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**Working Paper**

## Worker representatives

ECONtribute Discussion Paper, No. 330

**Provided in Cooperation with:**

Reinhard Selten Institute (RSI), University of Bonn and University of Cologne

*Suggested Citation:* Budde, Julian; Dohmen, Thomas; Jäger, Simon; Trenkle, Simon (2024) : Worker representatives, ECONtribute Discussion Paper, No. 330, University of Bonn and University of Cologne, Reinhard Selten Institute (RSI), Bonn and Cologne

This Version is available at:

<https://hdl.handle.net/10419/301036>

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**Discussion Paper No. 330**

**Worker Representatives**

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Simon Jäger

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July 2024

[www.econtribute.de](http://www.econtribute.de)



# Worker Representatives\*

Julian Budde<sup>†</sup>      Thomas Dohmen<sup>‡</sup>      Simon Jäger<sup>§</sup>      Simon Trenkle<sup>¶</sup>

July 2024

## Abstract

We study the descriptive and substantive representation of workers through worker representatives, focusing on the selection of German works council representatives and their impact on worker outcomes. Becoming a professional representative leads to substantial wage gains for the elected, concentrated among blue-collar workers. Representatives are positively selected in terms of pre-election earnings and person fixed effects. They are more likely to have undergone vocational training, show greater interest in politics, and lean left politically compared to the employees they represent; blue-collar workers are close to proportionally represented among works councilors. Drawing on a retirement-IV strategy and event-study designs around council elections, we find that blue-collar representatives reduce involuntary separations, consistent with blue-collar workers placing stronger emphasis on job security.

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\*We thank audiences at the Berlin Applied Micro Seminar, FU Berlin, U Copenhagen, CRC Retreat Montabaur, EIEF, Hamburg U, IAB, IFAU, IZA, Linnæus U, Maastricht U, LMU Munich, NBER Summer Institute in Political Economy, Northwestern U, PSE, Stockholm U, U St Andrews, U Glasgow, U Konstanz, U Lille, Uppsala U, 6th Workshop Economics & Politics Brussels, and David Autor, Axel Cronert, Johanna Rickne, and Claus Schnabel as well as our discussants, Laura Boudreau, Antonio Ciccone, and Matthew Johnson, for excellent comments and suggestions. We thank Friederike Leier for excellent research assistance and Alexander Busch for generously sharing Metal Union reports. Dohmen gratefully acknowledges support by the Deutsche Forschungsgemeinschaft (DFG, German Research Foundation) through CRC TR 224 (Project A05) and Germany's Excellence Strategy – EXC 2126/1– 390838866.

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# 1 Introduction

Blue-collar workers are underrepresented in many domains of power, ranging from the US Congress (Carnes, 2013; Feigenbaum et al., 2018; Carnes and Lupu, 2023) to the highest echelons of corporations (Ellersgaard et al., 2013). While extensive research has explored the characteristics of political or corporate leaders (Hartmann, 2000, 2006; Dal Bó et al., 2017) and how these individuals affect outcomes in their respective spheres (Jones and Olken, 2005; Malmendier and Tate, 2005; Bennedsen et al., 2020; Acemoglu et al., 2022), the composition of worker representatives remains underexplored (see Boudreau et al., 2023; Corradini et al., 2023, for recent work on union leaders). This gap is surprising in light of work stressing the importance of unions and worker representation for wages, working conditions, and the social safety net, and highlighting the role of preference heterogeneity among union members, particularly between blue- and white-collar workers (Acemoglu et al., 2001; Korpi, 2006; Becher and Pontusson, 2011; Ibsen and Thelen, 2017; Cronert and Forsén, 2021). To address this gap in the literature, we examine the impact of blue-collar representation on German works councils (*Betriebsräte*) — one of the most powerful codetermination institutions (Freeman and Lazear, 1995; Jäger et al., 2022a,b). We study both descriptive and substantive representation (Pitkin, 1967), i.e., we examine the extent to which works council members resemble the workers they represent, and whether descriptive representation of blue-collar workers affects worker outcomes in line with the policy preferences of the represented.

