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Working Paper

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IZA Discussion Papers, No. 707

Provided in Cooperation with:
IZA – Institute of Labor Economics

Suggested Citation: Schnabel, Claus; Wagner, Joachim (2003) : Trade Union Membership in Eastern and Western Germany: Convergence or Divergence?, IZA Discussion Papers, No. 707, Institute for the Study of Labor (IZA), Bonn

This Version is available at:
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DISCUSSION PAPER SERIES

IZA DP No. 707

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January 2003

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zur Zukunft der Arbeit
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Discussion Paper No. 707
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IZA Discussion Paper No. 707
January 2003

ABSTRACT

Trade Union Membership in Eastern and Western Germany: Convergence or Divergence?*

An empirical analysis of various waves of the ALLBUS social survey shows that the level and the structure of unionization has become more and more similar in eastern and western Germany in the period 1992 to 2000. The originally high level of union density in eastern Germany has dropped below that of western Germany, and union membership has been falling steadily in both parts of the country since 1992. Repeated cross-sectional analyses indicate that the factors influencing individuals' probability of union membership have converged over time between western and eastern Germany. After an assimilation period of about ten years the same set of variables can be used to explain unionization in post-socialist eastern Germany and in traditionally capitalist western Germany.

JEL Classification: J51

Keywords: trade union membership, Germany, micro data

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* This paper uses data from various ALLBUS surveys provided by the Zentralarchiv für Empirische Sozialforschung in Cologne. The authors alone are responsible for the use of the data in this study and for any conclusions drawn here.

Introduction

Since October 3, 1990, West and East Germany are united, after having been politically separated for more than forty years by the iron curtain. In these four decades, not only the political and economic system was different – the social environment, living conditions, wealth, consumer behaviour and even the language developed differently. Unification meant the end of the (hugely inefficient) socialist "command economy" of East Germany and a transition into the kind of social market economy long established in West Germany. The main elements of the West German economic and legal framework, including private property rights, free price formation, a free enterprise system and the entire industrial relations system, were extended to eastern Germany.[1] The rapid economic and monetary union (starting already on July 1, 1990) was shock therapy for East Germany, and the transition process – though supported by massive financial transfers from the West – has been painful and not fully successful (for details see, e.g., Sinn and Sinn 1992, Welfens 1996 and Heilemann and Rappen 2000).

German unification proved to be a major (and largely unexpected) challenge not only for politicians and economists, but also for the trade unions. The extension of the West German institutional framework of industrial relations to eastern Germany enabled the western unions – plagued by falling membership and density – to expand into the east. Since they were able to take over the members of the former state trade union, membership initially grew far beyond expectations, with the western unions signing up more than 4 million new members in the east. However, it proved very difficult to keep the new members, and union membership has been falling drastically since 1991 (see Fichter 1997 and Müller-Jentsch and Ittermann 2000). These membership problems are often attributed to the widespread deindustrialization and the huge employment losses in the transition process in eastern Germany, but insufficient union activity at the workplace, a disregard of the different history, socialisation and socioeconomic characteristics of the members in eastern Germany as well as membership identification problems may also play a role. Moreover, union membership losses are not restricted to eastern Germany and its special problems of transition but have been on the rise in western Germany, too (cf. Fichter 1997, 1998).

While a number of studies have documented and tried to explain the development of union membership and participation in eastern (and western) Germany (see, e.g., Frege 1996, Fichter 1997, 1998 and Ebbinghaus 2002), to the best of our knowledge there has been no attempt to investigate econometrically the determinants of union membership in both parts of Germany. Since it may be interesting to see whether the factors influencing union membership are different in eastern and western Germany and whether these factors (and union density) converge or diverge over time, this paper employs individual-level survey data to study these issues. Drawing on the large ALLBUS surveys of employees for the period 1992 to 2000, we analyse the extent and the determinants of union membership in western and eastern Germany, and we find a tendency of convergence between employees in both parts of Germany.

The structure of the paper is as follows: Section 2 discusses union membership trends and organization problems since German unification, supplementing union statistics by representative survey data. A brief overview over theoretical explanations of union membership decisions is provided in section 3. Section 4 presents the results of our econometric investigation and identifies the main determinants of union membership in eastern and western Germany; section 5 concludes.

1. Union membership trends and German unification

In the last decades trade unions in many countries have experienced severe membership losses and reductions in union density (see Ebbinghaus and Visser, 2000, Visser 2003). Germany is no exception to this trend. In the 1980s, membership stagnated around 7.8 million for unions belonging to the German Trade Union Federation (*Deutscher Gewerkschaftsbund*, DGB) and around 9.5 million for all unions (i.e. including the members of the competing union federations DAG, DBB and CGB). Union density, defined as the ratio of union members over employees, even fell in the 1980s in West Germany (see Müller-Jentsch and Ittermann 2000, Ebbinghaus and Visser 2000). For the unions, therefore, German unification created a new and unexpected chance (as well as a great challenge) for organizational development.

