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**The German Model of Industrial Relations:
(Where) Does it still Exist?**

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The German Model of Industrial Relations: (Where) Does it still Exist?*

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Abstract: Using data from the representative IAB Establishment Panel, this paper charts changes in the two main pillars of the German IR model over the last 20 years. It shows that collective bargaining coverage and worker representation via works councils have substantially fallen outside the public sector. Less formalized and weaker institutions such as voluntary orientation of uncovered firms towards sectoral agreements and alternative forms of employee representation at the workplace have partly attenuated the overall erosion in coverage. Multivariate analyses indicate that the traditional German IR model (with both collective agreements and works councils) is more likely found in larger and older plants, and it is less likely in plants managed by the owner, in single and foreign-owned plants, in individually-owned firms or partnerships, and in exporting plants. In contrast, more than 60% of German plants did not exhibit bargaining coverage or orientation or any kind of worker representation in 2015. Such an absence of the main institutional features of the German IR model is mainly found in small and medium-sized plants, in particular in the service sector and in eastern Germany, and its extent is increasing dramatically.

Zusammenfassung: Mit Daten des repräsentativen IAB-Betriebspanels zeichnet der Beitrag Veränderungen in den zwei Hauptpfeilern des deutschen Modells der industriellen Beziehungen im Lauf der letzten 20 Jahre nach. Er zeigt, dass die Abdeckung durch Kollektivverhandlungen und die Arbeitnehmervertretung durch Betriebsräte außerhalb des öffentlichen Sektors stark zurückgegangen sind. Weniger formalisierte und schwächere Institutionen wie eine freiwillige Orientierung an Branchentarifverträgen und alternative Formen der betrieblichen Mitarbeitervertretung haben die allgemeine Erosion etwas abgemildert. Multivariate Analysen zeigen, dass das traditionelle deutsche Modell der Arbeitsbeziehungen (mit Tarifverträgen und Betriebsräten zugleich) wahrscheinlicher in größeren und älteren Betrieben zu finden ist, während seine Existenz in eigentümergeführten und in Einzelbetrieben, in Exportbetrieben und in Betrieben im ausländischen Eigentum weniger wahrscheinlich ist. Allerdings gab es 2015 in mehr als 60% der deutschen Betriebe weder eine Tarifbindung oder -orientierung noch irgendeine Form der Mitarbeitervertretung. Ein solches Fehlen der Hauptinstitutionen des deutschen Modells der Arbeitsbeziehungen zeigt sich vor allem in kleinen und mittleren Betrieben, im Dienstleistungssektor und in Ostdeutschland, und das Ausmaß dieser Lücken steigt dramatisch an.

JEL-Classification: J50, J52, J53

Keywords: collective bargaining, bargaining coverage, works council, worker participation, industrial relations, Germany

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1. INTRODUCTION

Times are gone when Germany was termed the “sick man of Europe” (e.g. by *The Economist* on 3 June, 1999), but nowadays it is the German model of industrial relations that is said to be in a serious condition, even if observers slightly differ in their assessments. While Streeck (2009: part 2) diagnoses an “exhaustion” of the institutions of the postwar German economy (in particular industrial relations, IR), other researchers see an “erosion” of the German IR system (Hassel 1999) or even speak of the “demise” of the model (Addison et al. 2017). Although the distinction between “exhaustion” and “erosion” is more than just semantic,¹ it may obscure more than it reveals since the different diagnoses are based on the same view that the major components of the German IR system have been weakening over the last 20-30 years. By using a large, representative data set and charting variations in the main pillars of industrial relations over the last twenty years, this paper intends to find out whether and where the German model of industrial relations is still alive.

This special system of industrial relations is a cornerstone of the German economy, with industrial relations extending into the workplaces, boardrooms, social security systems and government to a much larger degree than in most other countries (Silvia 2013: 2). It used to be regarded as “a model case for stable long term high trust alliances between capital and labour” (Tüselmann/Heise 2000: 165) and has received much interest both from academics, e.g. in the varieties of capitalism debate (Hall/Soskice 2001, Thelen 2009), and from politics (e.g. the European Commission or the Dunlop Commission in the US). The two most important pillars of the German model identified in the literature are (sectoral) collective bargaining agreements and separate worker co-determination at the workplace, both of which are supported by encompassing interest associations (see Hassel 1999, Haipeter 2013, Addison et al. 2017).²

The present empirical analysis focuses on these two pillars and their transition while other interesting and partly related developments in German IR such as the falls in the membership and density of trade unions (see, e.g., Schnabel/Wagner 2007, Fitzenberger et al. 2011) and of employers’ associations (Silvia 2013: ch. 5) or the

¹ For detailed discussions, see Silvia (2013: 10f.) and Haipeter (2013).

² Additional important aspects of the German IR model mentioned in the literature include the importance of the law and the intermediary character of works councils and trade unions (Jacobi et al. 1998), skill formation via vocational training (Marsden 2015), and typical outcomes like relatively low wage dispersion and income inequality (Streeck 2016). Whereas the present paper only focuses on the German IR system or model, the term “German model” has also been used more broadly to describe the configuration of the German social and economic system (for a historical and critical discussion, see Streeck 2009: 108ff.).

emergence of a low wage sector and the introduction of a statutory national minimum wage (Bosch/Weinkopf 2017) are not investigated here. The goal of our study is to chart changes in collective bargaining coverage and works council coverage over the last 20 years and to identify the blank areas where neither collective bargaining agreements nor works councils exist. Our disaggregated analysis with an encompassing data set will enable us to see in which firms, regions and sectors of the economy the major institutions of the German IR model are still present and which shares of employees are covered. We move beyond the extant empirical literature (like Addison et al. 2017) not only in that we use a much longer observation period which also includes more recent years. More important, we provide a finer breakdown of bargaining and works council coverage and conduct econometric analyses, which enables us to confront some recent statements from the IR literature with empirical reality. Finally, in addition to the two formalized, legally supported pillars of German IR we also look at their informal lookalikes that have gained importance over time, namely voluntary orientation of uncovered firms towards sectoral agreements instead of formal bargaining coverage and alternative forms of employee representation at the workplace rather than works councils.

The paper is organized as follows: Chapter 2 provides a brief overview of the theoretical and empirical literature on the state of the German IR model. The institutional background and our data are explained in chapter 3, followed by a presentation of descriptive evidence in chapter 4. Chapter 5 presents the results of multivariate analyses and simulations on the (non-)existence of the German model in 2015. The paper ends with some conclusions and a brief outlook in chapter 6.

2. THE STATE OF KNOWLEDGE ON THE PRESENCE OF THE GERMAN IR MODEL

Although there is some consensus in the industrial relations literature that the German model is under threat and shows signs of disintegration, it is less clear where it still exists and plays an important role in practice. Until the end of the 1980s most observers regarded the (West) German system of industrial relations as almost all-encompassing,³ but in the 1990s some authors pointed to an increasing diversity in industrial relations in Germany. Jacobi et al. (1998), for instance, argue that sectoral collective bargaining no longer entails a common pattern of labour-management relations at company and workplace level within each industry and

³ See, for instance, Berghahn and Karsten (1987: 75, 107) who state – without giving an empirical source – that “more than 90 per cent of all work contracts are determined in their contents by collective agreements” and that only “some workers remain excluded” from co-determination via works councils.

that there is a large sector of small and medium-sized establishments with rather informal industrial relations. Hassel (1999) stresses that the major facets of the German IR system (like codetermination, collective agreements and encompassing interest associations) are concentrated on large companies in manufacturing industry whereas they are weak in the expanding service sector, giving rise to a growing segment of employees in small and medium-sized companies and in private-service companies who are not covered by plant-level co-determination (see also Keller 2004). Streeck and Hassel (2003: 111f.) diagnose a “shrinking core” and a “progressive encapsulation” of the traditional IR system in that co-determination and sectoral-level collective bargaining remain confined to those industries, large companies, and workers who came of age in the 1970s. Likewise, Thelen (2009: 492) speaks of “segmentalism” and remarks that “the formal institutions are stable but at the same time, they cover a shrinking core of workers, concentrated especially ... in large manufacturing firms.”

