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Laszlo Goerke, Markus Pannenberg*

Trade Union Membership and Works Councils in West Germany**

Abstract – The fraction of works councillors belonging to a trade union in Germany is much higher than union density among employees. If works councils represent the face of unions, union membership of employees should be related positively to the existence of works councils and their proximity to unions. Using data from the German Socio-Economic-Panel SOEP for West Germany we find that (a) works councillors exhibit a higher probability of being a union member, (b) the mere existence of a works council within an establishment has no significant impact on union membership and (c) a ten percent decrease in the average share of unionised works councillors coincides with a ten percent fall in the probability of being a union member. Hence, the decline in the unionisation of works councillors and the fall in union density in West Germany are closely linked.

Mitgliedschaft in Gewerkschaften und Betriebsräte in Westdeutschland

Zusammenfassung – Der Anteil der Gewerkschaftsmitglieder an allen Mitgliedern eines Betriebsrates ist erheblich höher als der gewerkschaftliche Organisationsgrad der Arbeitnehmer. Stellen Betriebsräte das Aushängeschild der Gewerkschaften dar, sollte die Gewerkschaftsmitgliedschaft der Beschäftigten positiv mit der Existenz von Betriebsräten und deren Nähe zu Gewerkschaften korreliert sein. Auf der Basis von Daten des Sozioökonomischen Panels (SOEP) für Westdeutschland finden wir zu dieser Hypothese folgende Ergebnisse: (a) Betriebsräte haben eine höhere Wahrscheinlichkeit Gewerkschaftsmitglieder zu sein. (b) Die alleinige Existenz eines Betriebsrates innerhalb eines Betriebs hat keine signifikante Auswirkung auf die Mitgliedschaft. (c) Eine zehnprozentige Abnahme des durchschnittlichen Organisationsgrades von Betriebsräten in einer Branche geht einher mit einer zehnprozentigen Reduzierung der Wahrscheinlichkeit, Gewerkschaftsmitglied zu sein. Folglich sind die Abnahme des Organisationsgrads in Westdeutschland und der fallende Anteil gewerkschaftlich organisierter Betriebsräte eng miteinander verknüpfte Phänomene.

Key words: **Panel Data, Trade Union Membership, Works Councils**

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1. Introduction

Why has trade union membership declined so dramatically in Germany since unification, dropping from approximately 13.7 million in 1990 to 8.5 million members in 2005? Age, sex, or occupational characteristics have consistently been found to explain an individual's probability of being a trade union member. However, these determinants of membership have not changed sufficiently over time to explain the dramatic decline in union density (Fitzenberger et al. 2006; Schnabel/Wagner 2006a). Among the explanatory variables subjected to empirical scrutiny, a particularly relevant one especially in the German industrial relations context has often been missing, namely the impact of employee representation at the establishment level.

While the influence of trade unions within establishments is often limited in Germany, there is a well-established system of employee representation at the level of the establishment, involving extensive information, consultation and co-determination rights. The Works Constitution Act makes works councils mandatory in all firms with at least five full-time employees. They are elected by the entire workforce. Since elections do not have to take place, unless employees request them, works councils are not comprehensive. In the year 2000, works councils existed in one out of six establishments and covered about 53 % of all German employees (Addison et al. 2004). Works councils are legally independent from trade unions and there is a fairly strict division of competences. Nevertheless, they are often closely related to trade unions since a large but declining majority of works councillors belong to trade unions. This suggests that the presence of works councils within an establishment can influence the decision of employees to become or be a member of a trade union. The conjecture is supported by the evidence on the development of union density and works council coverage over time, as the share of employees who are represented by works councils has also fallen.¹

Our hypothesis is that the existence of unionised works councils has a positive impact on the probability of an individual being a member of a trade union. We investigate this hypothesis using a representative survey of German residents (SOEP) which, *inter alia*, provides information on union density and representation by works councils for the years 2001 and 2003. We find that the fraction of unionised employees has declined by 1.7 percentage points from 2001 to 2003 to a level of 19.5 %. The share of works councillors who are members of a trade union has fallen more rapidly during that time span from about 68 % to 56 %. Our econometric analysis reveals that the proximity of works councils to trade unions, as measured by the fraction of unionised works councillors in an industry, is an important determinant of the individual membership decision. This implies that the strength of trade unions in Germany can be influenced by the share of unionised works councillors.

This paper is structured as follows: Section 2 substantiates our claim that the existence of works councils and, in particular, their proximity to trade unions can have an impact on the probability of an employee belonging to a union. To do so, the relation-

¹ Hassel (1999b) reports – for a non-representative sample – that the coverage of private sector employees by works councils declined from 50 % to 40 % from 1981 to 1994.

ship between trade unions and works councils, primarily as regulated in the Works Constitution Act, is outlined first. Section 2.2 presents and discusses various arguments as to why works councils can influence the probability of trade union membership. The scarce and mostly indirect empirical evidence on this issue is summarised in Section 2.3. The focus of our exposition of the legal situation is on the private sector. This is because there is a different, albeit similar system of employee representation in the public sector. Hence, most arguments with respect to the impact of works councils on union membership in the private sector discussed in Section 2.2 also apply to the public sector. We accommodate this similarity by including public sector employees into our empirical analysis. In Section 3 the data and the empirical specifications are described. Section 4 contains descriptive evidence on the unionisation of employees and works councils in Germany. This section also presents the estimates of a single-equation model of trade union membership in which the information on the works councillor status of an individual and on the fraction of unionised works councillors in an industry enters as an exogenous explanatory variable. However, being a works councillor may be regarded as endogenous with respect to the individual decision to join a union, since unobservable individual abilities could influence both outcomes for example. As a check of robustness, the results from estimating a recursive simultaneous two-equation probit model of union membership and works councillorship are reported. They confirm the findings for the single-equation set-up. Section 5 summarises our results and concludes.

2. On the relationship between works councils and trade unions

2.1 Works councils and trade unions in the German system of industrial relations

An extensive coverage by works councils in Germany dates back to 1920 when this institution was established by law.² At that time works councils were introduced as a means to mitigate revolutionary desires. They were interpreted as an instrument of more reform-oriented unions, in order to further their influence at the plant level. Subsequent to World War II the dual interest representation through unions on the one hand and by works councils on the other hand was set up again, after being destroyed during the Third Reich. In particular, the Works Constitution Act (WCA, 'Betriebsverfassungsgesetz') of 1952 gave works councils ('Betriebsräte') important powers in social, personnel, and economic matters. Trade unions did not unanimously approve of this law. Firstly, some regional regulations which were replaced by the Works Constitution Act had involved substantially more co-determination rights than the WCA. Secondly, the Works Constitution Act emphasised the independence of works councils from unions at the establishment level. In 1972, the Works Constitution Act was amended and co-determination rights of works councils in social and personnel matters were extended. But, as Müller-Jentsch (1995: 55) points out, "although the access of the unions to the workplace and their links with the works coun-

² See Müller-Jentsch (1995), Addison (1999), and Addison et al. (2000) for descriptions of the development of co-determination in Germany and the current regulations of the Works Constitution Act in English.

cils were improved, the formal independence of the councils and their exclusive jurisdiction over interest representation at the plant level were not affected.”