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[1] Following common terminology, this paper uses the expressions West Germany and East Germany when refering to the two German states before unification, whereas western and eastern Germany refer

In the course of the full-scale transfer of the West German institutional framework to the east, the DGB unions decided to expand to eastern Germany by applying a takeover model in which the East German state-controlled labour organization, the *Freier Deutscher Gewerkschaftsbund* (FDGB), was to voluntarily dissolve itself and recommend its members to transfer their enrollment to the appropriate branch union of the DGB.[2] Following this strategy, the DGB unions managed to sign up more than 4.1 million members in eastern Germany in 1990 and 1991, which was almost one-half of all former FDGB members (see the data in Dorsch 1996 and Fichter 1998). However, due to the special modalities of membership recruitment, not all of the new members were highly motivated to join,[3] and the membership boom directly after unification was a very special case which "did not follow any 'normal' patterns of union organizational development" (Fichter 1997: 87). Soon the trend reversed, with the DGB unions losing almost 800,000 members in 1992 and another 500,000 members in 1993, and membership in eastern Germany has continued to fall since. By the end of 1998, the last year for which disaggregate union statistics are available, the DGB unions had only 1.8 million members in eastern Germany, a loss of 56 per cent since 1991. Membership problems were aggravated by the fact that in the same period almost 1.2 million members turned their back on the DGB unions in western Germany (see Müller-Jentsch and Ittermann 2000).

The analysis of declining union membership and density is rendered difficult by the fact that only the DGB unions used to provide separate membership figures for eastern and western Germany, whereas the other unions have only presented figures for Germany as a whole. Moreover, official member statistics of all unions are inflated by a large (but not precisely known) number of retired members, preventing the calculation of

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to the two regions (and labour markets) of united Germany.

[2] For details and various phases of this process, see Artus (1996) and Fichter (1997). The alternative of union merger was regarded as unacceptable since the FDGB was synonymous to authoritarian socialist rule and thus would have been a political liability of the first order.

[3] This is stated quite clearly by Fichter (1997: 86): "In principle, all West German unions adhered to the rule of individual enrollment. But in practice, it was often disregarded. … Indeed, not a few East Germans became members of a DGB union without really knowing it and without having time to make a conscious decision for or against."

meaningful union density figures. In order to circumvent these problems, representative survey data of employees in both parts of Germany can be used.

The data used in this study are taken from various waves of the ALLBUS, the German general social survey. This survey has been conducted in West Germany every second year since 1980, and for a nominal fee the data are available for scientific research. Note that the ALLBUS data sets are not part of a panel study; for each wave an independent random sample is drawn covering people aged 18 years or more. An additional baseline survey was conducted in 1991 shortly after German unification, and since then the samples include residents in the new federal states in eastern Germany (as well as German-speaking foreigners).[4] In our study the sample is reduced to Germans because foreigners form a small and rather heterogeneous proportion of the samples. We look at individuals who were 18 to 64 years old and who were working full time or part time, either as blue collar workers, white collar workers (except top managers) or civil servants (*Beamte*).

(Table 1 about here)

Table 1 presents (in intervals of four years) information on union density available from our sample since 1992 for western and eastern Germany. In contrast to usual calculations of density rates that rely on union figures and therefore include both active and retired members in the numerator (see e.g. Müller-Jentsch and Ittermann 2000), our ALLBUS data refer to employees only and enable us to calculate a more realistic net density rate defined as the percentage of union members among western and eastern German employees. Table 1 shows that only one of four western and less than one of five eastern German employees is still a member of a trade union. Although the 95 per cent confidence intervals are quite large, it is obvious that union density figures have fallen in the observation period, in particular in eastern Germany. There density reached almost 40 per cent in 1992, clearly above the western level of 29 per cent. By 2000, however, the picture was reversed: density in eastern Germany had fallen to 18.5 per cent, which is even lower than the western German density of 25 per cent.

[4] For additional information on the ALLBUS, see Terwey (2000). In order to facilitate replications and extensions, the STATA do-files used in this study are available from the second author on request.

By and large, such a negative trend can be observed for men and women and for different groups of employees. In eastern and western Germany union density is lowest for white collar workers and highest for civil servants. In 2000, density was also lower for women than for men in both parts of Germany. Interestingly, in 1992 this had not been the case in eastern Germany. This may be interpreted as an indication that not only the level but also the pattern of unionization has converged between eastern and western Germany.

There are a number of possible explanations for the drastic fall in union membership and density since 1992,[5] most of which refer to macroeconomic factors, to structural change and to the transition process in post-communist eastern Germany. The economic shock and the sudden exposure to world-market competition which unification meant for the hugely inefficient East German economy as well as unions' strive for rapid wage convergence to western standards both resulted in substantial employment losses followed by union membership losses. While this is part of the story, the union density figures in Table 1 indicate that the unions also lost members among those who are employed. Structural change such as the widespread deindustrialization (in particular in eastern Germany) and the expansion of the service sector (in both parts) as well as the breaking up of the huge combines in eastern Germany have also contributed to union membership problems since recruiting has proved more difficult in smaller workplaces and in a service-oriented economy.