Recent analyses of the actual state of the German model paint an even bleaker picture. Haipeter (2013: 131) diagnoses a “fragmentation” of a former more uniform IR system. Streeck (2016) reiterates that the German system of IR is splitting into a shrinking core and a growing periphery, leading to a sharp dualism of the labour market and society, but he does not provide empirical evidence for these claims. Although Rehder (2016) is a bit less sceptical, she concedes that the formative power of IR institutions like co-determination and collective bargaining is substantially lower in the service sector. In her view, the different sector-specific worlds of industrial relations are less of a concern than the general fall in coverage of these IR institutions which is also seen in core areas. In contrast, Schroeder (2016) puts much emphasis on the segmentation of the German system into three worlds of industrial relations: Only in the first world, which is mainly found in manufacturing firms in the export sector, in core areas of the public sector, and in large companies, we still have the traditional IR model with sectoral bargaining, co-determination and strong encompassing actors (even if the conflict mode has changed over time). The second world is said to be more ambivalent since in medium-sized establishments and in some areas of the public sector the presence of unions and sectoral agreements cannot be taken for granted anymore. Finally, there is a third world where unions and employers’ associations, collective bargaining and cooperative labour relations are hardly present. According to Schroeder (2016), this world comprises small and medium-sized establishments (often in eastern Germany), the private service sector, and the skilled crafts and trades. Unfortunately, he does not present data on the size of these three worlds.

Some empirical evidence on the incidence of collective agreements and works councils is provided by the IAB Establishment Panel, an annual representative survey of about 16,000 establishments in western and eastern Germany. Using these data, Addison et al. (2017) chart changes in the architecture of German industrial relations in the period from 2000 to 2011. They show that sectoral collective bargaining coverage and works council incidence are in decline and that the joint presence of sectoral agreements and works councils is also eroding. The authors find that the coverage of collective agreements and works councils as well as the decline in traditional bargaining somewhat differ by sector, between small and large establishments and between western and eastern Germany. However, they mainly focus on trends and do not present finer breakdowns of coverage. Also using data from the IAB Establishment Panel, a descriptive analysis by Ellguth and Kohaut (2016) shows that in 2015 about 31 (21) percent of establishments in western (eastern) Germany were covered by a collective agreement, and only 9 (8) percent of establishments in the private sector with five or more employees had a works council. The authors provide evidence that coverage rates have fallen over time and that they vary substantially across industries and federal states and between establishments of different size. They identify some problem areas (such as the private service sector) where neither collective agreements nor works councils are present but they do not disaggregate the data in sufficient detail to test the segmentation or encapsulation arguments sketched above or the “three worlds” hypothesis by Schroeder (2016).⁴

3. INSTITUTIONAL BACKGROUND AND DATA

As mentioned above, our empirical analysis focuses on the two most important pillars of the German model identified in the literature, namely collective bargaining agreements and worker co-determination at the workplace.⁵ In Germany, the constitutionally protected principle of bargaining autonomy gives employers (or employers’ associations) and trade unions the right to regulate wages and working conditions without state interference. Collective bargaining agreements may be concluded either as multi-employer agreements at industry level or as single-employer agreements at company level. They are legally binding on all members of the unions and employers’ associations involved, but in general they are extended

⁴ Note that there are a number of further studies that have analysed in more detail either the decline in sectoral collective bargaining (see, e.g., Kohaut/Schnabel 2003, Haipeter 2013) or the low coverage rate of works councils (see, e.g., Addison et al. 2003, Hauser-Ditz et al. 2008).

⁵ For brief descriptions of these two pillars, see Gartner et al. (2013) and Addison et al. (2017).

to all employees working for the employers involved (no matter whether they are union members or not). Collective agreements determine wages as well as job classifications, working time, and working conditions. These collectively agreed norms are minimum terms in that companies bound by collective agreements may not undercut but only improve upon these terms and conditions (for instance by paying higher wages). The concrete implementation and monitoring of industry-level collective agreements is often relegated to works councils and management at the plant level.

According to the German Works Constitution Act, works councils are mandatory in all establishments that exceed a size threshold of five permanent employees, but they are not automatic: they must be elected by the entire workforce in the establishment, and employees are free not to set up a works council. The size of the works council (and of the equivalent “staff council” in the public sector) is fixed by law and rising with the number of employees in a plant. In addition to extensive rights of information and consultation, German works councils have co-determination rights prescribed by law on “social matters” such as remuneration arrangements, health and safety measures, and the regulation of working time. Unlike unions, works councils are not allowed to call a strike, and they are also excluded from reaching agreement with the employer on wages or working conditions that are normally settled by collective agreements between trade unions and employers’ associations at industry level (unless the latter explicitly authorize works agreements of this sort at plant level by means of so-called opening or derogation clauses).

The only dataset that allows us to continuously analyse both the coverage of collective bargaining and works councils in Germany is the IAB Establishment Panel (for details, see Ellguth et al. 2014). Starting in 1993 (1996) in western (eastern) Germany, the IAB Establishment Panel annually surveys plants from all industries using a stratified random sample of all plants that employ at least one worker covered by the social security system at the 30th June of a year. The data are collected in personal interviews with the owner or management of the establishment. Since 1996 the number of plants interviewed in each year has almost doubled and from 2001 onwards it amounts to roughly 16,000. Bossler et al. (2017) provide evidence that the interviewed plants are representative of the underlying population.

Since the IAB Establishment Panel has been set up for the needs of the Federal Employment Agency, detailed information on the number of workers, the composition of the workforce, the plant’s total wage bill, exporting activity and production technology, its business policies and training activities constitutes a

major part of the questionnaire. Most important for our analysis, establishments are also asked whether they are covered by collective agreements at industry or plant level, whether they use collective agreements as orientation points in wage-setting (and other issues), and whether there exists a works council or another form of worker representation in the establishment. The questionnaire is thus informative on various aspects of industrial relations, though some items are only available in specific waves of the panel.

Our period of observation extends over 20 years from 1996 (when the panel was set up in eastern Germany) to 2015. Throughout the analysis, we examine only establishments (not firms) with five or more employees because works councils can only be set up in these plants. We report cross-section weighted results for the shares of plants covered by collective agreements and works councils and corresponding shares of employees covered (based on the usual assumption that all employees working in covered plants are benefitting from plant coverage). When disaggregating the data by broad sectors, we must be aware that the industry classification used in the survey changed twice between 1996 and 2015, so that comparisons between sectors and across time should be interpreted cautiously. Appendix Table 1 displays how we group industries into sectors.

4. DESCRIPTIVE EVIDENCE

In order to get a complete picture of the presence of the German model, we start by looking at the entire economy, whereas related studies such as Addison et al. (2017) often only focus on the private sector and also exclude certain sectors like agriculture and the extractive industries. In the next step, we concentrate on the manufacturing and service sectors, and finally we extend the analysis by also paying attention to the informal orientation of uncovered establishments towards sectoral agreements and to alternative forms of employee representation at the workplace.