According to today’s version of the Works Constitution Act, which was last changed substantially in 2001, a works council must be established in any private sector company with at least five full-time employees at their request. Works councils are elected by all employees of full age in an establishment, with the exception of so-called ‘Leitende Angestellte’, employees with substantial decision-making rights (§ 5 WCA). Works councils have co-determination rights on social issues and personnel matters and can veto hiring and dismissal decisions under fairly restrictive conditions. They also have information and consultation rights regarding matters of personnel planning and the organisation of the work process and information entitlements with respect to business matters. Some of these competences are limited to larger companies, with more than 20 or 100 full-time employees. The works council must act “in the spirit of mutual trust, taking into account effective collective bargaining agreements, and in collaboration with trade unions and employers associations present in the establishment, with the aim of furthering the well-being of employees and establishment” (own translation, WCA § 2). To achieve this objective, union representatives must be granted access to the establishment. Unions can, in addition, propose candidates for works council elections (§ 14) and bring cases to the labour court if employers do not adhere to their obligations detailed in the Works Constitution Act (§ 23). A union representative can participate in works council meetings if at least 25 % of the works councillors make an according request (§ 31). Moreover, employers and works councillors are obliged to prevent any discrimination, inter alia, with respect to union activity and attitudes towards trade unions (§ 75). While works council members are not allowed to call a strike in their role as councillors, they are not restricted in their union activities (§ 74).

This brief survey of the role of unions as laid down in the Works Constitution Act indicates that trade unions and their representatives can play an important role for works council activities. However, their impact on a firm’s decision is often contingent on cooperation of the works council. In this sense, works councils may be interpreted as gatekeepers who can regulate a trade union’s influence at the establishment level.

2.2 Works councils and trade union membership – some theoretical considerations

Joining a trade union can be interpreted as the decision to purchase a good. While the price of the good can be measured precisely – the union membership fee – the nature of the good which an employee acquires by joining a union is less well defined. Many of the benefits which trade unions confer on their members are not private but constitute semi-public or pure public goods. This is especially true in Germany where the Basic Law (‘Grundgesetz’) guarantees the right to form coalitions between employees and employers. This basic right also entails the right not to join a coalition, such as a trade union. Accordingly, closed shops are illegal. This ‘negative freedom to join a coalition’ has also been interpreted by legal experts as ruling out differential wages or working conditions for otherwise alike union members and non-members. Accord-

ingly wages, working conditions, employment protection rules, and further consequences of trade unions activities benefit all employees within a firm or industry to which a collective bargaining agreement applies, irrespective of whether the person is a member of a trade union or not. This implies strong incentives to take a free ride on the benefits of trade union membership.

The last decades in the economic analysis of union membership have been characterised by the search for (quasi-) private goods which are uniquely related to trade union membership.³ Trade unions have been hypothesised to further employment protection solely for its members (Moreton 1998; Moreton 1999; Jones/McKenna 1994) and to be the sole provider of unemployment insurance (Holmlund/Lundborg 1999). Booth/Chatterji (1995: 346) further suggest “legal and pensions advice” and “grievance and promotion procedures” as private goods provided by unions. In addition to interpreting the excludable good in the above terms, trade union membership has also been viewed as providing a reputation which enhances a member’s utility directly due to an according societal norm.⁴ Since this reputation effect can only be obtained by a union member, social custom models can also help to overcome the free-rider problem.

Works councils have not played a role in this literature yet. This is to some extent surprising. We have identified five reasons for this neglect: Firstly, there is a close relationship between works councils and trade unions in Germany, as outlined above in Section 2.1. In addition, a large majority of works councillors have been or are trade union members (see Section 2.3 below for evidence). Therefore, industrial relations scholars have repeatedly interpreted works councils as decisive instruments of trade unions to recruit members within firms (Kotthoff 1979: 299; Streeck 1981: 209 ff.; Müller-Jentsch 1995: 61; Ebbinghaus/Visser 1999; Heery 2003). Taking this hypothesis as a starting point, Behrens (2005) estimates the probability that a works council will invest great effort in recruiting new union members. He finds a significantly positive impact of the union density of work councillors on this probability.

Secondly, works councillors can influence hiring and dismissal decisions (according to §§ 99 – 103 WCA), as mentioned above. Given a proximity of works councillors to trade unions, their impact on employment decisions implies that works councillors may relate trade union membership of an individual to his or her future job prospects (Streeck 1981: 211; Hassel 1999a: 142 ff.). An according relation can exist, even if the Works Constitutions Act explicitly forbids discriminating non-members since such membership-based discrimination is difficult to substantiate. Thirdly, unionised works councils can enforce a norm or custom according to which free-riding on union membership is not desirable (Checchi/Visser 2005). This would suggest that the proximity of works councillors to trade unions, as manifested in their union membership, is conducive to an individual’s probability of membership. Fourthly, trade

³ See Schnabel (2003) for a survey of the literature.

⁴ Such models of trade union membership are based on the seminal paper by Akerlof (1980) and have been developed and employed by Booth/Chatterji (1993); Corneo (1993, 1995, 1997); Naylor/Cripps (1993); Naylor/Raaum (1993); Goerke (1997); and Goerke/Pannenberg (2004), *inter alia*.

union membership may be viewed as an experience good (Bryson/Gomez 2003: 74). The stronger the linkage between works councils and trade unions is, the more employees experience the effects of trade unions and the more likely it is that they also join.

Finally, union membership has been shown to increase with the existence of institutions which are closely related to trade unions, such as union unemployment insurance schemes. The so-called Ghent systems usually do not make trade union membership compulsory in order to obtain unemployment benefits. However, since the collection of unemployment insurance contributions and the paying out of benefits is organised by trade unions or by affiliated funds, the contact between employees and trade unions is much more intensive in countries with a Ghent system. This can enhance the incentives to join a union, or to remain a union member when becoming unemployed. The evidence for such a linkage comes primarily from cross-country studies on union density (Western 1993; Western 1997: 55, 133; Ebbinghaus/Visser 1999; Blaschke 2000; Checchi/Visser 2005). Böckerman/Uusitalo (2006) show in addition that the emergence of independent, non-union related-unemployment insurance funds reduces union density in Finland.