In addition, however, the role of union policies and of employees' individual characteristics should be taken into account when explaining unionization. In both parts of Germany, unions have not been very successful in establishing effective workplace organization outside of large industrial plants, and in the course of the increasing individualization of society traditional union slogans and collective policies are less and less able to attract core groups such as young and white collar employees. In eastern Germany many members left the unions in deep frustration because they had taken union demands for rapid wage convergence to be promises and because they did not feel well represented and integrated by the new unions from western Germany.

[5] More detailed discussions can be found in Fichter (1997) and Ebbinghaus (2002).

A similar line of reasoning can be found in Fichter (1997, 1998) who also argues that the (western) union leaders disregarded the special socioeconomic characteristics of eastern Germany and the different social experiences of its employees, and that union attempts to integrate the new members into the new structures have been plagued by misunderstandings and disinterest. Somehow in contrast, in a survey of the textile industry Frege (1996: 404) finds that the willingness to participate seems no lower among eastern German members than among their western German counterparts, raising the question "as to whether union members' participation patterns in post-socialist societies are in fact significantly different from those in the West …".

In this context it should be interesting to know which role individual, occupational and political characteristics of employees play in explaining union membership. A crucial question is whether the unionization decision is affected by the same determinants in western and eastern Germany and whether the influence of these determinants has converged over time. Before such an empirical analysis will be undertaken in section 4, a brief survey of theoretical explanations of union membership seems in order.

2. Theoretical explanations of union membership

Traditionally, labour economists have analysed the forces that influence union membership within a conventional framework of demand and supply.[6] Union membership is considered as though it were an asset in the portfolio of an utility-maximizing worker that provides a flow of services, which are private and/or collective goods. Demand for union membership depends negatively on its costs relative to the price of other goods and assets, whereas wealth or permanent income should influence union membership positively if union services are a normal good. The larger the benefits of union respresentation (often proxied by personal and industry characteristics), the more likely are employees to join a union. Benefits can be wage gains but also net non-pecuniary benefits from a unionised work environment such as better working conditions and employment security. In contrast, the lower the cost of substitute services (such as social welfare benefits), the lower demand for union services should be. Finally, individuals' taste for unionism can affect the demand for

[6] This sort of analysis, which can be traced back to Berkowitz (1954) and Pencavel (1971), is described in more detail by Hirsch and Addison (1986, ch. 2.5) and Schnabel (2003).

union membership. This variable is meant to reflect workers‘ attitudes and preferences, ideological motives, social pressure and custom, and related non-economic variables stressed by other disciplines of social science.

Although unions may not be typical profit maximizers, they face a binding budget constraint in that they must fund union organizing, services and the like, which means that they must pay attention to revenues and (opportunity) costs. Therefore the supply of union services depends positively on revenues whereas the costs of union organizing and the costs of servicing existing members both affect supply negatively. Organizing and servicing costs are likely to have a fixed-cost component so that collective bargaining exhibits decreasing unit costs with respect to membership, and unionism is therefore less likely in small firms. Both the costs of organizing and of servicing will be affected by employers‘ attitudes toward unions and collective bargaining, and they can be influenced substantially by the legal structure within which unions may operate. Furthermore union goals (such as maximizing membership or a certain utility function) may affect the supply of union services in various ways.

Empirical studies generally estimate some variant of a reduced-form equation combining the supply and demand functions. Since most of the variables sketched above cannot be measured directly, they are often substituted for by proxy variables (such as firm size and personal characteristics). However, these variables are likely to affect unionism through more than one channel, so that interpretation is difficult. In addition to measurement problems in the explanatory variables of the reduced-form equation, the amount of union services is also not directly observed. Assuming that the level of services is proportional to the level of unionization, direct measures of union membership, union density or bargaining coverage can be used to proxy union services.

However, this sort of cost-benefit analysis of union membership determination does not pay enough attention to an important problem unions face in most countries, namely the free-rider problem. Many of the services unions provide – such as higher wages and better working conditions – accrue both to union members and non-members in the workplace. These services can be seen as public or collective goods since they are nonrival in consumption and low-cost exclusion of non-members is not possible. Hence an individual has a free-rider incentive not to join the union. The key problem for

economists is to explain why any individual would join a union when dues are costly and when the benefits apply to all workers regardless of their union status.[7]

A prominent explanation of why large groups providing collective goods such as trade unions manage to exist despite the free-rider problem stems from Olson (1965) who argued that a large group can only have formed for two reasons: Either because membership is compulsory or because the group offers selective incentives in the form of private goods and services available only to its members (with ancillary provision of the collective good as a "byproduct"). As regards unions, Olson (1965: 75) thought that "[i]n most cases it is compulsory membership and coercive picket lines that are the source of the union's membership". In many countries, however, "closed shops" (in which union membership is a condition of employment) are either illegal or are rarely found anymore, and the widespread presence of "open shop" unions (where membership is voluntary) suggests that selective incentives such as strike pay and legal support available to members may seem to be more important for joining a union.[8]