(Table 1 about here)

4.1 RESULTS FOR THE ENTIRE ECONOMY

Table 1 makes clear that in terms of establishments covered both pillars of industrial relations have become substantially weaker over the last 20 years so that the blank areas where neither collective bargaining agreements nor works councils exist now dominate. Whereas in 1996 two out of three establishments in Germany were

covered by collective bargaining agreements, it is now (in 2015) little more than one-third of establishments.⁶ Works council coverage decreased from about 17 percent to 12 percent of establishments, and in 2015 only 9 percent of establishments with five or more employees did have both a collective agreement and a works council. In contrast, almost 61 percent of establishments now belong to the blank area where neither collective bargaining agreements nor works councils do exist. These coverage rates are lower (and blank areas are larger) in eastern than in western Germany, but the rates of decline are somewhat similar in both parts of the country.

Substantial differences are also found when disaggregating into four broad sectors. We distinguish between manufacturing (including construction), private services, the public sector and a remaining category loosely termed primary sector (which includes agriculture, the extracting industries, and water and energy). Table 1 shows that bargaining coverage has substantially fallen in manufacturing, services, and the primary sector whereas it has remained stable in the public sector. Works council coverage has declined in all sectors except the primary sector (where the large standard errors suggest not to overinterpret the reported increase). The blank areas are largest in the service sector where two out of three establishments have neither collective bargaining agreements nor works councils. In contrast, this is the case for less than three percent of establishments in the public sector where almost all plants are covered by collective agreements and a large majority has staff councils (the equivalent of works councils in the public sector). This evidence is thus consistent with Schroeder's (2016) conjecture that the public sector is part of his "first world", where we still have the traditional IR model with sectoral bargaining and co-determination.

Finally, we disaggregate by plant size, making use of four categories. Table 1 demonstrates that large establishments with 500 and more employees are still strongholds of the traditional German model with very high and relatively stable coverage rates of collective bargaining and/or works councils. In contrast, in small establishments with less than 20 employees coverage rates have almost halved since 1996. In 2015, two-thirds of these small establishments had neither a collective bargaining agreement nor a works council. Medium-sized establishments also record substantial declines in bargaining and works council coverage rates.

(Table 2 about here)

⁶ For reasons of conciseness, our tables do not distinguish between collective bargaining at industry and plant level. Note that in 2015 just 3.3 percent of establishments conducted negotiations at the plant level whereas 33.5 percent were part of multi-employer bargaining at industry level. Disaggregated figures for industry-level and plant-level bargaining are provided by Ellguth and Kohaut (2016) and Addison et al. (2017).

The picture for the entire economy looks less bleak if we examine the coverage of collective bargaining and workplace representation by employment rather than by establishment, reflecting the higher presence of both pillars of the German model in larger establishments. Table 2 shows that in 2015 about 59 percent of employees worked in an establishment covered by collective agreements, and 47 percent of employees were represented by a works council. However, one-third of employees were neither covered by collective agreements nor by works councils, and this share has more than doubled since 1996 (and is even larger in eastern Germany). Coverage rates of collective agreements and (to a lesser extent) of works councils have been falling in western and eastern Germany, in establishments of all size categories, and across sectors, again with the notable exception of the public sector.

When asking where the traditional German model of IR still exists, as a crude approximation we may look at those cells in Table 2 where the majority of employees are still covered both by collective agreements and works councils.⁷ This is only the case in the public and primary sector and in the groups of medium-sized and large establishments. In contrast, blank areas where many employees are neither protected by collective agreements nor by works councils are particularly large in small establishments, in eastern Germany, and in the service sector. These findings confirm recent statements by Rehder (2016) and Schroeder (2016) who, however, do not provide empirical evidence for their assessments.

4.2 DISAGGREGATED RESULTS FOR MANUFACTURING AND SERVICES

Since the public and the primary sector seem to be exceptional cases in that coverage rates by employment are still relatively high and rather stable, we now focus on the manufacturing and services sector where substantial changes have occurred. Table 3 presents a finer disaggregation of results between western and eastern Germany, herein between manufacturing and services, and then between four categories of establishment size. Areas highlighted in grey indicate cells where the coverage rates of collective agreements or works councils are above 50 percent and shaded areas indicate cells where the majority of employees have neither collective agreements nor works councils.

(Table 3 about here)

⁷ Although such a 50 percent threshold may seem arbitrary, it has also been applied in German labour law, for instance as a prerequisite for *erga omnes* clauses: Until 2014, the labour ministry could only extend a sectoral collective agreement towards all employees in an industry if it already covered 50 percent or more of the employees in the industry.

Starting with the first column in Table 3, it can be seen that in 1996 collective bargaining coverage by employment exceeded 50 percent in all regions, sectors and almost all establishment size categories. In 2015, however, a majority of employees are covered by collective agreements mainly in medium-sized and large establishments (i.e. with 100 and more employees), both in the eastern and western German manufacturing and service sectors. Bargaining coverage is highest in western German manufacturing plants with 500 and more employees (where it amounts to 92 percent) and lowest in eastern German service sector plants with less than 20 employees (where the coverage rate is just 18 percent). Similarly, works council coverage is currently above 50 percent only in medium-sized and large establishments in both sectors and both regions. Again we observe a strong dispersion in coverage rates: In large manufacturing plants in western Germany, almost 97 percent of employees are represented by a works council, whereas this is the case for only 1 percent of employees in small establishments in the eastern German manufacturing sector. The two pillars of the German model, i.e. collective agreements and employees' workplace representation, thus still exist, but they are increasingly relegated to particular areas of the economy. Put differently, the "progressive encapsulation" of the traditional IR system already diagnosed by Streeck and Hassel (2003: 111f.) seems to be well under way.

The blank areas where neither collective agreements nor works councils exist have increased across almost all categories, as is visible from the last columns of Table 3. In very small service sector establishments in eastern (western) Germany, nowadays 80 (68) percent of employees have to go without both cornerstones of the German IR model. But even in the model's traditional stronghold of manufacturing, large blank areas of more than 56 (40) percent are found in plants with less than 100 employees in eastern (western) Germany. Although coverage rates have always been lower and blank areas been larger in small plants, they have now reached magnitudes that must be of great concern for proponents of the German model. The "third world" as defined by Schroeder (2016), where unions and employers' associations, collective bargaining, works councils and cooperative labour relations are hardly present, is greatly expanding in Germany.

4.3 INFORMAL TYPES OF BARGAINING COVERAGE AND WORKER REPRESENTATION

While collective bargaining agreements and works councils are formal institutions of the German IR system protected by law, establishments are free to choose other, less formal or more flexible modes of wage setting and worker representation. One employer strategy that has drawn more and more attention is that establishments

avoid being formally bound by collective bargaining agreements, which are sometimes perceived as straightjackets, but voluntarily orient themselves towards sectoral agreements in that they pay similar wages, have similar working hours etc. (see Kohaut/Schnabel 2003, Addison et al. 2016). For establishments, this orientation saves transactions costs since they do not have to negotiate on their own but still have the reputation of providing standard wages and working conditions. At the same time orientation allows for more flexibility since establishments not formally bound can always deviate from the terms of sectoral agreements if changing economic conditions require adjustments. Another strategy is that employers initiate other (plant-specific) forms of employee participation such as round tables that do not have the extensive legal powers of works councils and can be steered and easily dissolved by management (see Hauser-Ditz et al. 2008, 2013, Ertelt et al. 2017). The incidence of these less formal institutions will be described in the following, again concentrating on the manufacturing and service sectors since such alternative institutions do not play a role in the public sector.