The argument that being exposed to institutions close to trade unions enhances the probability of union membership can be extended to (unionised) works councils. In addition, such an institutional explanation of union membership decisions is amenable to an empirical investigation at the level of the individual employee because the experience of employees with the institution 'works council' varies greatly in Germany. This is the case because works council exist only in about every sixth company. Note though that works councils exist in an overwhelming majority of large firms. Therefore, the fraction of employees working in establishments in which there are works councils is much higher than 16% and amounts to around 61 % in our data for 2001.⁵

All of the above arguments referring to the positive impact of works councils on trade union membership are based on the assumption that works councillors are trade union members. If, however, that is not the case, works councillors will – presumably – not have an incentive to recruit employees as members or to enforce a social custom of trade union membership. Works councils which are dominated by non-union members may instead suggest to employees that non-membership is advantageous (Ebbinghaus/Visser 1999; Schnabel/Wagner 2006b). Furthermore, works councillors who abstain from unions are less likely to relate union membership with job prospects. A non-unionist works council may also function as a substitute for union activities at the establishment level and, hence, for union membership (Blaschke 2000; Visser 2002). Accordingly, a positive relationship between the incentives of being a trade union member and the existence and activities of works councils may be contingent on the proximity of works councils to trade unions.

2.3 Evidence on works councils and union membership

The unionisation of works councillors, or more precisely the number of works councillors who are members of a trade union relative to all works councillors, can be used

⁵ See Table A.2 in the Appendix. Addison et al. (2004) calculate a works council coverage of 54 % in West Germany for 2000, using the IAB Establishment Panel.

to measure the proximity between works councillors and trade unions. At an aggregate level, such information has been collected by the German Trade Union Confederation (Deutscher Gewerkschaftsbund, DGB) for firms in which at least one works councillor is a member of a trade union belonging to the DGB (Hassel 1999a: 143). In addition, the Institut der Deutschen Wirtschaft, a research institute associated with the German employers' associations, provides data on the union membership of works councillors for a sample of firms which belong to employer associations. The latter data, spanning a longer time period, is summarised in Figure 1.

Figure 1: Union density of works councillors and heads of works councils 1965-2002
(Sources: Niedenhoff 1981, 2003).

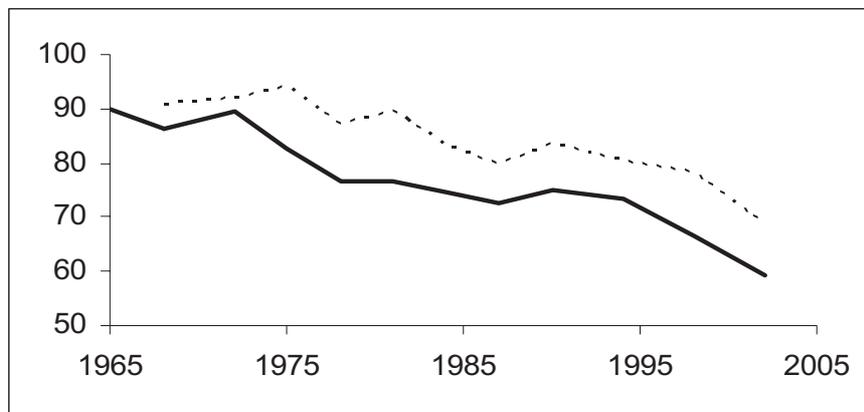


Figure 1 depicts the share of works councillors (bold line) and the heads of works councils (dotted line) belonging to a trade union. Works council elections have generally taken place every three years until 1990. Works councillors have been elected for a period of four years since then. Hence, the last election included in Figure 1 took place in 2002. The numbers summarised in Figure 1 indicate that the trade union density of works councillors has declined substantially from 90 % in 1965 to about 75 % in 1994 and to less than 60 % in 2002. The change in the fraction of union members among the heads of works councils has been comparable, although their density level has been considerably higher.

The data from the German Trade Union Confederation show that the share of works councillors who are union members declined only marginally to slightly less than 80 % in the period 1972 to 1994 (Hassel 1999a; Hassel 1999b). Until 1998, the next year in which works councils were elected, the respective share fell to about 73 % (Behrens 2005). The differential results suggest that the union density of works councillors shrank (from 1972 – 1994) especially because the share of completely non-unionised works councils rose, which are not included into the data from the DGB. Irrespective of the source of information, trade union density among works councillors is found to be least in those industries in which the fraction of unionised employees is also relatively low (Niedenhoff 2003; Hassel 1999b).

Trade union density in Germany was relatively stable from the mid 60s to mid 70s and increased slightly during the second half of the 70s, only to fall again during the 1980s. Density jumped by about five percentage points with German unification and has declined dramatically since then to – depending on the exact measure of union density looked at – approximately two-thirds or less of the level prevailing in the 1960s. This development is comparable to the change in the union density of works councillors as summarised in Figure 1, suggesting that the two types of density may be related. However, while the relative reduction in union densities among employees and works councillors from the mid 1960s to the beginning of this decade has been similar in magnitude, the development for the union density of works councillors has been less erratic.

Despite the various indications that the existence of works councils and the fraction of unionised works councillors may have a positive impact on the probability of an employee being a trade union member, immediate empirical evidence on this relationship is scarce. Schnabel/Wagner (2007) find that trade union presence at the workplace raises the probability of union membership in all 18 countries which are included into the analysis. This finding is consistent with evidence by Ebbinghaus/Visser (1999); Checchi/Visser (2005); Checchi/Lucifora (2002); and Visser (2002) for union density in Western European countries. Schnabel/Wagner (2006b) confirm the impact of union representation on membership for Germany. Estimating the probability of never being a union member, they obtain a significantly negative impact of union representation at the workplace.

All of the above mentioned studies do not measure the impact of works councils on trade union membership directly. There are only two studies – to our knowledge – which can provide evidence on this issue. Blaschke (2000) finds that the existence of statutory works councils in a country either has no impact on union density or actually reduces it in a sample of Western European nations. Thus, Blaschke's (2000) findings relate to legal conditions, rather than the actual situation. Estimating the probability of union membership, using individual data from 1976 to 1984 for Germany, Windolf/Haas (1989: 150) find that "the number of works councillors who are union members (average for the given industry)" has a positive effect on the probability of membership. They view their finding to be an indication of the recruiting effort of work councillors.⁶

Summing up, there are numerous theoretical arguments suggesting that the unionisation of works councils may positively influence an employee's decision whether to become a union member. While there are empirical indications that such a relationship exists, they are at best indirect, and an explicit test using recent representative data is lacking.