Our analysis focuses on members of German works councils, or works councilors, who are elected from the workforce by non-managerial employees for four-year terms (with the possibility of re-election). Works councils are a key institution of shop-floor worker voice in many European countries.<sup>1</sup> In Germany, different unions or employee groups (and, in smaller firms, individual workers) compete for votes. Works councils have the right to be informed and consulted on and even directly affect a range of personnel and business decisions, such as company restructuring, layoffs, working conditions, and the introduction of new technologies. They can also make proposals for improving working conditions and participate in the negotiation of firm-specific bargaining agreements. Works councilors also frequently serve as worker-elected directors on boards of firms with board-level codetermination. Our analyses primarily focus on professional worker representatives (*freigestellte Betriebsräte*); that is, a subset of works council members who are released from their regular job to focus entirely on their role as representatives. We refer to the non-professional works council members (*nicht-freigestellte Betriebsräte*), who exercise their role on the works council pro-bono, as part-time worker representatives.<sup>2</sup>

To characterize worker representatives and study descriptive representation (Pitkin, 1967), we primarily draw on and combine two main datasets. The first dataset is the Integrated Employment Biographies (IEB), a panel based on social security records which allows us to track employment trajectories for over 45 years and study workforce composition within a given establishment. While the IEB does not provide information on part-time worker representatives, we make use of detailed occupation and industry information to identify

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<sup>1</sup>Beyond Germany, works councils exist, for example, in the Netherlands (*Ondernemingsraad*), Austria (*Betriebsrat*), or Spain (*Comité de Empresa*). Many other European countries have joint shop-floor committees with representatives from the worker side and the firm side, for example, Belgium (*Ondernemingsraad/ Conseil d'Entreprise*), Denmark (*Samarbejdsudvalg*), France (*Comité social et économique*), and Norway. In Continental Europe, one exception is Sweden where only unions offer workplace representation and no structure similar to works councils exists (Oesingmann, 2015). At the EU level, European Works Councils exist in multinational firms (Council Directive 94/45/EC).

<sup>2</sup>Part-time worker representatives are not fully released from their regular job, but only temporarily exempt when needed for works council duties.

professional worker representatives. We implement several validation checks to assess the accuracy of data on professional worker representatives in the IEB. In addition, we use data from the LIAB, a linked employer-employee dataset, to cross-validate our measure of professional worker representatives. The second main dataset we utilize is the German Socio-Economic Panel (SOEP), which provides detailed information about the preferences, personality traits, and employment histories of a large and representative sample of German workers (Goebel et al., 2019), and also allows us to identify worker representatives. Moreover, we can make use of a recent link between IEB and SOEP that allows us to combine the information of these two datasets. Lastly, we draw on annual reports of the Metal Union (IGM) since 1953 which contain demographic information on workforce and works council members for establishments that have been covered by IGM collective bargaining agreements. Taken together, these different datasets allow us to provide a comprehensive picture of worker representation in Germany and how it has changed over time.

Consistent with the desirability of the role as worker representative, we find that becoming a professional worker representative leads to substantial earnings gains and increased employment security. For example, four years after an election, worker representatives earn about 7% more than a comparison group of similar workers in their firm. These gains are concentrated among blue- rather than white-collar workers.<sup>3</sup> We also find that professional representatives tend to get reelected and stay in their role for a long time after an initial election (with about 75% still in office 8 years after their first election as professional representative). Our analysis supports narrative accounts of professional worker representation as an attractive career path (Jürgenhake et al., 2011), in particular for blue-collar workers.

We find that professional works councilors are positively selected in terms of earnings potential (mirroring results for politicians in Dal Bó et al., 2017). They have about 5% higher pre-election wages and 10% higher person fixed effects compared to the median worker at their establishment. In contrast, part-time works councilors have similar pre-election wages as their coworkers. Works council members are disproportionately male, more likely to have vocational training (as opposed to no formal training or university-level education). The blue-collar worker share on the works council is broadly similar to the one in the workforce. Works councilors have substantially higher political interest and engagement, and are slightly more left-leaning politically. They score higher on the Big Five traits of openness and extraversion and report a smaller degree of neuroticism compared to the employees they represent, but are similar in terms of other Big Five traits as well as altruistic preferences and locus of control.

Examining trends in representation since the 1970s, we document a notable change in the representation of women and workers with different educational backgrounds on works councils. For our analysis of representation over time, we focus on West Germany to be able to observe a longer panel. The gap in female representation has steadily decreased from 15 percentage points in 1976 to less than 5 percentage points in 2018, i.e., women still remain somewhat underrepresented among professional works councilors today. While we see a constant overrepresentation of workers with vocational degrees over the observation period, the representation of university graduates declined from equal representation in 1976 to a slight underrepresentation at the end of the period. Blue-collar representation has been broadly proportional throughout the period,

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<sup>3</sup>Our analysis of earnings gains focuses on professional worker representatives. Earlier work based on the German Socio-Economic Panel, by Goerke and Pannenberg (2024) documents that works council membership (including *both* part-time and professional representatives) is on average not associated with a salary premium after election. Brébion (2022) documents a salary premium of about 4.6% in manufacturing and a salary penalty of 3.7% in the service sector. See also Bourdieu et al. (2024) for evidence on the compensation of French union representatives.

with a small underrepresentation in the 1970s that closed over time. The convergence in female and educational representation occurred despite an overall increase in the share of women and university graduates in the workforce. Turning to ability measures, we find that the higher pre-election earnings of professional works councilors relative to the median worker at their establishment have been stable over time, with a similar pattern for AKM person fixed effects.