(Table 4 about here)

In the IAB Establishment Panel, starting in wave 1999 plants not covered by collective bargaining are asked whether they orient themselves towards sectoral agreements.⁸ Table 4 shows that the share of establishments with orientation towards collective agreements has substantially increased between 1999 and 2015, from about 22 to 32 percent. However, this increase has not been strong enough to compensate for the fall in formal collective bargaining coverage (from 53 to 35 percent), so that the share of establishments that are neither directly covered by collective agreements nor indirectly via orientation has risen from 25 to 33 percent. Whereas in 1999 the orientation phenomenon was mainly found in eastern Germany, it is now equally prevalent in both parts of the country.

The orientation strategy is as important in manufacturing as in the service sector, but the blank areas where there is neither formal bargaining coverage nor orientation are much larger in the service sector. The informal orientation towards sectoral agreements can predominantly be found in small establishments with less than 20 employees where it is now even more frequent than formal coverage by

⁸ In the 2011 wave of the panel, such plants were additionally asked about the kind of orientation. Three out of four plants in manufacturing and services answered that their orientation concerned wages (with 95 percent of these plants stating that they pay similar or even higher wages than stipulated in the sectoral agreement), and about one-quarter of plants said that their orientation concerned other terms of the sectoral agreement (such as working time). Taking a closer look at wage alignment, Addison et al. (2016) find that those workers paid according to sectoral agreements earn the most and that some way behind them come workers in orientating establishments. The latter establishments in turn pay more than their non-orientating counterparts.

collective agreements. Such small establishments are also those which most often are neither directly nor indirectly affected by the sectoral agreements that form the backbone of the German industrial relations system. Although “the erosion process has in practice been attenuated by orientation” (Addison et al. 2016: 418), the collective bargaining pillar is more and more crumbling.

(Table 5 about here)

Turning to the second strategy of using less formal institutions, since 2004 the IAB Establishment Panel consistently asks employers whether there exist other plant-specific forms of employee representation (than works councils) such as speakers of the workforce or round tables. Table 5 shows that the incidence of these other forms of representation has somewhat increased over time, in particular in eastern Germany and in manufacturing. In 2015, about 13 percent of establishments in the manufacturing and service sectors report having such a form of employee representation, whereas less than 11 percent of establishments have a works council (and there are few establishments where both bodies exist simultaneously, see Ertelt et al. 2017).

Table 5 also makes clear that there are substantial differences by establishment size. Whereas in small establishments these other (mostly management-initiated) forms of employee representation are much more frequent than works councils, employees in larger establishments have typically elected works councils. However, in medium-sized (100-499) and large establishments the incidence of works councils has fallen over time while other forms of employee participation have gained importance. A more detailed analysis by Ertelt et al. (2017) with IAB Establishment Panel data finds that both bodies correlate negatively with respect to their incidence, foundation, and dissolution, which suggests that there exists a predominantly substitutive relationship between works councils and other forms of employee representation. This partly explains why the overall incidence of non-participation has hardly changed over time: In 2015, still more than three-quarter of establishments in Germany neither have a works council nor another form of employee participation. In small establishments and in eastern Germany, non-participation is even found in more than 80 percent of establishments. This large participation-free zone calls in question whether Germany is really a country where workers' wishes, objections and suggestions have to be taken into consideration by management.⁹

⁹ That said, even if there is no works council present it could be well the case that the mere threat of workers setting up a works council is sufficient for management taking account of workers' preferences and suggestions.

(Table 6 about here)

After discussing the two strategies of using less formal institutions separately, it is now time to bring together formal and informal bargaining coverage as well as worker representation by works councils and other forms of representation. This is done in Table 6 using a 9-field matrix that also includes the states of no coverage and no representation. It shows that between 2004 and 2015 the traditional core of the German IR system has not changed much: In 2004, 8.7 percent of establishments in manufacturing and services were both covered by collective bargaining agreements and works councils, and this share fell only slightly to 8.0 percent in 2015. Even if we take a broader picture by including orientation and other forms of representation, the percentage of firms with some kind of bargaining coverage and employee representation is quite stable. What has substantially changed in this decade is the share of establishments that are neither covered by collective bargaining or orientation nor have works councils or other forms of worker representation. Whereas this blank area included 24.6 percent of establishments in 2004 (employing 13 percent of all workers), it has expanded to 29.5 percent of establishments in 2015 (in which 16 percent of all workers are employed).

(Table 7 about here)

Table 7 makes clear that this phenomenon is largely restricted to small and medium-sized establishments with less than 500 employees. Almost 30 percent of these establishments are neither covered by collective bargaining or orientation nor have works councils or other forms of worker representation, whereas this is only the case for less than 2 percent of establishments with 500 and more employees. It is such large establishments where the traditional German IR model still exists: 78 percent of establishments with 500 and more employees have both collective bargaining agreements and a works council. If we include the less formal types of institutions, even 88 percent of large establishments are characterized by some kind of formal or informal bargaining coverage and some kind of worker participation via works councils or other forms of representation.

5. MULTIVARIATE ANALYSIS

Although the descriptive results reported in the previous chapter are quite instructive, it needs a multivariate analysis to see whether the factors identified so far (like establishment size) really play a decisive role in explaining the (non-)existence of the traditional German model. In contrast to most previous research, we will not

analyse bargaining coverage and employee representation separately but focus on the joint existence (or non-existence) of both institutions.

With our data from the IAB Establishment Panel, we thus run a cross-section regression analysis for the year 2015 using three models with different dependent variables (that somewhat correspond to the diagonal in Table 6). Model 1 looks at the core of the German IR model, that is establishments that are both covered by collective bargaining and a works council. The dependent variable is a dummy taking on the value of one if this is the case (and zero otherwise). Model 2 takes a broader view by including the less formal institutions discussed above. The dependent variable is a dummy that takes on the value of one if an establishment has some kind of bargaining coverage (either formal or via orientation) and at the same time some kind of worker representation (either by a works council or by other forms of representation). Model 3 focuses on the blank area. Here the dependent variable is a dummy taking on the value of one if an establishment neither has some kind of bargaining coverage (either formal or via orientation) nor some kind of worker representation (either by a works council or by other forms of representation). Since our dependent variables are dichotomous, we run probit estimations using Stata 14.2.

Our explanatory variables are those variables that have been highlighted in chapter 2 and have been identified in previous empirical research as the main determinants of bargaining coverage and worker representation.¹⁰ They include the size, age and sectoral affiliation of establishments, the composition of their workforce, the ownership, management, and legal status of the establishment, the export status and the existence of a profit sharing scheme, and the location of the establishment in eastern or western Germany. The regression sample is restricted to the manufacturing and service sectors and comprises 9986 observations. Since we only conduct cross-sectional estimations we do not claim to identify causal relationships.

(Table 8 about here)

The results of our estimations using unweighted data are shown in Table 8.¹¹ It can be seen that the size of an establishment (in terms of the number of employees)

¹⁰ See, e.g., the studies by Kohaut and Schnabel (2003), Addison et al. (2013), Hauser-Ditz et al. (2008, 2013), and Ertelt et al. (2017).

¹¹ While the descriptive information presented in Tables 1 to 7 is based on weighted data (taking care of the sampling frame using strata for 19 sectors and 10 size classes), our econometric investigation uses unweighted data but includes the stratification variables (i.e. sector and establishment size dummies); for a discussion and justification of this practice, see Winship and Radbill (1994). Note that our main insights do not change when using weighted data.

plays an important role in all models, confirming our descriptive results. The probability of collective bargaining and works council coverage increases with establishment size (model 1), and this is also the case when including the less formal institutions of bargaining orientation and other forms of worker representation (model 2). Correspondingly, the probability of no kind of bargaining coverage and no kind of worker representation is significantly lower in larger establishments (model 3). From an economic perspective, these relationships probably reflect the fact that some advantages of having collective agreements and worker representation (e.g., a reduction in transaction costs) increase with establishment size. Similar results are found for establishment age: Establishments founded before 1990 are much more likely to have collective agreements and a works council and less likely to belong to the blank area with no bargaining and works council coverage. This is not surprising since such older establishments have been exposed to trade union and employee efforts of introducing collective bargaining and works councils for a much longer period of time than younger plants, but the relationship found may also reflect a different, more cooperative tradition of industrial relations in these older establishments. Obviously larger and older establishments are those in which the traditional German model of IR is still alive.