⁶ Windolf/Haas (1989: 155) furthermore interpret their results as showing "that union membership of works councillors has a positive effect on the union density *of the firm*. Simply speaking, if all works councillors in *that firm* are union members, the union density of the workforce in *that firm* is likely to be high (*italics added*)."⁶ Bearing in mind that they have no information on the existence of a works council in the particular firm, this interpretation seems to be rather bold.

3. Data and empirical specifications

3.1 Data

Our data stems from the German Socio-Economic Panel (SOEP), a nationally representative longitudinal survey of the resident German population (Wagner et al. 1993; SOEP Group 2001).⁷ We use survey data for the years 2001 and 2003, because the survey includes information on union membership and on works councillorship in both years. Our sample consists of West German full- and part-time employees in the private and public sector with valid information on union membership and works councillorship. Observations from self-employed persons and apprentices are excluded.⁸ We restrict ourselves to West German employees as there are too few observations for East Germany to calculate industry-specific shares of unionised works councillors in all cases. Sample weights are used in the descriptive as well as in the econometric analysis to take into account the sampling design of the different subsamples of the SOEP as well as panel attrition (Pannenberg et al. 2004).

Information on individual union membership and works councillorship is generated from a survey question whether the respondent is a member of a trade union and/or a works council respectively. In the survey year 2001, but not in 2003, additional information is available on the existence of a works council in the establishment of the respondent which we use to generate a corresponding dummy variable indicating the incidence of works councils (*WCINC*). A further key variable in our empirical analysis is the net union density of works councils. Since we do not have information on union membership of works councillors in a respondent's establishment, we utilise data on unionised works councils at the industry level. We calculate industry-specific net union densities of works councils (*WCUD*) as the share of unionised councillors among all works councillors in the particular industry. The industry dummies mimic the union structure in Germany, i.e. manufacturing, chemicals/mining/energy, construction, transport, food/sundries/restaurants, education and science, and other public sector occupations (see Table A1 in the Appendix for documentation) and are generated from NACE 1-digit levels.⁹

⁷ The data used in this paper was extracted using the Add-On package SOEP Menu written by Dr. John P. Haisken-DeNew (Haisken-DeNew 2005; <http://www.soepmenu.de>). J. Haisken DeNew and M. Hahn supplied SOEP Menu Plugins. Haisken-DeNew (2005) describes SOEP Menu in detail.

⁸ Since we cannot identify employees with substantial decision rights ('Leitende Angestellte') in the data set precisely, we include them into our estimates. However, excluding the highest occupational category from the estimations, which implies excluding more than only 'Leitende Angestellte', does not change our subsequent findings. The results are available from the authors upon request.

⁹ Note that there is a residual category for *WCUD*, resulting from cases in which information on industry status is missing. Industry-dummies are generated by SOEP-Menu-Plugin *p2278* (author: J. Haisken-DeNew).

3.2 Empirical specification

Since we are interested in assessing the effects of works councils on trade union membership, we specify the following standard probit model:

$$P(U_{i,t} = 1 | X_{i,t}) = \Phi(\beta' X_{i,t}), \tag{1}$$

where $U_{i,t}=1$ if the individual is a union member, $X_{i,t}$ is the vector of covariates, β' is a vector of unknown parameters and $\Phi()$ is the cdf of the standard normal distribution.

One might argue that being a works councillor, i.e. the result of running for a works council and being elected, is endogenous with respect to the individual decision to join a union since, for example, unobservable individual abilities and/or preferences have an impact on both outcomes. In this case, the estimated parameters of the single-equation probit model are biased. As a check of robustness, we additionally employ a recursive simultaneous two-equation probit model, which allows us to control for unobserved individual heterogeneity. Our specification builds on a reduced form latent variable specification of works councillorship (WC_{it}^*) and a structural form latent variable specification of union membership (U_{it}^*), where observed works councillorship (WC_{it}) enters the right-hand side:

$$\begin{aligned} WC_{it}^* &= \beta_1' X_{1,it} + \varepsilon_{1,it} \\ U_{it}^* &= \alpha WC_{it} + \beta_2' X_{2,it} + \varepsilon_{2,it} \end{aligned} \tag{2}$$

The works councillorship variable WC_{it} will equal 1 if $WC_{it}^* > 0$. The union membership variable $U_{i,t}$ will equal 1 if $U_{it}^* > 0$, while $X_{1,it}, X_{2,it}$ are vectors of covariates and $\alpha, \beta_1', \beta_2'$ are (vectors) of unknown parameters. The error terms $\varepsilon_{1,it}, \varepsilon_{2,it}$ are assumed to be independently and identically distributed as bivariate normal:

$$\begin{pmatrix} \varepsilon_{1,it} \\ \varepsilon_{2,it} \end{pmatrix} \sim IIDN \left(\begin{bmatrix} 0 \\ 0 \end{bmatrix}, \begin{bmatrix} 1 & \rho \\ \rho & 1 \end{bmatrix} \right) \tag{3}$$

where ρ is the correlation coefficient which can be interpreted as the correlation between unobservable explanatory variables of the two equations, such as unobserved individual abilities. Note that the identification of parameters in this specification hinges on the functional form chosen, since we have no variable at hand that influences the probability of being a works councillor but has no direct impact on the likelihood of being a union member.¹⁰ The parameters are estimated using maximum

¹⁰ In preliminary regressions we started with a full simultaneous two equation model, in which observed union status also has an impact on the likelihood of being a works councillor. Without sufficient exclusion restrictions we could not identify the parameters of interest.

likelihood as the estimation criterion (Greene 1998, 2003). A Wald-Test of ρ is used to test for endogeneity.¹¹

We use two empirical specifications of models (1) and (2). Specification 1 makes use of SOEP-data for 2001 only, as information on the incidence of a works council in the establishment where the respondent works ($WCINC$) is available for this wave. In this case, X_{it} and $X_{2,it}$ include our key variables WC_{it} (works councillorship of the respondent), $WCINC$ (incidence of works council in establishment), $WCUD$ (net union density of works councillors in industry) and an interaction of $WCUD$ and $WCINC$. Specification 2 uses data for 2001 and 2003.¹² In that case, X_{it} and $X_{2,it}$ include WC_{it} , $WCUD$ as well as an interaction of $WCUD$ and a dummy variable for the year 2003 (*year 2003*). The vectors X_{it} , $X_{1,it}$, $X_{2,it}$ additionally contain the following joint subset of variables which have been found to determine union status:¹³ age, age squared, tenure, tenure squared and dummy variables for being a foreigner, being male, different firm size categories, doing an apprenticeship, having a university degree, having preferences for the social democratic party (SPD) or the Christian parties (CDU/CSU), whether the father was self-employed when the respondent was 15 years old, being a blue collar worker, the industry (NACE 1-digit) in which the respondent works and the state of residence ('Bundesland'). Table A.2 in the Appendix presents descriptive statistics for the variables used in the econometric analysis. For all specifications, estimated parameters, their robust "clustered" standard errors and marginal effects are reported.