We next turn to an analysis of substantive representation (Pitkin, 1967) of blue-collar workers, i.e., analyzing whether blue-collar representatives advance the policy preferences of blue-collar workers. To provide context for this analysis, we first study differences in attitudes between white- and blue-collar workers based on representative survey data from the SOEP from 1999 to 2019.<sup>4</sup> We find that blue-collar workers exhibit higher levels of economic anxiety and perceive greater anticipated unemployment risk than their white-collar counterparts. They are substantially more worried about their job security and economic situation and also report greater stress levels associated with anticipated job loss. These worries are grounded in differential experiences as blue-collar workers are 38% (10.2ppt) more likely to have experienced unemployment in the past. Relatedly, Helm et al. (2023) document larger wage premium losses after displacement comparing low- to high-wage workers in German manufacturing. Finally, blue-collar workers are more likely to expect to lose their job in the next two years (11% or 1.9ppt).

To study the effects of blue-collar worker representatives on worker outcomes, we leverage two complementary identification strategies. First, we use an event-study specification that takes advantage of large changes in works council composition, driven by works council elections held every four years. Simply put, we compare establishments in which the share of blue-collar workers on the works council increased sharply in an election year compared to matched control establishments with similar characteristics but no comparable change in blue-collar representatives. Second, we utilize an instrumental variables (IV) strategy that relies on retirement-induced changes in works council representation following Acemoglu et al. (2022). Essentially, our IV strategy compares two establishments with a similar worker structure over time, where one has a blue-collar representative retiring and the other has a white-collar representative retiring. The former establishment is more likely to see a change to a white-collar representative, while the opposite is true for the latter.

Our analysis shows that blue-collar representation significantly reduces worker turnover, specifically involuntary turnover into unemployment. We find a sizeable reduction of worker turnover of around 0.8ppt (from a base of 11%) for both blue- and white-collar workers. We further dissect these results into voluntary turnover (moves to other employers) and involuntary turnover (separations involving unemployment spells). We find no differences in voluntary turnover and find the entire reduction in turnover to be driven by reductions in involuntary turnover as well as reductions in plant closures. These results are consistent with blue-collar representatives advocating for greater employment protection for the workers they represent, including both white- and blue-collar workers. The fact that voluntary turnover remains unchanged indicates that blue-collar representation does not affect the overall perceived utility of working at a particular establishment.

We then examine the impact of blue-collar representation on wages across the firm’s wage distribution. Works councils could affect wages through multiple channels, e.g., (i) by directly serving as counter-parties to the

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<sup>4</sup>We identify blue-collar workers as those working in simple manual occupations, simple service occupations, qualified manual occupations, technical occupations, and agricultural occupations drawing on the occupational categorization in Blossfeld (1985). As alternative definitions, we consider workers in routine occupations only or workers with vocational training (compared to a university-level education).

firm in establishment-specific bargaining agreements, (ii) by enforcing sectoral bargaining agreements, and (iii) through their effects on technology choice and productivity. Overall, we find only limited evidence for wage effects. Contrary to negative compensating differentials predicted by an insurance view of the increased employment protection (i.e., where workers pay for employment protection in the form of lower wages, see for example Malcomson (1983)), we find some evidence of small positive effects on wages across the wage distribution. We also note that our evidence on wage effects, in contrast to the effect on separations, is less conclusive as we see larger differences in results depending on the research design.

To shed light on mechanisms underlying our results, we explore effect heterogeneity and find significantly larger effects for individuals with higher AKM worker effects. Effects appear smaller in the manufacturing sector and larger when a blue-collar worker enters the works council for the first time, though these differences are not statistically significant at common significance levels. We find no evidence that higher wage gains of becoming a works council member mitigates the effects of representation.

Our results suggest that blue-collar representatives achieve substantive representation in that they increase employment protection by reducing layoffs, in line with the greater job security concerns expressed by blue-collar workers. Our results also support the hypothesis that a crucial dimension of heterogeneity in union membership and representation is the blue-/white-collar divide and the employment risk that workers are exposed to (Becher and Pontusson, 2011; Ibsen and Thelen, 2017; Cronert and Forsén, 2021).