In addition, ownership, management and legal status of the establishment seem to be important for the (non-)existence of the German model. Table 8 shows that establishments that are managed by the owner are almost 18 percentage points less likely to have both a collective agreement and a works council, *ceteris paribus*, and they are almost 11 percentage points more likely to be in the blank area of no bargaining and worker representation. This finding is consistent with anecdotal evidence and case studies indicating that firm owners try to prevent the introduction of works councils and collective agreements because they fear a restriction of their power or that employees do not set up such institutions because they do not want to affront their paternalistic employers (see, e.g., Hauser-Ditz et al. 2008). Similarly, foreign investors seem to shun the German model and its powerful institutions since establishments in foreign ownership are somewhat less likely to have both a collective agreement and a works council, and they are much more likely to belong to the blank area.¹² The same is true for establishments that are exporters and thus particularly exposed to global competition. This result stands in contrast to the importance of the export sector for the traditional German model stressed by Schroeder (2016). Concerning the legal status of the establishment we see that individually-owned firms or partnerships and single establishments which are not part of a larger company (that may induce spillover effects) are less likely to have

¹² A closer inspection of the data shows that this relationship with foreign ownership is only statistically significant in western Germany.

some forms of bargaining coverage and worker representation (models 1 and 2), and they more often fall into the blank area of no bargaining and representation (model 3).¹³

Table 8 further indicates that the (non-)existence of the German IR model seems to be related to the composition of the workforce, but we do not want to interpret these control variables which could partly be endogenous (for instance, if the share of women or marginal workers was affected by the existence of a works council). It can also be seen that industry affiliation plays a statistically significant role even after controlling for many other factors. Finally, the non-existence of the German IR model is associated with the location of the establishment in western or eastern Germany. Even after controlling for factors like establishment size and age, ownership, export status, industry affiliation, and workforce composition (which often differ between western and eastern Germany), establishments in eastern Germany are almost 9 percentage points more likely to neither have some kind of bargaining coverage nor some kind of worker representation (model 3). Interestingly, concerning the existence of the traditional IR system (model 1) differences between western and eastern Germany are small and not statistically significant.

(Table 9 about here)

In order to demonstrate the economic relevance of these explanatory variables and to get a better idea in which types of establishments the German IR model is likely to exist (or not), we perform a simulation reported in Table 9. We focus on a number of variables that are both statistically significant and economically important while fixing the values of the other variables in the empirical model at their sample means in the case of continuous variables or at the most common frequency for dichotomous variables. We consider four hypothetical plants with varying characteristics and compute the predicted probabilities of having both a collective agreement and a works council (based on the relevant coefficient estimates for model 1 in Table 8) and of falling into the blank area of no bargaining and representation (based on the probit estimates for model 3).

All our hypothetical plants are single establishments in domestic ownership that do not make use of profit sharing (and have average values of workforce composition). The hypothetical plant 1 is an exporting manufacturing plant in western Germany with 500 employees or more that was founded before 1990, has no owner-manager,

¹³ The relationship between the existence of profit sharing in an establishment and the (non-) existence of the German model is not clear-cut. The results in Table 8 should not be overemphasized since problems of endogeneity (i.e. establishments with collective agreements and works councils being more likely to introduce profit sharing schemes) cannot be ruled out.

and is not an individually-owned firm or partnership. For this plant, the predicted probability of having both a collective agreement and a works council is 78.7 percent, and the probability of being in the blank area of no bargaining and representation is as low as 1.6 percent (see Table 9). This kind of plant clearly is one in which the traditional German model is still alive. However, if we reduce plant size to 100-499 employees and assume that this hypothetical plant 2 is located in eastern Germany, was founded after 1990, and is managed by the owner, the predicted probability of having both a collective agreement and a works council drastically falls to 12.3 percent and the probability of belonging to the blank area increases to 27.8 percent.

Our hypothetical plants 3 and 4 are considerably smaller and located in the business support industry in western and eastern Germany, respectively. As can be seen from Table 9, the probability of finding both a collective agreement and a works council in these types of plants is almost zero. In contrast, the probability of neither having some kind of bargaining coverage (either formal or via orientation) nor some kind of worker representation (either by a works council or by other forms of representation) rises to almost 60 percent in our hypothetical plant 4 from eastern Germany which has less than 20 employees, was founded after 1990, is an individually-owned firm or partnership managed by the owner(s), and does not export. Here the traditional (western) German model does not exist and probably never has been implemented.

6. CONCLUDING REMARKS

Using data from the IAB Establishment Panel (1996-2015), our empirical investigation of the two most important pillars of the German IR model, namely collective bargaining agreements and worker representation at the workplace, suggests that the German model nowadays resembles a Swiss cheese: rather solid from outside, but many holes inside. The holes are small and medium-sized establishments, in particular in the service sector and in eastern Germany, which predominantly have neither a collective agreement nor a works council. The rather solid impression from outside comes from the fact that in 2015 still almost 60 percent of employees in Germany are covered by collective bargaining and about 47 percent of employees are represented by a works council (mainly due to large plants being covered). We have demonstrated, however, that both bargaining and works council coverage have substantially fallen since 1996, with the notable exception of the public sector. The increased use of informal institutions such as voluntary orientation

of uncovered firms towards sectoral agreements and alternative forms of employee representation at the workplace has attenuated the overall erosion in coverage. However, these not legally formalized institutions are much weaker and cover fewer employees than the official institutions of bargaining coverage and works council presence they replace.

Our multivariate analyses have shown that the traditional German IR model (with both collective bargaining agreements and works council presence) is more likely to be found in larger and older establishments, and it is less likely in establishments managed by the owner, in single and foreign-owned establishments, in individually-owned firms or partnerships, and in exporting establishments, *ceteris paribus*. Correspondingly, it is mainly smaller and younger establishments, establishments with an owner-manager, single and foreign-owned establishments, limited liability companies and exporting establishments, and establishments in eastern Germany where any kind of collective bargaining coverage or worker representation is more likely to be absent. These results are largely in accordance with descriptive assessments from the industrial relations literature, although the negative *ceteris paribus* effect of export activity found does not confirm the importance of the export sector suggested by Schroeder (2016) in his “three worlds of industrial relations” framework.