In addition to such material selective incentives, Booth (1985) has suggested to interpret the incentive private good as being the „reputation" utility that derives from complying with a social custom of union membership. This idea stems from Akerlof (1980) and takes up an argument commonly put forward by sociologists and psychologists, namely that within a community there is a set of rules and customs that are obeyed by individuals because of the sanction of a loss of reputation if the custom should be disobeyed. In the context of union membership, the social custom can be thought of as urging workers not to free-ride. Following social custom theory, Booth (1985) and Naylor (1990) have proposed models in which it is assumed that workers directly derive utility from the reputation effect of belonging to a union, and which show that a union can exist despite the free-rider problem if it achieves a minimum critical

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[7] In a median voter model in which workers have different reservation wages and hence different optimal points in the trade-off between an increased wage and a decreased probability of employment, Bulkley and Myles (2001) argue that joining a union instead of free-riding may be rational if it enables individuals to influence union bargaining goals and thus their own employment probability.

[8] Booth and Chatterji (1995) develop a theoretical model of the simultaneous determination of union wages and membership which points to the existence of excludable private goods such as grievance procedures or influence over manning arrangements as an important factor motivating workers to join

density. In the social custom approach, the decision to join is interdependent and – contrary to the Olson (1965) free-rider paradox – workers may be more prepared to join a union if others are joining.[9]

Within this framework, Naylor and Cripps (1993) have shown that when workers‘ tastes are heterogeneous with respect to their sensitivity to reputation, stable intermediate union density is a possible equilibrium outcome. They provide an explanation of voluntary membership of the open shop trade union in which the union density level is likely to increase as a result of a reduction in union membership costs, an increase in strike pay or an increase in individuals‘ sensitivity to the social custom of union membership and the associated solidarity effects. Extensions of the social custom model taking into account employer behaviour in form of management opposition to union membership have been proposed by Naylor and Raaum (1993) and by Corneo (1995). They show that a stable long-run equilibrium may exist, in which strong unions persist in spite of management opposition. Furthermore, Booth and Chatterji (1993) provide a model of union membership and wage determination which predicts that the open shop union is viable only after membership has achieved a minimum critical density, and wages are at a sufficient level to support this.

One corollary of most of the models discussed above is that in the absence of coercion the open shop union’s provision of services may be crucial in obtaining its minimum critical level of density. Union density is likely to increase with the quality of the services provided, while at the same time the size and density of the union may positively affect the provision of services due to economies of scale. If, however, union-like services are available elsewhere at lower cost or if the provision of certain welfare benefits by government substitutes for the private provision by unions (as stressed by Streeck 1981 and Neumann and Rissman 1984), the attractiveness of union membership will be reduced and unions may face serious problems of survival.[10]

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unions in the absence of coercive closed shop rules. In models by Moreton (1998) and by Jones and McKenna (1994) greater job security for union members acts as a selective incentive to join the union.

[9] Naylor (1990) demonstrates the formal equivalence of the Booth (1985) model and the “critical mass“ or “tipping“ models developed by Schelling (1978) and discussed by Marwell and Oliver (1993); see also the “resource mobilization“ approach by Klandermans (1984).

[10] Interestingly, the major reason for high union density in East Germany had been that the state unions provided various welfare functions such as access to a holiday resort; see also Frege (1996).

In addition to pure economic reasoning, social, psychological and political factors may also contribute to explaining the level and development of union membership. Without the pretention of exhaustiveness, three theoretical and partly overlapping approaches to trade union participation can be distinguished within the social psychology, namely the frustration-aggression approach, the rational-choice approach and the interactionist approach (see Klandermans 1986).[11]

The frustration-aggression approach explains union membership as a result of individuals‘ frustration, dissatisfaction or alienation in their work situation (and membership resignation in terms of frustration with union policies). However, dissatisfaction “is neither a necessary nor a sufficient condition for participation” (Klandermans 1986: 199). The rational-choice approach interprets unionization as the outcome of a process of weighing the costs and benefits of participation (a prominent example is Crouch 1982). Of course, such an approach also underlies economic theories of unionization, but economists often pay attention only to individual, selective costs and benefits. In contrast, social scientists try to take a broader view and point out that the decision to join a union can also be influenced by collective, social and ideological motives, which may be difficult to measure. The balance of costs and benefits, combined with expectations about the degree to which the union will be able to realize these motives, determine the actual membership decision.

In the interactionist approach union participation is inextricably bound up with group culture, and an individual’s decision to join a union is strongly influenced by his social context, i.e. his living and working environment (see also social identity theory, e.g. Tajfel 1982). Concerning the living environment, tradition and prevailing opinions within someone’s group are important because here general beliefs are formed about unions even before the employment relationship is entered into. Starting with Booth (1985) this line of reasoning has been incorporated into the social custom models of union

[11] Short overviews of psychological and socio-political theories of union membership and participation can also be found in Guest and Dewe (1988) and Frege (1996). Earlier contributions from sociologists and political scientists – stressing the importance of factors such as class consciousness, values, modes of production, the composition of the workforce, the political climate, the role of government incomes policies, and the centralisation and cohesiveness of the labour movement – include Streeck (1981) and Beyme (1981).

membership discussed above which in some sense blend interactionist and rational-choice explanations. Concerning the working environment, the prevailing union density in an individual's establishment or industry and the contact with the union at the workplace may play a role. While this is also recognized in some economic explanations, economists have tended to concentrate on the demand side of unionism and have paid less attention to the supply side, for example the union's decision to allocate resources to the recruitment of new members.