Our findings contribute to several additional strands of the literature. First, we add to a growing body of research examining the characteristics of worker representatives or union leaders, and how these characteristics affect union policy and worker outcomes (Breda, 2016; Boudreau et al., 2023; Corradini et al., 2023). Boudreau et al. (2023) study union leaders in Myanmar’s garment sector and find that they are positively selected in terms of education and grit, and have lower neuroticism compared to the workers they represent. In an experiment, union leaders increase worker mobilization through consensus building. Corradini et al. (2023) study a gender quota among Brazilian union leaders and find that it leads to an increase in female-centric amenities in affected establishments. Second, our study of selection into worker representation complements work analyzing the selection into union membership. Farber et al. (2021) analyze union membership (as well as the effects of unions) in the United States over time and document that disadvantaged groups were overrepresented in terms of occupation, education, and race relative to the overall workforce during peak union density years (from the 1940s through 1960s) in the United States. Batut et al. (2021) study characteristics of union members in West Germany, France, Italy, and the UK over time and find that blue-collar workers and less educated workers were overrepresented in the 1960s, though the gap has since shrunk while remaining positive for blue-collar workers. Dodini et al. (2023b,a, 2024) study union membership and its consequences in Norway. Our analysis differs from an analysis of union membership: While a majority of workers who are works councilors are members of a union (56% in our SOEP sample), *all* eligible workers in an establishment can vote in the works council election regardless of their individual union status. Third, our paper contributes to the literature on the effects of German works councils (see Addison, 2009; Jäger et al., 2022a,b, for summaries of the literature), in particular work that has documented a positive relationship between the presence of a works council and employment protection (Hirsch et al., 2010). In addition, we complement work by Findeisen et al. (2024) who study robot adoption in German firms and document that the presence of a works council shields workers from layoffs, in particular older workers and workers in routine occupations. Fourth, our paper contributes to the literature on structural changes lead-

ing to significant shifts of employment away from manufacturing and blue-collar work witnessed in many countries (Acemoglu et al., 2016; Autor et al., 2019; Helm et al., 2023). While our findings indicate stable blue-collar representation among works councilors, the overall share of German workers covered by works councils has declined by around 10 percentage points over the last thirty years (Ellguth and Kohaut, 2021). This decline in blue-collar representation may have contributed to the overall decline of manufacturing and blue-collar employment in Germany. Finally, the evidence we present highlights the interaction of institutions in shaping economic outcomes, specifically focusing on works council representation and employment protection (cf. Hall and Soskice, 2001).

The remainder of the paper is organized as follows. Section 2 describes the institutional setting of worker representation in Germany as well as the data we use. Section 3 documents the wage and employment effects of becoming a worker representative. Section 4 characterizes worker representatives in comparison to the worker populations they represent. Section 5 presents causal effects of electing blue-collar workers as professional works council representatives. The last section concludes.

## 2 Context and Data

### 2.1 Works Councils and Worker Representation in Germany

**Two Channels of Worker Representation: Sectoral Bargaining and Codetermination** Worker representation in Germany operates through two distinct channels: sectoral bargaining and codetermination. Sectoral bargaining refers to the negotiation of collective agreements at the industry level to arrange wage floors and working conditions. Codetermination gives workers a voice in the decision-making process through works councils and by allowing them to elect representatives to sit on the supervisory boards of larger companies.

**Sectoral Bargaining** Sectoral bargaining in Germany is organized through a system of collective bargaining agreements negotiated between unions and employers’ associations (or individual firms). The agreements are specific to particular sectors and regions (typically the state level) and cover a range of issues related to working conditions and wages. The negotiations take place between representatives of the unions and the employers. Once an agreement is reached, it binds employers who negotiated an individual agreement or who are part of an employer association concluding an agreement. Coverage through sectoral or firm-level bargaining agreements has declined from around 70% of workers covered in the 1990s to 51% of workers covered by 2020 (Ellguth and Kohaut, 2021).

**Works Councils: History, Legal Basis, and Relationship to Unions** Works councils are an institution to provide worker voice and codetermination at the establishment and firm level. They were first introduced in Weimar Germany through an agreement between moderate trade unions and industry leaders and then codified into law through the Works Council Act of 1920. Their modern form was codified in the aftermath of World War II through the Works Constitution Act (*Betriebsverfassungsgesetz* or *BetrVG*) of 1952.