Although there exist quite a few informal explanations for the erosion of the German IR model, a definite answer has not been given (and would be beyond the scope of this paper). Hassel (1999) and Keller (2004) point to the tendency towards smaller plant size and to shifts in the employment structure from the public to the private sector and from manufacturing to services, but our analysis has shown that coverage rates have fallen across all plant size categories and in both the manufacturing and the service sector. It may also be tempting to relate the decrease in coverage rates to the appearance of new uncovered and the disappearance of covered establishments, but Addison et al. (2017) find that neither the behaviour of newly-founded and closing plants nor outsourcing of production seem to be the root of the expanding bargaining-free sector. Other potential reasons or catalysts of the erosion of the German IR model are the falling rates of membership in unions and employers’ associations and the shifting of collective bargaining and regulatory activities to the plant level which was accompanied by a loss in regulatory power of unions and employers’ associations (Hassel 1999, Silvia 2013, Addison et al. 2017). In addition, the advantages and disadvantages of different levels of regulation may have changed over time for many firms (Schnabel et al. 2006). Growing international competition and technological change entail that the transaction-cost advantage of collective bargaining agreements and works councils decreases in favour of the

flexibility advantages of decentralized or individual regulation. The relatively rigid rules established by (sectoral) collective bargaining and works councils, with limited scope for flexible decision-making on production issues, compensations systems and other personnel policies, may have posed serious problems for many firms, prompting them to opt out of the traditional system.¹⁴ Finally, it could also be the case that the German IR system is simply exhausted and that its “time’s up”, as hypothesized by Streeck (2009: 136). He argues that all institutions are in principle perishable and may wither away in dialectical processes of self-undermining, self-exhaustion and overextension. With the passage of time institutions can break down because their efficacy decreases whereas maintenance costs increase due to social and economic changes, so that these institutions now fit less well in their changing environment.

Even if this swan song may be a little bit premature since we have shown that the traditional German IR model still does exist in some places, the model is clearly on the retreat and the outlook is rather bleak. It is an open question how far the erosion and segmentalism can go before undermining social cohesion and the political stability of the entire corporatist German model (Marsden 2015). Although most observers seem to take a prolongation of the weakening of collective regulation and its actors for granted, in particular if there is insufficient government support for the system (as argued by Streeck 2016), Haipeter (2013) also sees some signs of renewal. He points to new union strategies for a revitalisation of collective bargaining that include rank-and-file participation, to the mobilisation and integration of employees via works councils when applying derogation clauses, and to recent collective agreements that cover new topics like qualification and demography and provide new opportunities for firms and works councils. In Haipeter’s (2013) opinion, one reason for optimism is that the social partners are still powerful enough to make significant contributions to the way in which institutions develop (although a return to the old system of industry-level corporatism can be ruled out). Silvia (2013: 230) argues that there are no obvious substitutes for the current industrial relations regime and that “the commitment to holding the shop together is still very much alive among the social partners and state officials.” Likewise, Marsden (2015) emphasizes that a long-standing strength of the German system has been its ability to adapt to different economic circumstances and to reform itself. It remains to be seen whether the German IR system, like Baron Münchhausen, can really pull itself out of the swamp by its own hair.

¹⁴ Interestingly, this reasoning does not seem to have induced many firms to switch to tailor-made plant-level collective agreements since Addison et al. (2017) do not find a material increase in the extent of plant-level collective bargaining.

Table 1: Presence of IR institutions in Germany (% of establishments covered, all sectors)

	Collective bargaining		Works council		Coll. barg. & works council		Neither coll. barg. nor works council	
	1996	2015	1996	2015	1996	2015	1996	2015
Germany	65.4 (1.3)	36.8 (0.8)	16.6 (0.8)	11.9 (0.4)	15.5 (0.8)	9.4 (0.4)	33.5 (1.3)	60.7 (0.8)
Western Germany	67.5 (1.6)	38.9 (1.0)	17.0 (1.0)	12.2 (0.5)	15.9 (0.9)	9.6 (0.4)	31.4 (1.6)	58.5 (1.0)
Eastern Germany	54.5 (1.7)	28.1 (1.3)	14.6 (0.8)	10.6 (0.6)	13.2 (0.8)	8.4 (0.5)	44.1 (1.7)	69.6 (1.3)
Sectors								
Primary sector	74.0 (4.9)	53.7 (4.2)	16.7 (3.4)	19.2 (2.6)	16.1 (3.4)	18.4 (2.6)	25.3 (4.9)	45.5 (4.2)
Manufacturing	74.5 (2.0)	49.9 (1.7)	12.9 (1.1)	9.2 (0.5)	12.1 (1.0)	6.1 (0.4)	24.7 (2.0)	47.0 (1.7)
Services	59.0 (1.8)	31.1 (0.9)	15.8 (1.1)	11.0 (0.5)	14.5 (1.0)	8.5 (0.4)	39.7 (1.8)	66.5 (0.9)
Public sector	97.1 (1.4)	95.5 (1.7)	80.3 (5.8)	72.8 (3.7)	78.6 (5.8)	71.1 (3.7)	1.2 (1.1)	2.8 (1.3)
Plant size								
5-19 employees	61.8 (1.7)	31.8 (1.0)	8.7 (0.9)	5.1 (0.4)	8.4 (0.9)	4.0 (0.4)	37.8 (1.7)	67.1 (1.0)
20-99 employees	73.7 (1.9)	47.6 (1.2)	33.8 (1.7)	24.2 (1.0)	30.1 (1.6)	19.0 (0.9)	22.6 (1.8)	47.2 (1.2)
100-499 employees	91.2 (1.2)	66.1 (1.4)	78.4 (2.5)	65.6 (1.4)	75.2 (2.5)	49.5 (1.5)	5.7 (1.1)	17.9 (1.1)
500 and more employees	91.4 (2.6)	87.0 (1.7)	93.3 (2.4)	89.5 (1.7)	88.8 (2.6)	81.6 (2.0)	4.1 (2.4)	5.1 (1.2)

Note: only establishments with five or more employees; weighted values, standard errors in brackets

Source: IAB Establishment Panel, own calculations

Table 2: Presence of IR institutions in Germany (% of employees covered, all sectors)

	Collective bargaining		Works council		Coll. barg. & works council		Neither coll. barg. nor works council	
	1996	2015	1996	2015	1996	2015	1996	2015
Germany	81.3 (0.8)	59.3 (0.7)	57.2 (1.0)	47.3 (0.8)	54.4 (1.0)	39.6 (0.9)	15.9 (0.8)	32.9 (0.7)
Western Germany	82.2 (0.9)	60.9 (0.8)	58.0 (1.1)	48.3 (0.9)	55.3 (1.1)	40.3 (1.0)	15.0 (0.9)	31.2 (0.8)
Eastern Germany	76.7 (0.9)	52.0 (1.5)	53.3 (1.2)	43.0 (1.6)	50.2 (1.2)	36.0 (1.7)	20.2 (0.9)	41.0 (1.4)
Sectors								
Primary sector	87.4 (1.8)	74.2 (2.9)	61.8 (3.3)	59.3 (3.8)	60.7 (3.3)	56.4 (3.9)	11.4 (1.8)	22.9 (2.6)
Manufacturing	86.2 (0.9)	64.0 (1.4)	57.5 (1.4)	54.4 (1.6)	55.4 (1.4)	44.0 (1.8)	11.7 (0.9)	25.6 (1.1)
Services	75.0 (1.3)	52.6 (1.0)	50.1 (1.4)	38.8 (1.0)	46.7 (1.4)	31.2 (1.0)	21.6 (1.3)	39.8 (0.9)
Public sector	97.3 (1.0)	98.4 (0.5)	96.0 (0.8)	94.7 (1.0)	93.6 (1.3)	93.8 (1.0)	0.3 (0.2)	0.7 (0.3)
Plant size								
5-19 employees	62.5 (1.6)	34.2 (1.1)	9.9 (0.9)	6.7 (0.6)	9.4 (0.9)	5.2 (0.5)	37.1 (1.6)	64.3 (1.1)
20-99 employees	76.9 (1.7)	49.4 (1.2)	39.3 (1.7)	29.3 (1.0)	35.9 (1.6)	22.5 (1.0)	19.7 (1.6)	43.8 (1.1)
100-499 employees	90.9 (1.4)	68.1 (1.3)	81.3 (2.3)	69.7 (1.3)	77.8 (2.2)	53.3 (1.4)	5.6 (1.3)	15.5 (1.0)
500 and more employees	93.9 (1.5)	91.0 (1.3)	95.8 (1.3)	91.0 (1.9)	92.3 (1.5)	85.7 (2.0)	2.5 (1.3)	3.8 (1.0)