To a certain degree, social scientists provide other explanations or emphasize different determinants of unionization than economists. Some of these factors can be incorporated in the economist's supply-demand and cost-benefit framework discussed above whereas others are more difficult to operationalize. Empirical studies of the determinants of union membership usually take an eclectic approach and combine economic as well as socio-political hypotheses and explanations. Surveys of the international empirical evidence are provided*, inter alia*, by Chaison and Rose (1991), Wheeler and McClendon (1991), Riley (1997) and Schnabel (2003). They show that according to time-series studies business cycle factors and structural developments play a significant role in explaining union membership trends and that cross-sectional analyses at the level of individuals have identified a number of personal, occupational and firm characteristics, attitudes and social variables which are associated with the unionization decision. While time-series analysis is not feasible in our short period of observation, the latter approach will be pursued now.

3. Empirical analysis

In Germany, empirical research as to why individuals belong to a union that makes use of cross-sectional analyses has focused exclusively on individual-level data of union and non-union employees in the former West Germany.[12] Currently there exist six cross-sectional studies that either use data from the German Socio-Economic Panel (Lorenz and Wagner 1991, Wagner 1991, Goerke and Pannenberg 1998, Fitzenberger

[12] Also for West Germany, aggregate time-series analyses in the business cycle tradition have shown that economic variables such as wage and price inflation, employment growth and unemployment influence union membership growth (see Armingeon 1989 and Schnabel 1989). In addition, the composition of the labour force plays a significant role, in particular in explaining long-run trends in unionization (Carruth and Schnabel 1990).

et al. 1999), or from representative surveys (Windolf and Haas 1989, Schnabel and Wagner 2003), the majority of which analyse data from the 1980s and early 1990s. Interestingly, all six studies find establishment size to be a significant determinant of unionization, but other significant covariates differ widely between (and even within) studies depending on the data set and year analysed and on the econometric specification used. Therefore it may be worthwhile to take up an econometric investigation that analyses a more recent period of observation and that estimates the same equation at several points in time for western and eastern German employees. This should enable us to find out which variables actually explain an individual's probability of being a union member, whether the determinants of union membership differ between eastern and western Germany, and whether they have converged over time.

The ALLBUS data described in section 2 allow us to investigate the determinants of union membership because they include information on a number of potential covariates such as personal and occupational characteristics, attitudes and family background. Since the dependent variable in our investigation is a 1/0-dummy indicating whether an employee is a union member or not, a probit analysis (estimating the probability of union membership) is appropriate.

In many countries union membership has been found to be systematically related in cross-sectional studies to a number of *personal characteristics* such as sex, age and education (see the surveys by Riley 1997 and Schnabel 2003). Table 1 showed that (with the exception of eastern Germany in 1992) in both parts of Germany men exhibit a higher union density than women. This stylised fact has traditionally been interpreted as a reflection of mens' greater degree of attachment to the labour force which would increase the benefits of unionization both from the point of view of workers and of unions. A similar reasoning applies to full time workers, and therefore dummy variables for sex and full time working are included in the analysis. In addition, an age variable is included in the analysis in order to test the hypothesis that younger workers are less likely to be union members. Such a relationship can be found in union statistics and it is said to reflect a different socialisation of young workers resulting in lower identification with unions, a related change of values, and difficulties of recruiting young workers which in Germany are often trained in small and medium-sized firms where union density is lower (see, e.g., Schnabel and Pege 1992).

The ALLBUS survey also contains information on the educational and qualificational background of employees which is not found in union statistics. We are able to include dummy variables in our analysis that take on the value of 1 if employees have finished an apprenticeship or are master craftsmen and if they have a polytech or university degree. For the former variable we would expect a positive influence on unionization since unions have developed and have traditionally served as representatives of skilled craftsmen and since recruitment costs should be relatively low for this rather homogeneous group (with high employment security) that forms the backbone of the German industrial workforce. In contrast, a polytech or university degree is assumed to be negatively associated with unionism because more educated employees have greater individual bargaining power (and thus a lesser need for collective voice) and because sometimes they identify more with management than with the labour movement.

The *occupational status* of employees is included in the analysis by dummy variables for blue collar workers and civil servants which again enable us to test whether the relationships showing up in Table 1 also hold in a multivariate analysis. Since blue collar workers and civil servants have rather homogeneous preferences and working conditions which make them easier to organize they are expected to have a higher probability of being union members.