The Works Constitution Act gives workers in establishments with at least five workers a right to form a works council. The size and responsibilities of the works council are a function of the firm size, see Appendix



Table A1 for details. Our analysis of the administrative data will focus on establishments with more than 200 employees where at least one works council member has a right to be released from other duties to work full-time on works council duties. These professional worker representatives are elected by and from the overall works council and tend to take on more active and managing roles in the works council.

Works councils are related to but distinct from unions. Works council members are directly or indirectly elected by the non-managerial workforce and not appointed by the union (though unions can run in works council elections, see more on elections below). Unions generally promote works councils and view them as an important avenue of worker voice. In the SOEP data, about 56% of works council members report that they are also union members.<sup>5</sup> Based on surveys after the 2022 works council elections, Kestermann et al. (2022) report that 41% of works council members are union members.

**Information, Consultation, and Codetermination Rights** Works councils have a range of competencies granted to them by law, which include information, consultation, and codetermination rights. These rights allow works councils to be actively involved in various aspects of a company’s operations, such as working hours, remuneration, workplace safety, and social matters. Specifically, works councils have the right to access company information, such as financial statements and personnel planning, which enables them to engage in discussions with management.

One significant area of co-determination for works councils is personnel matters. They have the right to participate in decisions related to hiring, transfers, promotions, and dismissals of employees. In cases of large-scale layoffs or significant changes to company operations that may have consequences for employees, such as a mergers or restructuring, works councils are entitled to be consulted and potentially negotiate social compensation plans (*Sozialpläne*) to mitigate adverse effects on the workforce by defining layoff criteria (e.g., by seniority, age, disability status, as well as family obligations such as the presence of children in the household).

Additionally, works councils play a crucial role in maintaining workplace safety and health. They have the right to be involved in the design and implementation of occupational safety measures, the introduction of new technologies (especially monitoring technology), and the organization of working hours. Furthermore, they can initiate measures to improve working conditions and reduce hazards in the workplace. They are also tasked with monitoring compliance with labor law and provisions from applicable sectoral bargaining agreements, which could lead to direct wage effects. Additionally, works councils are involved in the classification of workers into positions whose pay, in turn, is determined by sectoral or firm-specific bargaining agreements.

Works councils have the authority to negotiate and conclude establishment-level agreements (*Betriebsvereinbarungen*) on matters not covered by sectoral bargaining agreements. Although these agreements can only deviate from sectoral bargaining provisions if they benefit workers, a shift towards increased decentralization through opening and hardship clauses in sectoral bargaining agreements has given rise to establishment-level agreements that can also deviate from a sectoral bargaining agreement in terms of lower

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<sup>5</sup>In comparison, the union share among all employees in the SOEP is about 14% in all establishments and 22% in those with a works council present. Numbers are based on all SOEP survey years from 2001 to 2019 in which both works council and union membership are surveyed; sample restrictions are similar to our main analysis. For 2019, the union share among works councillors is about 51%.

wage levels or longer hours (Rehder, 2003; Dustmann et al., 2014; Ellguth et al., 2014; Jäger et al., 2022a). Such agreements, often dubbed *pacts for employment*, have become common during economic crises as a means of preserving jobs.

In summary, German works councils hold a range of legally granted competencies that enable them to actively participate in company decision-making processes. Their primary focus is to represent employees’ interests and promote communication and cooperation between workers and management.

**Elections** Elections to the works council are regularly held every four years. All non-managerial employees of a firm with at least six months of tenure are eligible to vote, including apprentices as well as employees without German or EU citizenship. Turnout in the last regularly-held works council elections was at 69% (Kestermann et al., 2022). When multiple platforms (e.g., unions or alternative lists) compete in the works council election, eligible workers vote for individual platforms (about 40% of works council elections Kestermann et al., 2022). In smaller establishments with fewer than 100 employees or where there is no competition of different unions or lists, workers vote directly for individual candidates for the works council (as is the case for about 60% of works council elections Kestermann et al., 2022).

We provide an example of election campaigns in Figure 1 for the works councils elections at a food delivery firm (Just Eat Takeaway with its German brand Lieferando). Figure 1 (a) shows a January 2022 protest at a Leipzig establishment of the food delivery firm that occurred after the dismissal of a rider. The banner features key demands related to dismissals and payment. Panels (b) and (c) illustrate campaign flyers of two competing unions, the Lieferando Workers Collective in Panel (b) and “Liefern am Limit” (“Delivering at the Limit”), which is part of a union belonging to the umbrella German Trade Union Confederation (DGB). Both campaigns stress their direct representation of riders and drivers (“If you don’t vote, we risk handing over the workers council to superiors and managers.” and “We consist of 100% drivers.”, respectively). Both campaign posters feature English to communicate with a workforce with a high share of immigrants with limited German skills.