Note: only establishments with five or more employees; weighted values, standard errors in brackets

Source: IAB Establishment Panel, own calculations

Table 3: Presence of IR institutions in manufacturing and services (% of employees covered)

	Collective bargaining		Works council		Neither coll. bargaining nor works council	
	1996	2015	1996	2015	1996	2015
Western Germany	80.5 (1.0)	57.6 (0.9)	54.2 (1.2)	44.5 (1.0)	16.7 (1.0)	33.8 (0.8)
- Manufacturing	89.5 (1.0)	67.1 (1.5)	61.3 (1.6)	57.0 (1.8)	8.9 (1.0)	23.1 (1.2)
- 5-19 employees	77.5 (3.0)	53.6 (2.6)	5.6 (1.6)	1.8 (0.6)	22.5 (3.0)	46.0 (2.6)
- 20-99 empl.	84.1 (2.7)	49.0 (2.5)	36.9 (3.1)	25.9 (2.1)	13.8 (2.6)	40.4 (2.4)
- 100-499 empl.	94.4 (1.3)	63.0 (2.5)	89.5 (2.1)	76.4 (2.2)	2.3 (0.9)	16.3 (1.9)
- 500+ empl.	98.7 (0.5)	92.4 (1.9)	99.3 (0.4)	96.5 (1.4)	0.4 (0.3)	2.2 (1.1)
- Services	74.8 (1.5)	53.8 (1.1)	49.7 (1.7)	39.4 (1.1)	21.7 (1.5)	38.2 (1.0)
- 5-19 employees	57.2 (2.4)	30.2 (1.4)	11.1 (1.4)	7.5 (0.9)	42.1 (2.4)	68.0 (1.5)
- 20-99 empl.	71.7 (3.1)	47.8 (1.7)	36.8 (2.8)	26.6 (1.5)	24.4 (3.0)	45.8 (1.7)
- 100-499 empl.	87.8 (2.9)	65.6 (2.0)	73.1 (4.5)	63.1 (2.1)	8.5 (2.8)	16.5 (1.5)
- 500+ empl.	87.9 (3.7)	87.6 (2.4)	91.9 (3.5)	82.9 (3.9)	5.6 (3.4)	5.6 (1.7)
Eastern Germany	73.1 (1.1)	46.8 (1.5)	46.1 (1.2)	37.0 (1.6)	23.2 (1.0)	45.3 (1.5)
- Manufacturing	69.2 (1.7)	46.2 (2.4)	37.3 (1.7)	39.7 (2.5)	26.2 (1.6)	39.7 (2.0)
- 5-19 employees	52.7 (3.6)	42.6 (4.0)	1.8 (0.8)	0.9 (0.3)	47.3 (3.6)	57.0 (4.0)
- 20-99 empl.	67.4 (2.3)	33.6 (2.5)	26.8 (2.2)	24.8 (2.1)	27.0 (2.2)	56.0 (2.6)
- 100-499 empl.	82.7 (2.5)	51.8 (3.5)	77.4 (2.7)	66.2 (3.4)	7.7 (1.8)	22.1 (2.6)
- 500+ empl.	95.4 (2.1)	74.9 (11.6)	94.1 (2.7)	97.6 (2.5)	2.2 (1.6)	2.4 (2.5)
- Services	75.7 (1.4)	47.0 (1.9)	51.9 (1.7)	36.0 (2.0)	21.3 (1.3)	47.2 (1.8)
- 5-19 employees	47.4 (2.9)	18.1 (1.6)	9.3 (1.6)	6.3 (1.0)	52.1 (2.9)	80.2 (1.7)
- 20-99 empl.	75.2 (2.4)	43.0 (2.6)	39.6 (2.6)	26.1 (2.2)	20.1 (2.3)	51.4 (2.6)
- 100-499 empl.	87.2 (1.9)	67.6 (3.2)	72.1 (2.5)	60.4 (3.5)	8.3 (1.7)	21.2 (2.8)
- 500+ empl.	94.2	85.6	90.9	87.5	3.9	11.2

	(2.5)	(9.9)	(2.9)	(9.8)	(2.4)	(9.9)
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Note: only establishments with five or more employees; weighted values, standard errors in brackets; cells highlighted in grey indicate coverage rates of 50 percent or more, shaded cells indicate areas where the majority of employees have neither collective agreements nor works councils

Source: IAB Establishment Panel, own calculations

Table 4: Collective bargaining and orientation (% of establishments covered, manufacturing and service sectors)

	Collective bargaining		Orientation		Neither coll. barg. nor orientation	
	1999	2015	1999	2015	1999	2015
Germany	53.4 (1.4)	35.2 (0.8)	21.8 (1.2)	31.6 (0.8)	24.8 (1.3)	33.1 (0.8)
Western Germany	57.0 (1.7)	37.3 (1.0)	19.9 (1.4)	31.5 (1.0)	23.1 (1.5)	31.2 (1.0)
Eastern Germany	35.4 (1.5)	26.5 (1.3)	31.3 (1.6)	32.2 (1.4)	33.3 (1.9)	41.3 (1.4)
Manufacturing	63.5 (2.1)	49.9 (1.7)	22.5 (1.9)	31.6 (1.6)	14.0 (1.4)	18.5 (1.1)
Services	48.8 (1.8)	31.1 (0.9)	21.5 (1.5)	31.7 (1.0)	29.6 (1.7)	37.3 (1.0)
5-19 employees	49.4 (1.7)	30.8 (1.0)	23.3 (1.4)	33.6 (1.1)	27.3 (1.5)	35.6 (1.1)
20-99 employees	67.0 (1.9)	45.3 (1.3)	16.3 (1.3)	27.4 (1.1)	16.7 (1.7)	27.3 (1.2)
100-499 employees	76.1 (2.4)	62.5 (1.5)	17.2 (2.4)	19.3 (1.2)	6.7 (1.0)	18.2 (1.2)
500 and more employees	85.5 (4.7)	84.8 (2.1)	4.0 (0.8)	7.3 (1.4)	10.5 (4.8)	7.9 (1.6)

Note: only establishments with five or more employees; weighted values, standard errors in brackets

Source: IAB Establishment Panel, own calculations

Table 5: Works councils and other forms of worker representation (% of establishments covered, manufacturing and service sectors)

	Works councils		Other forms of worker representation		Neither works councils nor other forms	
	2004	2015	2004	2015	2004	2015
Germany	10.9 (0.4)	10.6 (0.4)	11.3 (0.6)	12.9 (0.6)	78.7 (0.7)	77.8 (0.7)
Western Germany	11.0 (0.5)	10.9 (0.5)	12.7 (0.7)	13.7 (0.7)	77.2 (0.8)	76.7 (0.8)
Eastern Germany	10.0 (0.6)	9.2 (0.6)	4.5 (0.5)	9.3 (1.1)	85.8 (0.8)	82.5 (1.1)
Manufacturing	9.2 (0.5)	9.2 (0.5)	9.5 (0.8)	12.5 (1.3)	81.9 (1.0)	78.9 (1.3)
Services	11.4 (0.5)	11.0 (0.5)	12.0 (0.7)	13.0 (0.7)	77.5 (0.9)	77.5 (0.8)
5-19 employees	4.6 (0.4)	4.6 (0.4)	9.9 (0.7)	11.6 (0.7)	85.9 (0.8)	84.4 (0.8)
20-99 employees	26.5 (1.1)	21.5 (1.0)	17.4 (1.0)	17.1 (1.0)	58.1 (1.3)	64.0 (1.2)
100-499 employees	69.3 (1.5)	62.0 (1.5)	12.3 (1.0)	15.8 (1.2)	23.6 (1.4)	28.6 (1.5)
500 and more employees	92.6 (1.3)	87.6 (2.0)	12.7 (1.4)	17.5 (2.1)	3.2 (0.8)	6.0 (1.5)