Workplace and firm characteristics have been found to influence unionization in a number of studies (reviewed by Riley 1997 and Schnabel 2003). As mentioned above, all previous econometric studies for West Germany found a positive and statistically significant effect of firm size on the probability of union membership. Unfortunately, we are not able to investigate this relationship since no firm size variable is available in our data set. We do have information, however, whether employees are working in the public sector. Since union recruitment tends to be easier and less costly in large, homogeneous organizations with a bureaucratic nature and a low turnover rate, unionization is expected to be higher in the public sector than in the market sector. In addition, union services may be valued most highly in large, bureaucratic organizations where workers are likely to be treated impersonally and feel a greater need for representation and protection. In such organizations there may also exist higher peer pressure to conform to a social custom of union membership (as suggested by Riley

1997). Finally, in the public sector there exist substantially more works councils than elsewhere (cf. Addison et al. 2002), and since works councils usually are prime actors of union recruitment (Streeck 1981: 209ff.), the propensity to join a union should be higher there.

Some studies have also paid attention to the location of a company and have found significant effects of *urbanization* (see, e.g., the studies by Antos et al. 1980 for the U.S. and Berg and Groot 1992 for the Netherlands). Since our data set contains information on the size of the village or city where the individuals live (but not where they work), we are able to include in our estimations an index of the size of the agglomeration (with values increasing from 1 for less than 2,000 inhabitants to 7 for 500,000 and more), and we expect a positive relationship with union membership. There are two main reasons for this hypothesis: The first relates to union recruitment costs that should be lower in large agglomerations (which also have an above-average share of large companies). Secondly, large agglomerations usually have a longer tradition of unionization, and the employees often have experienced a longer and intensive "industrial socialization" which makes them more likely to join a union (cf. Müller-Jentsch 1987).

Political *attitudes* of individual employees have been found to be significant determinants of union membership in many studies (see the surveys by Riley 1997 and Schnabel 2003). For West Germany, Windolf and Haas (1989), Lorenz and Wagner (1991) and Fitzenberger et al. (1999) all found that Social-Democrat (SPD) voters have a higher probability of being union members which is not surprising given the historically close relationship between the SPD and the labour movement. In the ALLBUS data set there is information on the political orientation of respondents measured on a ten-point scale ranging from 1 for extreme left to 10 for extreme right. Since left-wing views should be associated with a higher probability of union membership we expect a negative coefficient of this variable in our estimations.

Several theories of social psychology as well as social custom models suggest to include *social variables* into individual-level cross-sectional studies of unionization. In Germany, the influence of reference groups and key individuals such as parents and spouses on the decision maker has been investigated with mixed success by Windolf and Haas (1989) and Goerke and Pannenberg (1998). Our data set contains information on whether an employee's father was a blue collar worker (when the

interviewee was 15 years old), and we expect this dummy variable to have a positive influence on the probability of union membership in western Germany due to a union-friendly socialization process in the family. In eastern Germany, however, this variable may play a less important role since unionization was almost complete in East Germany and was thus part of the socialization process even in families lacking a blue collar worker background.

(Tables 2 and 3 about here)

The results of our estimations for western and eastern Germany, which were run separately for the years 1992, 1996 and 2000 as well as for all data pooled, are presented in Tables 2 and 3, respectively. Looking first at the pooled estimations in the last column of Table 2, it can be seen that in western Germany men, full time workers, blue collar workers, civil servants, employees in the public sector and those whose father was a blue collar worker are significantly more likely to be union members. In contrast, employees with a polytech or university degree are less likely to join a union whereas having finished an apprenticeship or being a master craftsman does not significantly influence the unionization decision. The probability of union membership significantly increases with the age of an employee and with the size of the agglomeration he or she lives in. Individuals' political orientation also plays a significant role in that moving to the right of the political spectrum is associated with a falling probability of being a union member. A closer look reveals, however, that only four of these variables, namely full time worker, blue collar worker, civil servant and political orientation, exert a significant influence on union membership in all three years investigated. The impact of the other variables suggested by the results of the pooled estimations is not robust over time and should not be overinterpreted.

For eastern Germany, the picture presented in Table 4 looks different. The results of the pooled estimations in the last column indicate that only five of our eleven explanatory variables, namely age, blue collar worker, public sector employee, city size and political orientation, seem to play a significant role in explaining unionization. Moreover, none of these five variables proves to be statistically significant in all three years investigated, and the negative and highly significant coefficients on the time dummies show that there has been a substantial reduction in the propensity to unionize since 1992 that is

independent of the other covariates. All in all, this suggests that it is much more difficult to identify the determinants of union membership in eastern Germany than in the west.

This raises the question whether the unionization decision in post-socialist eastern Germany and in traditionally capitalist western Germany can be explained by the same (western) theories and models of union membership determination. In an empirical study of 440 union members in the eastern German textile industry, Frege (1996: 406) got the impression that union members in eastern Germany do not behave differently than their western counterparts with regard to their willingness to participate in collective activities, and she concluded that "it seems possible and fruitful to apply 'Western' theories of union participation to a post-socialist context despite the differences between post-socialist societies and Western capitalist societies."[13] However, Frege (1996) analysed the behaviour of those who already were union members and not the unionization decision, which could differ between eastern and western Germany.