Depending on establishment size (starting in establishments with at least 200 employees), a number of elected works council members get released from their regular work duties to focus on their works council duties full-time. These professional worker representatives are elected by and from within the works council (§38 *BetrVG*).

**Compensation** Workers are generally not compensated for serving on the works council. Part-time works council members continue to receive their regular salary. Professional worker representatives continue to receive a salary. Until a recent ruling by the Federal Court of Justice (BGH, 10.01.2023 - 6 StR 133/22), it was common for professional worker representatives to be compensated in accordance with a hypothetical career that comparable workers would have achieved (leading to substantial compensation in some cases, e.g., of more than EUR 750,000 per year for a senior Volkswagen works council member). We test for the wage and employment effects of becoming a professional worker representative and report results in Section 3.

**Coverage** As of 2020, around 40% of employees in Germany in establishments with at least 5 workers (the size limit at which the right to form a works council kicks in) are covered by a works councils (Ellguth and

Kohaut, 2021). The share of workers covered by a works council has declined from close to 50% in the 1990s (Jäger et al., 2022a).

**Board Representation** In larger German firms, workers have a right to be represented on their firm’s supervisory board. In firms with 501 to 2000 workers, workers can elect one third of the directors on the supervisory board. In firms with more than 2000 workers, 50% of directors on the supervisory board are elected by workers although the capital side retains the tie-breaking vote. The works council organizes the elections of the worker-elected directors and, frequently, the works council members themselves also serve as worker-elected directors (Jäger et al., 2020). Board representation may thus also be a channel through which works council members exert influence.

## 2.2 Data and Sample Selection

We primarily utilize two complementary datasets to provide a detailed and comprehensive overview of worker representation in Germany and its evolution over time. The first dataset we employ is the Integrated Employment Biographies (IEB), the universe of employer-employee data administered by the Institute for Employment Research (IAB).<sup>6</sup> This dataset allows us to compile a sample of employed individuals and follow their employment trajectories for over 45 years from 1975 until 2020. It contains detailed information on employment status, earnings, occupation and basic demographics such as gender and nationality. Importantly, it allows to study workforce composition within a given establishment. Although it lacks a direct identifier for works council membership, we can use detailed occupational and industry information to identify an important subset of works council members — those who are released from their regular work to concentrate fully on their representational duties (henceforth: professional works council members). These professional worker representatives are assigned a unique occupational code and can be distinguished from other representatives, like union leaders and employer representatives, using industry information. In 2007, professional worker representatives made up about 11% of total works council members in West Germany.<sup>7</sup> They devote their entire working time to representational duties and are more common in larger establishments. In consequence, compared to part-time council members these members are more specialized in their representational role and arguably play a more pivotal role in negotiations with the employer side.

Second, we draw on the German Socio-Economic Panel (SOEP), a large and representative panel survey of German households that has been fielded annually since 1984. The survey contains detailed questions about preferences, personality traits and employment trajectories. From 2001-2019, the survey included modules that inquire about individual works council membership and the existence of a works council at a respondent’s current workplace in five distinct waves, namely in 2001, 2006, 2011, 2015, and 2019.<sup>8</sup> Our final sample (see below for details) includes 1,236 individuals, who had been member of a works council at some point during this time period, and 13,351 represented employees. In addition, we can directly compare the works council

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<sup>6</sup>We use version V15.00.00-201912 of the IEB for our analysis.

<sup>7</sup>This number stems from own calculations based on the *Betriebsrätebefragung* of 2007, an establishment-level survey of works council members summarized in Schäfer (2008).

<sup>8</sup>In these years, individual works council membership is surveyed. The presence of a works council is assessed in all years except for 2015. For the year 2015, we use the closest available information from either 2011 or 2016 whenever individuals report to not have changed their place of employment in between. Membership is additionally surveyed in 2003 and 2007, however, works council existence is not.

information in the SOEP data and the IEB data for survey respondents for whom we could link responses to their administrative records in the IEB data.<sup>9</sup>

We also utilize annual reports of the Metal Union (IGM) for the years 1952-2018 which contain demographic information on workforce and works-council members for establishments that are covered by IGM collective bargaining agreements. In addition, we draw on the LIAB, a linked employer-employee dataset, that links the establishment panel (Betriebspanel) survey with individual employment records from the IEB of employees in these establishments and allows to cross-validate our measure of professional worker representatives with survey information on the existence of a works council, as well as to look at additional establishment level outcomes.