Note: only establishments with five or more employees; weighted values, standard errors in brackets

Source: IAB Establishment Panel, own calculations

Table 6: Formal and informal coverage, 2004 and 2015 (% of establishments covered, manufacturing and service sectors)

2004	Collective bargaining	Orientation	Neither coll. barg. nor orientation
Works council	8.7 (0.4)	1.4 (0.2)	0.8 (0.1)
Other forms	5.7 (0.4)	2.9 (0.3)	1.9 (0.2)
Neither works coun-cils nor other forms	32.8 (0.9)	21.3 (0.8)	24.6 (0.9)
2015	Collective bargaining	Orientation	Neither coll. barg. nor orientation
Works councils	8.0 (0.4)	1.5 (0.2)	1.1 (0.1)
Other forms	5.2 (0.4)	3.9 (0.3)	2.6 (0.3)
Neither works coun-cils nor other forms	22.0 (0.7)	26.3 (0.8)	29.5 (0.8)

Note: only establishments with five or more employees; weighted values, standard errors in brackets

Source: IAB Establishment Panel, own calculations

Table 7: Formal and informal coverage in small and large establishments, 2015 (% of establishments covered, manufacturing and service sectors)

Establishments with < 500 employees	Collective bargaining	Orientation	Neither coll. barg. nor orientation
Works council	7.7 (0.4)	1.5 (0.2)	1.1 (0.1)
Other forms	5.2 (0.4)	3.9 (0.3)	2.6 (0.3)
Neither works coun-cils nor other forms	22.1 (0.8)	26.4 (0.8)	29.6 (0.8)
Establishments with 500+ employees	Collective bargaining	Orientation	Neither coll. barg. nor orientation
Works councils	78.2 (2.4)	4.9 (1.1)	4.5 (1.2)
Other forms	4.2 (1.2)	0.7 (0.4)	1.5 (0.8)
Neither works coun-cils nor other forms	2.3 (0.8)	1.8 (0.9)	1.9 (0.9)

Note: only establishments with five or more employees; weighted values, standard errors in brackets

Source: IAB Establishment Panel, own calculations

Table 8: Determinants of the (non-)existence of the German IR model, 2015
(probit estimations, marginal effects, manufacturing and service sectors)

	Model 1	Model 2	Model 3
Dependent variable (establishments covered / not covered)	Presence of coll. bargaining and works council	Presence of coll. barg. or orientation and works council or other forms	No coll. barg. or orientation, no works council or other forms
Explanatory variables			
Establishment size (reference: 5-19 empl.)			
20-99 employees	0.0919 (0.0077)	0.1216 (0.0103)	-0.0912 (0.0106)
100-499 employees	0.2295 (0.0109)	0.2908 (0.0148)	-0.1925 (0.0121)
500+ employees	0.4066 (0.0239)	0.4847 (0.0287)	-0.2587 (0.0167)
Establishment age (dummy: founded before 1990 = 1))	0.0575 (0.0077)	0.0598 (0.0090)	-0.0716 (0.0088)
Owner manager (dummy: 1 = yes)	-0.1764 (0.0093)	-0.1850 (0.0124)	0.1061 (0.0110)
Foreign ownership (dummy: 1 = yes)	-0.0218 (0.0111)	-0.0011 (0.0157)	0.0568 (0.0199)
Exporting establishment (dummy: 1 = yes)	-0.0228 (0.0086)	-0.0044 (0.0104)	0.0609 (0.0113)
Legal status (dummy: individually-owned firm or partnership = 1)	-0.0917 (0.0134)	-0.0305 (0.0125)	-0.0208 (0.0104)
Single establishment (dummy: 1 = yes)	-0.0954 (0.0074)	-0.0932 (0.0096)	0.0678 (0.0098)
Profit sharing (dummy: 1 = yes)	0.0136 (0.0080)	0.0634 (0.0103)	-0.0278 (0.0109)
Workforce composition			
Share of women	-0.0028 (0.0169)	-0.0088 (0.0191)	0.0480 (0.0180)
Share of part-timers	0.0359 (0.0181)	0.0602 (0.0215)	-0.0050 (0.0223)
Share of employees with university degree	0.0318 (0.0161)	0.0457 (0.0211)	0.0591 (0.0235)
Share of marginal employees	-0.2340 (0.0344)	-0.2535 (0.0340)	0.1610 (0.0299)
Share of fixed-term employees	-0.1369 (0.0240)	-0.1511 (0.0275)	0.0493 (0.0276)
Share of temporary agency workers	0.0065 (0.0394)	0.1774 (0.0499)	-0.1827 (0.0732)
Industries (reference: manufacturing)			
Construction	-0.0142 (0.0169)	-0.0198 (0.0177)	-0.1326 (0.0126)
Trade	-0.0338	-0.0270	0.0265

	(0.0125)	(0.0140)	(0.0138)
Transport and storage	-0.0183 (0.0160)	-0.0327 (0.0188)	0.1170 (0.0216)
Information, communication	-0.0977 (0.0202)	-0.1300 (0.0237)	0.1712 (0.0318)
Accommodation and food services	-0.0723 (0.0225)	-0.0311 (0.0229)	0.0187 (0.0199)
Financial and insurance services	0.0535 (0.0234)	0.0318 (0.0287)	0.0392 (0.0342)
Business support, scientific and other professional services	-0.0690 (0.0122)	-0.0986 (0.0141)	0.0994 (0.0156)
Other services	-0.0591 (0.0133)	0.0127 (0.0164)	-0.0245 (0.0151)
Eastern Germany (dummy: 1 = yes)	-0.0066 (0.0075)	-0.0729 (0.0087)	0.0876 (0.0090)
No. of observations	9986	9986	9986

Note: only establishments with 5 or more employees; unweighted values, standard errors in brackets; estimations also include dummy variables indicating missing values for the export and the owner manager variables

Source: IAB Establishment Panel, own calculations

Table 9: Predicted probabilities for the (non-)existence of the German IR model

	Plant 1	Plant 2	Plant 3	Plant 4
Establishment size (no. of employees)	500+	100-499	20-99	5-19
Establishment founded before 1990	yes	no	no	no
Owner manager	no	yes	yes	yes
Individually-owned firm or partnership	no	no	no	yes
Exporting establishment	yes	yes	no	no
Industry	manufacturing		business support	
Eastern Germany	no	yes	no	yes
Foreign ownership	no			
Profit sharing	no			
Single establishment	yes			
Workforce composition	set at mean values in estimation sample			
Probability of the presence of coll. bargaining and a works council	78.7%	12.3%	2.2%	0.06%
Probability of no coll. barg. or orientation, no works council or other forms	1.6%	27.8%	37.0%	59.4%

Note: predictions for four hypothetical plants based on the probit estimations in Table 8 (models 1 and 3).

Appendix Table 1: Sector classifications by years

	1996–1999	2000–2008	2009–2015
Primary sector	1, 2, 5	1, 2	1–3
Manufacturing sector	3, 4, 6–18	3–20	4–19
Service sector	19–38	21–40	20–42
Public sector	39–41	41	43

Note: Numbers of industry codes are those given in the respective questionnaires of the IAB Establishment Panel.

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