4. Results

4.1 Descriptive evidence

Table 1 presents the key findings of a descriptive analysis of union membership and works councillorship in West Germany.

The figures reveal that net union density, i.e. the share of employed union members among the number of all employees, in West Germany has still been declining since 2000 with levels of 21.2 % in 2001 and 19.5 % in 2003. These numbers are in line with the result of a steadily waning net union density for the period 1985-2003 by Fitzenberger et al. (2006, Figure 2) and Schnabel/Wagner (2006a, Table 1). The net works

¹¹ A likelihood-ratio-test comparing the likelihoods of the two independent single-equation probit models with the likelihood of the recursive simultaneous two-equation probit model yields identical results.

¹² We decided to use a "pooled estimator" with robust clustered covariance matrix instead of random-effects estimators since the latter requires orthogonality of the unobserved individual effect and the vector of covariates which is most likely not the case in our specification.

¹³ See, for example, Windolf/Haas (1989), Wagner (1991), Lorenz/Wagner (1991), Fitzenberger et al. (1999), Goerke/Pannenberg (2004), Fitzenberger/Beck (2004), Schnabel/Wagner (2005), Schnabel/Wagner (2006a), and Fitzenberger et al. (2006).

Table 1: Union membership and works councillorship in West Germany

	2001			2003		
	Net Union Density	Net Works Councillors Density	Net Union Density of Works Councils	Net Union Density	Net Works Councillors Density	Net Union Density of Works Councils
All	21.2	4.3	68.7	19.5	4.5	55.6
Public Sector	26.6	5.9	56.8	24.7	6.9	54.6
Private Sector	19.3	3.8	75.5	17.5	3.6	56.3
Firm Size						
X < 20 employees	10.2	1.3	/	10.2	2.5	/
20 ≤ X < 200 empl.	17.0	5.1	53.7	16.2	5.2	49.9
200 ≤ X < 2000 empl.	24.3	5.3	75.4	23.1	5.9	59.1
X ≥ 2000 employees	35.1	5.8	76.8	30.4	4.7	63.7
N. of observations	7623			6807		

Source: SOEP 2001, 2003. Survey weights used.

/: less than 20 unionised works councillors in that particular group.

councillor density, i.e. the ratio of the number of works councillors to the number of all employees, is constant over time with 4.3 % in 2001 and 4.5 % in 2003. Hence, the amendment of the Works Constitutions Act in 2001 which – among other alterations – increased the mandatory size of the works council, depending on firm size, had no obvious impact on the prevalence of works councillors in the short-term.

Our key variable, the net union density of works councillors, has declined remarkably between 2001 and 2003. In 2001, roughly seven out of ten works councillors were also union members, while in 2003 this applied only to eleven out of 20 works councillors. This indicates that the impact of unions on works councils is declining over time and mirrors the decline of the overall net union density. The information generated from the representative SOEP data for West Germany is consistent with the evidence provided by Niedenhoff (2003) on the basis of a non-representative sample for the whole of Germany. Niedenhoff (2003) also finds that the share of union members among works councillors has fallen substantially since the beginning of this decade (see also Figure 1).

Considering differences between the private and public sector, the net union density is remarkably higher in the public than in the private sector, while the erosion of union membership over time is observed in both sectors. Moreover, works councillors are more prevalent in the public than in the private sector. However, the share of unionised works councillors is much lower in the public sector than in the private sector.¹⁴ Within the private sector, the share of unionised works councillors is the highest in manufacturing and chemicals/mining/energy (see Table A.1 in the Appendix). The net union density of works councils has been decreasing by a striking 25 %

¹⁴ Keller/Schnell (2003) estimate the fraction of unionised works councillors in the public sector ('Personalräte') to be above 70 % in 2002. Since they base their calculation on a completely different data set than we use, the numbers are not directly comparable.

in the private sector between 2001 and 2003 while it has been relatively stable in the public sector. Hence, the erosion in the prevalence of unions in works councils is substantially more pronounced in the private than in the public sector. With respect to firm size, we observe that net union density as well as net works councillor density is increasing with firm size. Moreover, the decline in net union density is more distinct the larger the establishment is.

4.2 Estimation results

Table 2 presents the results for the two single-equation probit specifications.¹⁵ Starting with specification 1 (*columns 1 and 2*) the parameter estimate for being a member of a works council is significantly positive. The estimated marginal effect indicates that being a works councillor increases the likelihood of being a union member by 32 percentage points. Hence, conditional on observable personal as well as firm characteristics we find a strong correlation between getting involved with co-determination issues as a works councillor and the probability of being a union member.

Trying to detect the effect of works council activities at the work place on union membership, we include the net union density of works councils (*WCUD*), the dummy variable for the incidence of a works council (*WCINC*) as well as an interaction of both variables. The existence of a works council (*WCINC*) has no significant impact on the probability of being a union member. At first sight, this finding may be surprising. However, it is in line with the evidence provided by Blaschke (2000) who detects no (or a significantly negative) impact of the existence of statutory works councils in a country on aggregate union density. Moreover, the estimated parameter of the interaction term is significantly positive, i.e. we observe a significantly positive effect of the average industry-specific net union density of works councillors if a works council exists in the particular establishment. Combining the marginal effect of the interaction term with the average of *WCUD* (66.76 %) in 2001, our estimate indicates that the likelihood of being a union member will increase by 20 percentage points if the works council in the firm exhibits the average share of unionised members among all works councillors instead of only consisting of non-union councillors. Compared to the estimated parameter for being a works councillor himself, the estimated effect is remarkably high. This indicates that unionised works councils, but not works councils as such, exert a substantial influence on an employee's decision to join a union. Our finding is consistent with viewing unionised works councils as (1) a recruitment agency of trade unions, (2) creating or emphasising a social custom of union membership, (3) being able to influence the personnel policy of companies, (4) providing employees with the experience of unionisation, and, finally, (5) being the institutional face of trade unions at the establishment level. It should be emphasised, though, that the positive interaction term of *WCUD* and *WCINC* does not allow the relative importance of the various channels of influence to be assessed.