**Identifying Works Council Members** For the SOEP, we can identify works council membership based on direct questions about membership; for the IEB data we can identify it indirectly based on a combination of occupational and industry codes.

The SOEP asked employed individuals in the years 2001, 2006, 2011, 2015 and 2019 whether they are works council members, along with questions on membership in other organizations. The question (translated from German) reads: “Are you a member of one of the following organizations or associations?” We code all individuals that tick the option “in a works council” as council members and those who do not as regular employees. For all years, the SOEP also asks whether a works council exists at the current place of work, which allows us to compare council members and regular employees, who are working in an establishment with a works council.

The IEB does not provide direct information on works council membership, but we propose a way to identify professional worker representatives using occupational and industry information. We use the three-digit occupational classification from 1988 of the Federal Employment Agency (KldB 1988) and — from 2011 onwards — the corresponding crosswalk to the occupational classification of 2010 (KldB 2010). To begin with, we identify all individuals with the code *Association Leader* and *Officials* (“Verbandsleiter, Funktionäre”, occupational code = 763), which includes not only professional worker representatives on works councils but also other organization and association representatives, such as union leaders, employer representatives and sports association officials. To exclude non-works council representatives, we use detailed information on the establishment’s industry. Typically, non-works council representatives are employed in specific industries (such as unions or employer associations), while works council members are employed across all industries. For example, we can expect employer representatives to be overwhelmingly employed by employer organizations, which in turn can be identified via their industry code. To further refine our measure, we exclude representatives from the two-digit industry “Interest groups as well as church and other religious associations” based on the time-consistent industry classification of 2008 (industry-code = 94). This exclusion helps us to identify professional council members in other industries accurately. The resulting group of workers in relevant occupations across other industries is our measure of professional council members in the IEB.

## A Validation Exercise for Professional Worker Representatives in the Administrative Data

We perform several validation exercises on our measure for professional worker representatives using the

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<sup>9</sup>This linkage is part of a larger data linkage project that resulted in the SOEP-ADIAB data (see Jäger et al., 2024; Antoni et al., 2023).

administrative IEB data. The administrative data originates from employer notifications used for social security purposes and is generally considered to be of high quality. However, the occupational code we use to identify professional worker representatives is not a necessary requirement for calculating social security contributions and may, therefore, be somewhat less reliable. At the same time, our sample consists of large establishments that typically have their own HR departments with high reporting standards.

To investigate the validity of our professional works council measure empirically, we conduct three distinct tests, all of which are displayed in Figure 2. The first test compares the expected variation in the number of professional worker representatives based on the number of employees with the actual variation in the data. By law, the number of councilors eligible for professional slots varies with the number of employees and has remained constant since 2001. Panel (a) displays the actual and expected sizes of works councils (counting only professional members) for the period of 2001-2018. The expected and actual numbers closely track each other throughout the establishment-size distribution.

Our second exercise tests a prediction resulting from the fact that works councils are elected nationwide in the same year, usually every fourth. As elections are competitive and individuals can decide to not run again (for example because of approaching retirement age), we should expect to see excess turnover of works council members in election years. Panel (b) shows the exit rates of individuals from the works council among those who remain at the establishment. The exit rates are detrended using a linear trend. We observe clear excess turnover in almost all of the election years, with exit rates being about 2 percentage points higher in these years, which is approximately 50% above the mean turnover in non-election years.

In a third test, we directly cross-validate our measure with establishment-level survey information on works council status. The survey measure is part of the IAB Establishment Panel and linked to corresponding administrative employee records of the IEB in form of the LIAB dataset. We select all establishments that have valid survey information on council status, and further restrict to cases where council status is constant over the years. Panel (c) plots the share of establishments with at least one professional works councilor by establishment size separately for whether according to the establishment panel a works council exists or not. For those who do report a works council we see a strong increase in the share of establishments with at least one professional worker representative by establishment size, that reaches around 0.6 for establishments with 2000 and more employees. For establishments that report to have no works council in contrast, that share stays flat and close to zero throughout the whole establishment size distribution, implying a small share of false positives. These findings imply a strong information content in the IEB-measure on council status. At the same time they also point to an under-coverage of professional council members as indicated by the non-negligible (approximately 40%) share of false negatives. Appendix Table A5 shows that these establishments are somewhat younger and pay slightly lower wages, but are broadly comparable to the establishments we identify in the IEB data.

