consider the potentially heterogeneous effects of different institutional arrangements in a country.

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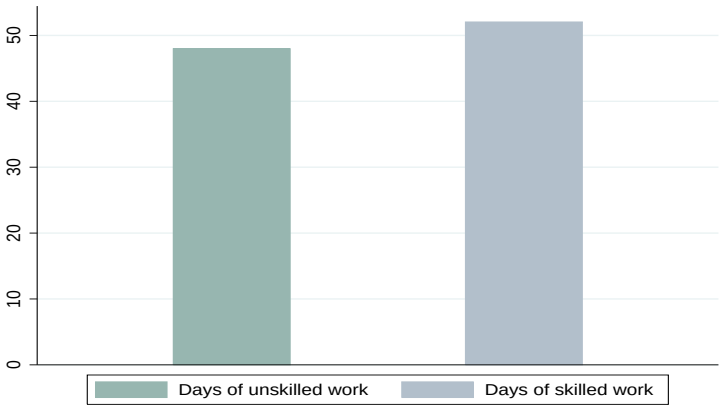
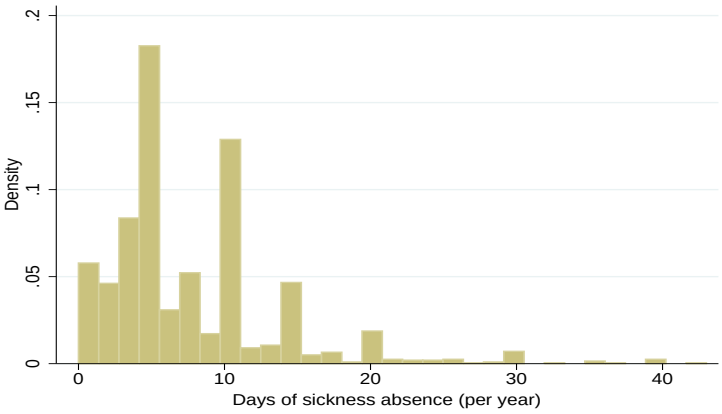
A Figures

Figure A1: Days of productive work (per apprentice and year)



Source: BIBB CBS 2007

Figure A2: Distribution of apprentices' absence days



Source BIBB CBS 2007. Firms (26) with more than 50 absence days are not displayed.

B Tables

Table B1: Summary statistics of main variables (mean)

	Works council in the firm	No works council in the firm	Total
Main (In)Dependent variables			
Days of sickness absence	7.31	9.04	8.80
Works council in firm	1.00	0.00	0.14
Firm training variables			
Share of apprentices retained	74.45	56.59	59.09
Number of apprentices in firm	5.55	2.28	2.74
Monthly skilled worker wage (Euro)	2572	2198	2250
Local demand-supply ratio (in percent)	100.55	100.35	100.38
Firm (re)organization variables			
Firm merged with other firm	0.18	0.10	0.11
Firm introduced cost controlling	0.41	0.30	0.32
Covered by collective agreements	0.76	0.52	0.55
Age of firm (in years)	57.96	29.84	33.78
Export sector	0.32	0.10	0.13
High competitive pressure	0.87	0.79	0.80
Other structural firm variables			
1-9 employees	0.00	0.45	0.39
10-49 employees	0.29	0.49	0.46
50-99 employees	0.20	0.04	0.06
100-249 employees	0.27	0.02	0.05
250-499 employees	0.17	0.00	0.03
500-999 employees	0.03	0.00	0.00
1000+ employees	0.03	0.00	0.01
Crafts	0.41	0.33	0.34
Trade	0.23	0.27	0.26
Services I	0.11	0.14	0.14
Services II	0.15	0.13	0.13
Education, health	0.10	0.13	0.13
West Germany	0.85	0.84	0.84
Person-level variables (firm ⊘)			
Male apprentices	0.64	0.54	0.56
Non-German apprentices	0.07	0.08	0.08
Social aid during training	0.03	0.05	0.05
Unemployment days before training	30.87	44.18	42.31
Days of training until graduation	1034	1030	1031
Last daily apprentice pay (Euro)	29.20	21.70	22.75
Age at time of graduation (years)	22.90	22.89	22.89
Obtained university access (Abitur)	27.23	19.01	20.16
Observations	370	885	1255

Table B2: Sickness-related absence days by structural variables

	Mean	St.deviation
Firm size		
1-9 employees	8.50	(10.85)
10-49 employees	9.42	(15.34)
50-99 employees	7.80	(7.66)
100-249 employee	8.00	(6.54)
250-499 employee	6.89	(4.80)
500-999 employee	7.53	(5.14)
1000+ employees	7.75	(6.94)
Occupational field		
Metalworking	7.74	(5.13)
Electrical engineering	8.36	(6.44)
Information technology	6.15	(7.53)
Chemistry	6.35	(4.66)
Accommodation and food	10.25	(12.46)
Construction	14.01	(24.18)
Print, media	6.85	(9.77)
Health	5.11	(4.24)
Administrative: sales and distribution	9.10	(8.40)
Administrative: headquarters	9.83	(18.06)
Other occupations	7.74	(7.12)
Economic sector		
Crafts	9.81	(14.84)
Trade	8.50	(7.06)
Services I	8.59	(8.70)
Services II	7.22	(6.90
Education, health	8.61	(20.99)
Region		
West Germany	9.10	(9.02)
East Germany	8.74	(13.28)
Total	8.80	(12.69)