¹⁵ Marginal effects are evaluated at the weighted sample means of all explanatory variables. Marginal effects for dummy variables are calculated as the discrete change of union membership the dummy variable changes from 0 to 1.

Table 2: Determinants of union membership in West Germany

	Specification 1 (2001)		Specification 2 (2001/03)	
	Parameter / Std.-Err.	Marginal Effect	Parameter / Std.-Err.	Marginal Effect
Member of works council (WC)	0.981** (0.100)	0.324 --	1.051** (0.090)	0.352 --
Net union density of works councils (WCUD)	-0.004 (0.006)	-0.001 --	0.006* (0.003)	0.002 --
Incidence works council in firm (WCINC)	-0.122 (0.371)	-0.030 --	-- --	-- --
Interaction of WCUD with WCINC	0.011* (0.006)	0.003 --	-- --	-- --
Interaction WCUD with dummy year 2003	-- --	-- --	-0.004+ (0.002)	-0.001 --
Dummy variable: year 2003	-- --	-- --	0.258+ (0.152)	0.062 --
Male	0.192** (0.064)	0.045 --	0.173** (0.057)	0.041 --
Foreigner	-0.139 (0.093)	-0.031 --	-0.022 (0.080)	-0.005 --
Part-time employment	-0.158+ (0.083)	-0.036 --	-0.115+ (0.069)	-0.027 --
Age (in years)	0.066** (0.020)	0.016 --	0.064** (0.018)	0.015 --
Age squared (in years)	-0.001** (0.000)	-0.000 --	-0.001** (0.000)	-0.000 --
Tenure (in years)	0.033** (0.009)	0.008 --	0.042** (0.008)	0.010 --
Tenure squared (in years)	-0.000+ (0.000)	-0.000 --	-0.001* (0.000)	-0.000 --
Apprenticeship	0.056 (0.088)	0.013 --	0.042 (0.078)	0.010 --
University degree	-0.232* (0.106)	-0.052 --	-0.240* (0.093)	-0.053 --
Prefers Social Democrats (SPD)	0.374** (0.062)	0.098 --	0.355** (0.054)	0.093 --
Prefers Christian Parties (CDU/CSU)	-0.106 (0.071)	-0.024 --	-0.117* (0.055)	-0.027 --
Blue collar worker	0.512** (0.066)	0.133 --	0.466** (0.053)	0.121 --
Father was self-employed	-0.157+ (0.087)	-0.035 --	-0.130+ (0.077)	-0.029 --
Firm size: 20 ≤ X < 200 employees	0.081 (0.096)	0.020 --	0.326** (0.072)	0.083 --
Firm size: 200 ≤ X < 2000 employees	0.183+ (0.107)	0.046 --	0.571** (0.075)	0.156 --
Firm size: X ≥ 2000 employees	0.427** (0.105)	0.112 --	0.792** (0.073)	0.223 --
Constant	-3.147** (0.582)	-- --	-3.716** (0.453)	-- --
Industry dummies (NACE 1- digit)		yes		yes
State dummies		yes		yes
Number of Observations		7046		13220
Wald_X (degrees of freedom)		892.29 (42)**		956.06 (42)**

Source: GSOEP 2001, 2003. Sample weights are used. Robust standard errors are in parentheses.

Significance levels: ** (0.01), * (0.05), + (0.1).

Wald_X: Wald – Test with H₀: no joint significance of all regressors

Considering the parameter estimate of the dummy variable indicating whether the father was self-employed when the respondent was 15 years of age, we find a significantly negative impact on being a union member. Households in which the father was self-employed tend to oppose the union movement. We interpret the significantly negative effect of the 'father was self-employed' variable as evidence for social custom explanations of joining a union (see Goerke/Pannenberg 2004). With respect to individual characteristics of employees we observe a significantly positive effect of age, tenure, firm size and of being a blue collar worker on the probability of being unionised. Employees who prefer the Social Democrats exhibit a higher likelihood of being a union member. Yet, an employee with a university degree has a significantly lower probability of joining the union. All these results are in line with other empirical studies on the determinants of union membership in Germany (e.g. Fitzenberger/Beck 2004; Fitzenberger et al. 2006; Schnabel/Wagner 2006a; Goerke/Pannenberg 2004).

Specification 2 uses both waves of the SOEP in which information on works councillorship is available (*Table 2, columns 3 and 4*). This allows us to test whether the impact of the net union density of works councils on union membership has changed over time. Note however that we cannot control for the existence of a works council within the establishment of the respondent (*WCINC*) in this specification, since the relevant information is only available in 2001.

Works councillors exhibit a significantly higher probability of being a union member than non-councillors. The marginal effect is similar in size when compared to the result of specification 1. Moreover, the estimated parameter of the industry-specific average net union density of works councils is significantly positive. The estimated marginal effect implies that an employee of an establishment in a fictitious industry with the average share of unionised works councillors in both years, i.e. 62.1 % (see table A.2 in the Appendix), exhibits a twelve percentage points higher chance of being a union member relative to a setting in which no councillors are members of a trade union. This indicates that the net union density is *ceteris paribus* higher in those industries in which unions exert a more intensive influence within works councils. The finding is again in line with an explanation that works councils are acting as recruitment agencies for unions, enhance a social custom of union membership, provide additional job security for union members or the experience good 'unionism', and behave as union representatives at the establishment level.

The estimated parameters of the dummy variable *year 2003* as well as the interaction of *WCUD* and *year 2003* are significant at the 10 % level. The sum of the product of the estimated marginal effect for *WCUD* times the average value of *WCUD* (62.1 %), the marginal effect of *year 2003*, and the marginal effect of the interaction term times the average value of *WCUD* in 2003, i.e. 57.2%, yields an overall marginal effect for *WCUD* of 12.8 %. This number basically equals the previous one of 12.4 % percentage points. Hence, we do not observe a decreasing impact of the net union density of works councils on the individual probability of being unionised in the course of time, conditional on observable attributes of the employees and their establishments.

With respect to most other explanatory variables of the probability of union membership, specification 2 yields similar results to the previous one. As an excep-

tion, the estimated parameter for individual preferences for Christian parties (CDU/CSU) has now become significantly negative, which is consistent with the fact that a major fraction of the CDU/CSU traditionally tends to oppose the political objectives of the German union movement.