In order to test for differences in the determinants of union membership between western and eastern Germany we pooled the data for both parts and estimated the above union membership equation for each year. This model was augmented by a complete set of interaction terms in which all eleven variables included were interacted with a dummy variable indicating whether the employee lived in western Germany or not. Then we performed a Wald test of the joint hypothesis that all the coefficients of the interaction terms are zero, which would mean that there are no differences between western and eastern Germany concerning the determinants of union membership.

For 1992 the prob-value of this test was 0.0005, and therefore the null hypothesis of no differences could be rejected at an error level of far less than one per cent. This result, indicating that in 1992 the determinants of union membership in eastern Germany were totally different from those in western Germany, is not surprising given the modalities of union membership recruitment in eastern Germany directly after unification (see section 2 and Fichter 1997). Repeating this test for 1996 gave a prob-value of 0.0243, which means that the null hypothesis of no differences could not be rejected anymore at an error level of one per cent, but at an error level of five per cent. By 2000, the end of our observation period, the picture had changed considerably. Since the prob-value

[13] See also Kuruvilla et al. (1990) who successfully applied western theories to union members in Japan.

reached 0.2060, the null hypothesis that the determinants of union membership are the same in both parts of Germany could not be rejected at any conventional level of significance. This means that although the significance and relative importance of individual variables may differ, the same set of variables is able to explain the probability of union membership in both parts of Germany in the year 2000.

These test results from repeated cross-section regressions may be interpreted as indications that the determinants of union membership have converged over time between western and eastern Germany. In other words, there is some evidence that ten years after unification the same theories and models of unionisation can be applied to employees in both parts of Germany.

4. Conclusions

In uniting two economies and societies that had developed differently for more than forty years, German unification has proved to be a political and social experiment of the first order. While not all has grown together that belongs together (as the former German chancellor Willy Brandt proclaimed at the fall of the Berlin wall), some tendencies of assimilation and convergence cannot be overlooked. Using a representative data set we were able to show that the level and the structure of unionization has become more and more similar in eastern and western Germany in the period 1992 to 2000. The originally high level of union density in eastern Germany has even dropped below that of western Germany, and at just 18.5 per cent it may not be far from the (unspecified) minimum level of density identified as critical for union survival in recent theories of unionization. Moreover, union membership has been falling steadily in both parts of the country since 1992, and repeated cross-sectional analyses indicated that the factors influencing individuals' probability of union membership seem to have converged over time between western and eastern Germany.

The empirical evidence suggests that a number of personal, occupational and attitudinal variables such as age, occupational status, and political orientation play a role in the unionization process in Germany, although the influence of many variables is not robust over time. There is, however, the problem that the determinants of unionization had to be analysed by comparing the characteristics of union and non-union employees, whereas the process of joining or leaving a union could not be investigated due to lack

of data.[14] The same is true for the role played by union recruitment strategies and works councils, which might be promising areas of further research.

Our empirical findings do not enable us to clearly discriminate between alternative (but often related) theories from economics, social psychology and industrial relations. This reinforces the impression from the wider literature that it has proved difficult to build a bridge between the variety of theoretical approaches and the empirical literature on the determinants of unionization (see Schnabel 2003). The empirical results seem to indicate, however, that after an assimilation period of about ten years the same theories and models can be applied to explain unionization in post-socialist eastern Germany and traditionally capitalist western Germany.

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[14] Rare analyses of this sort can be found in Waddington and Whitston (1997) and Rij and Daalder (1997).

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Table 1: Percentage of union members among German employees, 1992-2000*

	1992		1996		2000	
	West	East	West	East	West	East
All	28.7 (25.8/31.7)	39.7 (35.3/44.1)	26.6 (23.9/29.5)	26.7 (22.9/30.8)	25.4 (22.4/28.6)	18.5 (15.1/22.4)
Male	36.0 (32.0/40.2)	35.8 (29.8/42.1)	33.8 (29.9/37.8)	28.8 (23.5/34.5)	31.0 (26.8/35.5)	20.8 (15.8/26.5)
Female	18.5 (14.8/22.7)	43.5 (37.3/50.0)	16.3 (12.8/20.2)	24.1 (18.6/30.3)	17.7 (13.8/22.3)	16.1 (11.5/21.7)
Blue collar	37.6 (32.1/43.3)	37.8 (30.8/45.1)	38.3 (33.0/43.8)	28.0 (22.1/34.6)	31.6 (26.0/37.6)	22.2 (16.4/28.8)
White collar	20.2 (16.8/23.9)	40.7 (35.1/46.5)	16.2 (13.3/19.6)	24.2 (19.2/29.7)	18.5 (14.9/22.6)	15.1 (10.9/20.1)
Civil servants	43.5 (34.3/53.0)	50.0 (11.8/88.2)	44.7 (34.9/54.8)	53.3 (26.6/78.7)	37.1 (27.9/47.1)	31.3 (11.0/58.7)

* Source: Own calculations based on the ALLBUS data for 1992-2000. Numbers in brackets are the lower/upper bounds of the binomial exact 95% confidence interval.