One might object to the above interpretation of the estimation results that individual decisions to join a union as well as to run (successfully) for works council membership are determined jointly, e.g. unobservable individual characteristics and/or preferences have an impact on both decisions. If this is so, the estimated parameters of the single-equation probit models will be biased. As a check of robustness, we estimated both empirical specifications of the recursive simultaneous two-equation probit model sketched above (equation 2). Table 3 presents the estimated parameters, their robust standard errors and the respective marginal effects of the union membership equation.¹⁶

Regarding the parameter estimates of the works council variables of specification 1, it is evident that the impact of being a member of the firm's works council exerts a significantly larger impact on the likelihood of being a union member when we model the joint probability of union membership and works councillorship. The marginal effect indicates that being a works councillor increases the probability of union membership by 72 percentage points. Moreover, the effect of the interaction of the existence of a works council in the particular firm (*WCINC*) and the industry-specific net union density of works councils (*WCUD*) is alleviated, while still being significantly positive. The marginal effect indicates that the probability of being unionised will increase by roughly 13 percentage points if the share of unionised members among all works councillors of the particular firm rises from zero to the average share. Hence, controlling for the simultaneity of being a union member and a member of the works council, we again find supportive evidence that works councils do indeed have a positive impact on an employee's decision of being a union member. As regards the other parameter estimates, we obtain similar results to the single-equation probits. The estimated correlation parameter is significantly negative. This indicates the necessity to estimate a simultaneous two-equation model though identification in our particular empirical specification hinges on the functional form chosen.

The estimates of specification two of the recursive simultaneous two-equation probit model support the previous results. The estimated parameter for being a works councillor is significantly positive and indicates that the likelihood of being a union member will increase by 72 percentage points if the employee is a works council member. Moreover, the estimated marginal effect of the significantly positive point estimate of *WCUD* shows that an employee in a fictitious industry with the average net union density of works councils has a six percentage points higher probability of being unionised, compared to the non-union case. If we additionally take into account

¹⁶ The parameter estimates of the reduced form works councillorship equation are not of primary interest for our particular analysis. Results for specification 1, that is, for 2001, are found in the Appendix in Table A.3. Further results are available from the authors on request.

Table 3: Check of robustness: Simultaneous equation model of the determinants of union membership in West Germany

	Specification 1 (2001)		Specification 2 (2001/03)	
	Parameter / Std.-Err.	Marginal Effect	Parameter / Std.-Err.	Marginal Effect
Member of works council (<i>WC</i>)	2.166** (0.259)	0.721 --	2.148** (0.357)	0.717 --
Net union density of works councils (<i>WCUD</i>)	-0.004 (0.005)	-0.001 --	0.006* (0.003)	0.001 --
Incidence works council in firm (<i>WCINC</i>)	-0.076 (0.367)	-0.019 --	-- --	-- --
Interaction of <i>WCUD</i> with <i>WCINC</i>	0.010+ (0.005)	0.002 --	-- --	-- --
Interaction <i>WCUD</i> with dummy year 2003	-- --	-- --	-0.004+ (0.002)	-0.001 --
Dummy variable: year 2003	-- --	-- --	0.248+ --	0.061 --
Male	0.181** (0.063)	0.044 --	0.165** (0.055)	0.040 --
Foreigner	-0.177* (0.090)	-0.040 --	-0.042 (0.076)	-0.010 --
Part-time employment	-0.137 (0.081)	-0.032 --	-0.097 (0.068)	-0.023 --
Age (<i>in years</i>)	0.057** (0.019)	0.014 --	0.058** (0.018)	0.014 --
Age squared (<i>in years</i>)	-0.001** (0.000)	-0.000 --	-0.001** (0.000)	-0.000 --
Tenure (<i>in years</i>)	0.032** (0.009)	0.008 --	0.040** (0.008)	0.010 --
Tenure squared (<i>in years</i>)	-0.001* (0.000)	-0.000 --	-0.001* (0.000)	-0.000 --
Apprenticeship	0.027 (0.086)	0.007 --	0.018 (0.077)	0.004 --
University degree	-0.238* (0.104)	-0.054 --	-0.242** (0.092)	-0.055 --
Prefers Social Democrats (<i>SPD</i>)	0.352** (0.061)	0.093 --	0.341** (0.053)	0.091 --
Prefers Christian Parties (<i>CDU/CSU</i>)	-0.090 (0.070)	-0.021 --	-0.111* (0.055)	-0.026 --
Blue collar worker	0.487** (0.065)	0.129 --	0.451** (0.052)	0.119 --
Father was self-employed	-0.165* (0.083)	-0.038 --	-0.138+ (0.073)	-0.032 --
Firm size: $20 \leq X < 200$ employees	0.034 (0.094)	0.008 --	0.285** (0.071)	0.074 --
Firm size: $200 \leq X < 2000$ employees	0.133 (0.105)	0.034 --	0.527** (0.074)	0.145 --
Firm size: $X \geq 2000$ employees	0.376** (0.104)	0.100 --	0.749** (0.073)	0.213 --
Constant	-2.888** (0.570)	-- --	-3.484** (0.445)	-- --
Correlation par. $(0.5 \cdot \ln[(1 + \rho)/(1 - \rho)])$	-0.701** (0.204)	-- --	-0.613* (0.243)	-- --
Industry dummies (<i>NACE 1- digit</i>)	yes	yes	yes	yes
State dummies	yes	yes	yes	yes
Number of Observations	7046		13220	
Wald-Test_X (<i>degrees of freedom</i>)	1562.14 (80)**		1406.61 (80)**	
Wald-Test_ρ (<i>degrees of freedom</i>)	11.77 (1)**		6.48 (1)*	

Source: GSOEP 2001, 2003. Sample weights are used. Robust standard errors are in parentheses. Significance levels: ** (0.01), * (0.05), + (0.1).

Wald-Test_X: H_0 : no joint significance of all regressors. Wald-Test_ρ: H_0 : ρ = 0.

Estimated parameters of the works council equation for 2001 are documented in Table A.3 in the Appendix.

the two estimated marginal effects of *year 2003* and of the interaction of *WCUD* and *year 2003*, we again find the same result as if we just take into account the marginal effect of *WCUD*. The estimated correlation parameter is significantly negative and the respective Wald-Test (Wald-Test_ ρ) indicates that there is indeed a significant correlation between unobserved factors in both equations. All the other parameter estimates as well as the test statistic of the overall Wald-test (Wald-Test_X) are very similar to those of specification 1.