Table 2: Results from estimations of union membership functions for Western Germany

Endogenous variable: Union member (1 = yes); Method: Probit

Year Exogenous variable	1992	1996	2000	Pooled data
Age *(years)*	0.015** (3.25)	0.007 (1.41)	0.008 (1.49)	0.011** (3.68)
Sex *(dummy, 1 = male)*	0.254* (1.98)	0.350** (2.67)	0.208 (1.46)	0.288** (3.77)
Full time worker *(dummy, 1 = yes)*	0.668** (3.45)	0.471* (2.38)	0.547** (2.59)	0.549** (4.77)
Completed apprenticeship or master craftsman *(dummy, 1 = yes)*	0.064 (0.46)	-0.017 (-0.12)	-0.032 (-0.17)	0.015 (0.17)
Polytech or university degree *(dummy, 1 = yes)*	-0.171 (-0.97)	-0.362* (-1.97)	-0.443 (-1.91)	-0.312** (-2.84)
Blue collar worker *(dummy, 1 = yes)*	0.443** (3.60)	0.617** (4.77)	0.366** (2.59)	0.467** (6.26)
Civil servant *(dummy, 1 = yes)*	0.458* (2.51)	0.615** (3.10)	0.664** (3.15)	0.556** (4.96)
Public sector employee *(dummy, 1 = yes)*	0.356** (2.58)	0.373** (2.73)	0.025 (0.16)	0.269** (3.28)
Size of village/city *(index from 1 = small to 7 = large)*	0.043 (1.50)	0.049 (1.61)	0.109** (3.23)	0.063** (3.55)
Political orientation *(index from 1= extreme left to 10 = extreme right)*	-0.069* (-2.46)	-0.121** (-4.10)	-0.112** (-3.09)	-0.099** (-5.62)
Father: blue collar worker *(dummy, 1 = yes)*	0.325** (3.01)	0.114 (1.04)	0.101 (0.80)	0.191** (2.94)
1996 *(dummy, 1 if 1996)*				-0.120 (-1.67)
2000 *(dummy, 1 if 2000)*				-0.176* (-2.29)
Constant	-2.223** (-6.24)	-1.552** (-4.24)	-1.695** (-4.19)	-1.748** (-8.07)
Number of observations	746	788	632	2166

Note: z-values in brackets; *(**) denote statistical significance at the 5 per cent (1 per cent) level.

Table 3: Results from estimations of union membership functions for Eastern Germany

Endogenous variable: Union member (1 = yes); Method: Probit

Year Exogenous variable	1992	1996	2000	Pooled data
Age *(years)*	0.018** (2.56)	0.007 (1.00)	0.001 (0.19)	0.009* (2.18)
Sex *(dummy, 1 = male)*	-0.245 (-1.43)	0.258 (1.50)	0.305 (1.61)	0.078 (0.79)
Full time worker *(dummy, 1 = yes)*	-0.026 (-0.08)	-0.148 (-0.59)	-0.173 (-0.60)	-0.077 (-0.49)
Completed apprenticeship or master craftsman *(dummy, 1 = yes)*	0.416 (1.83)	-0.129 (-0.57)	0.380 (1.29)	0.172 (1.26)
Polytech or university degree *(dummy, 1 = yes)*	0.003 (0.01)	-0.123 (-0.49)	0.198 (0.62)	-0.070 (-0.47)
Blue collar worker *(dummy, 1 = yes)*	0.255 (1.39)	0.098 (0.54)	0.530* (2.53)	0.217* (2.03)
Civil servant *(dummy, 1 = yes)*	0.278 (0.50)	0.684 (1.80)	0.400 (0.29)	0.447 (1.88)
Public sector employee *(dummy, 1 = yes)*	0.160 (1.06)	0.343* (2.04)	0.649** (3.12)	0.310** (3.21)
Size of village/city *(index from 1 = small to 7 = large)*	0.080* (2.42)	-0.009 (-0.27)	0.078 (1.85)	0.048* (2.37)
Political orientation *(index from 1= extreme left to 10 = extreme right)*	-0.158** (-3.64)	-0.031 (-0.71)	-0.093 (-1.82)	-0.098** (-3.79)
Father: blue collar worker *(dummy, 1 = yes)*	0.190 (1.32)	0.026 (0.18)	0.145 (0.87)	0.105 (1.24)
1996 *(dummy, 1 if 1996)*				-0.360** (-3.70)
2000 *(dummy, 1 if 2000)*				-0.618** (-5.97)
Constant	-0.954 (-1.75)	-0.775 (-1.65)	-1.630** (-2.65)	-0.684* (-2.23)
Number of observations	377	393	366	1136

Note: z-values in brackets; *(**) denote statistical significance at the 5 percent (1 percent) level.

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