5. Conclusions

Union membership in Germany has declined remarkably since the 1990s. Contemporaneously, the share of works councillors who are union members has fallen. In 2003, only every fifth employee in (West) Germany still belonged to a trade union while less than six out of ten works councillors were trade union members. Our empirical findings suggest that the decline in the unionisation of works councillors and the fall of the overall union density in West Germany are closely linked. In particular, our results indicate that it is not the mere existence of a works council in the firm, but the proximity of works councils to trade unions, as measured by the fraction of works councillors in an industry who are trade union members themselves, that represents an important determinant of trade union membership by ordinary employees. To illustrate the magnitude of this impact, assume an average employee who is working in an establishment with a works council in a fictitious industry with an average share of unionised works councillors. Our findings imply that if the average share of unionised works councillors in this industry declines by ten %, the probability of this employee being a member of a trade union will also fall by ten %. Hence, our results provide one important explanation for the stylised fact that changes in the composition of the work force have only played a minor role for the fall in union density in Germany (Fitzenberger et al. 2006; Schnabel/Wagner 2006a).

Our results strongly rely on the (change in the) net union density of works councillors within an industry. Ideally, one would also like to know how much the probability of union membership of an employee will change by if the fraction of works councillors within the establishment varies in which the respective employee works. This information could help, for example, to evaluate the gains from organising campaigns by trade unions. Unfortunately, the Socio-Economic Panel (SOEP) does not provide the relevant information. Moreover, our data does not allow us to determine whether the positive impact of unionised works councils on union membership is due to (1) their recruitment efforts, (2) them enforcing a norm or social custom more actively, (3) influencing personnel policy, (4) providing employees with the experience of unionism, or (5) being the institutional face of trade unions at the establishment level. Hence, future research on these topics is necessary.

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Appendix

Table A.1: Industry-specific net union density of works councils (*WCUD*)

	<i>WCUD</i>	
	2001	2003
Manufacturing	78.91	72.21
Chemicals/ Mining/ Energy	73.14	79.36
Construction	73.15	63.96
Transport	89.76	73.32
Food/ Sundries/ Restaurants	44.69	35.26
Education and Science	49.69	57.75
Other Public Sector	59.06	48.45
Industry info missing	83.52	56.49
N. of observations	7623	6807

Source: SOEP 2001, 2003. Survey weights are used. N=14430.

Table A.2: Descriptive statistics

Variable	Mean	Std. Dev.
Union membership (<i>U</i>)	0.20	0.40
Works councillorship (<i>WC</i>)	0.04	0.21
Net union density of works councils (<i>WCUD</i>)	62.07	12.74
Incidence works council in firm (<i>WCINC</i>) ¹	0.61	0.49
Interaction of <i>WCUD</i> with <i>WCINC</i> ¹	41.39	34.16
Interaction <i>WCUD</i> with dummy year 2003	28.18	29.70
Male	0.55	0.50
Foreigner	0.09	0.28
Part-time employment	0.21	0.41
Age (<i>in years</i>)	41.45	10.86
Tenure (<i>in years</i>)	10.98	10.09
Apprenticeship	0.63	0.48
University degree	0.22	0.41
Prefers Social Democrats (<i>SPD</i>)	0.22	0.41
Prefers Christian Parties (<i>CDU/CSU</i>)	0.18	0.38
Blue collar worker	0.31	0.46
Father was self-employed	0.11	0.31
Firm size: $20 \leq X < 200$ employees	0.29	0.45
Firm size: $200 \leq X < 2000$ employees	0.24	0.43
Firm size: $X \geq 2000$ employees	0.26	0.44
Agriculture/ hunting/ fishing	0.01	0.08
Mining/ quarrying	0.005	0.07
Manufacturing	0.27	0.44
Electricity/ gas/ water supply	0.01	0.09
Construction	0.05	0.23
Wholesale and retail trade/ repair	0.13	0.34
Hotels/ restaurants	0.02	0.14
Transport, storage/ communication	0.06	0.23
Financial intermediation	0.05	0.22
Real estate/ renting/ business	0.08	0.27
Public administration/ defence	0.10	0.30
Education	0.07	0.26
Health/ social work	0.11	0.32
Other services/ Private households	0.04	0.20
Berlin	0.04	0.19
Schleswig-Holstein	0.05	0.21
Hamburg	0.02	0.16
Lower Saxony	0.12	0.32
Bremen	0.01	0.10
North Rhine-Westphalia	0.27	0.45
Hessen	0.08	0.28
Rhineland-Palatinate, Saarland	0.06	0.25
Baden-Wuerttemberg	0.16	0.37
Bavaria	0.18	0.39
Year 2003	0.49	0.50

Source: SOEP 2001 and 2003. Survey weights are used. N=14430. ¹: year 2001 only.

**Table A.3: Simultaneous equation model:
Determinants of works councillorship in West Germany (2001)**

<i>Specification 1 (2001)</i>		
	Parameter / Std.-Err.	Marginal Effect
Male	0.066 (0.084)	0.044
Foreigner	0.419** (0.142)	-0.040
Part-time employment	-0.229* (0.113)	-0.032
Age (<i>in years</i>)	0.113*** (0.029)	0.014
Age squared (<i>in years</i>)	-0.001*** (0.000)	-0.000
Tenure (<i>in years</i>)	0.029* (0.014)	0.008
Tenure squared (<i>in years</i>)	-0.000 (0.000)	-0.000
Apprenticeship	0.360** (0.110)	0.007
University degree	0.214 (0.133)	-0.054
Prefers Social Democrats (<i>SPD</i>)	0.040 (0.087)	0.093
Prefers Christian Parties (<i>CDU/CSU</i>)	-0.115 (0.101)	-0.021
Blue collar worker	0.109 (0.099)	0.129
Father was self-employed	0.176 (0.113)	-0.038
Firm size: $20 \leq X < 200$ employees	0.896*** (0.130)	0.008
Firm size: $200 \leq X < 2000$ employees	0.924*** (0.146)	0.034
Firm size: $X \geq 2000$ employees	0.912*** (0.141)	0.100
Constant	-6.059*** (0.687)	
Industry dummies (<i>NACE 1- digit</i>)		yes
State dummies		yes
Wald-Test_X (<i>degrees of freedom</i>)		1562.14 (80)**
Wald-Test_ρ (<i>degrees of freedom</i>)		11.77 (1)**
Number of Observations		7046

Source: GSOEP 2001. Sample weights are used. Robust standard errors are in parentheses.
Significance levels: ** (0.01), * (0.05), + (0.1).
Wald_Test_X: H_0 : no joint significance of all regressors. Wald-Test_ρ: H_0 : ρ = 0.
Estimated parameters of the union membership equation are found in Table 3.