In sum, all three validation exercises support the reliability of our measure for professional worker representatives in the administrative data.

**Sample Selection** From each of our datasets, we construct a sample that allows us to compare characteristics of works council members with characteristics of the employees they represent, i.e., regular employees working in an establishment with works council characteristics, that are neither part of a works council nor

in a management position.

For both the SOEP and IEB we select the sub-sample of individuals represented by the works council using the following criteria: age 20-64, regular social security employment (IEB) or self-reported employment (SOEP), and a works council in the current establishment. Further, we exclude individuals in management positions<sup>10</sup> and those we observe as a works council member at least once. For the SOEP, we additionally exclude civil servants and the self-employed, two groups not observed in the IEB and with different or no employee representation. The sub-sample of works council members is based on the identification procedures above, where we take all individuals classified as a works council member without imposing any further sample restrictions.

For the SOEP, this leaves a sample of 1,616 works council member individual-year observations (1,236 individuals) and 21,426 employee individual-year observations (13,351 individuals) over five waves. Note, however, that not all outcomes in the SOEP are surveyed in all waves. For an overview of outcomes variables and details on the timing of different SOEP questions see Appendix Section B.

In a next step, we construct establishment-level characteristics of works council members and regular employees which we can later use to characterize worker representation at that level. In the IEB data, we collapse our individual  $\times$  year data to the establishment  $\times$  year level. For the SOEP data we skip this step, as we cannot observe multiple individuals for a given establishment.

### 3 Wage and Employment Effects of Becoming a Works Council Member

We turn now to the wage effects of becoming a professional worker representative. While released from their regular work duties, professional worker representatives continue to be paid by their employer. By law, the salary of professional worker representatives should track the salary that they would have received in a hypothetical scenario where they would have continued with their regular career. This requirement comes with the challenge of calculating wages in a counterfactual, hypothetical career, leaving firms with leeway in deciding how much to pay.<sup>11</sup>

To investigate the wage effects of becoming a professional worker representative, we compare the average wage trajectory of works councilors around the time of their first election to the works council to that of a control group of similar workers from the same establishment that did not become professional works council members.

In particular, we match to each professional works councilor an observationally similar control worker within the same *establishment*  $\times$  *tenure*  $\times$  *blue-/white-collar* cell. We require that (1) control workers are never observed as members of any works council throughout their career and (2) both works councilors and control workers are full-time employed at the match establishment in the year of election and the five previous years.

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<sup>10</sup>We identify managers using the following occupation code: KldB 1988 = 751 *Entrepreneurs, Managing Directors and Division Managers* (“Unternehmer, Geschäftsführer, Geschäftsbereichsleiter”). As we discussed in Section 2.1, managers are not represented by the works council and neither eligible to vote nor stand in works council elections.

<sup>11</sup>The literature mentions both the possibility of paying higher as well as lower wages to works councilors. Brébion (2022) considers average wage premia for (all) works councilors in different industries and documents evidence for both types of discrimination.

Conditional on these restrictions, we use 1:1 propensity score matching based on age, age-squared, daily real wages as well as dummies for 2-digit occupations and three educational groups. We obtain propensity scores from a logit regression at the time of establishment entry where we pool over all cells. In a second step, we then select the worker with the propensity score closest to the works council member within each cell as the control unit. Appendix Table A6 shows that characteristics of professional works councilors in the matched sample are similar to characteristics of the full sample we observe in the IEB.

Figure 3 shows how different labor market outcomes evolve separately for representatives and the matched control group around works council elections and documents substantial wage premia for works councilors. Panel (a) plots the mean real log-wage profiles for representatives and matched control workers, focusing on a balanced sample of individuals who remained employed throughout the displayed time period. Log-wages of professional council members exhibit slightly higher levels, but very similar pre-election trends. Upon election as a professional works councilor in  $t = 0$ , a stark divergence emerges in the wage trajectories. Professional worker representatives experience a substantial immediate wage increase, contrasting with the control group which exhibits no comparable wage change. This divergence persists and compounds over time, with professional worker representatives continuing to outpace their matched controls in wage growth. Adjusting for differences in pre-event levels, log-wages of professional worker representatives are about 6% higher than that of the control four years after the election and at the end of their first term.

A similar picture emerges when considering earnings as an outcome where non-employment periods are included as zeros. Panel (b) shows raw daily real earnings profiles for representatives and matched control workers, with non-employment periods post-event included as zeros. Before elections, trends of works council members and controls evolve very similarly, but start to diverge in the event period. At the end of their first term, daily earnings are about 8 Euros or about 10% higher than those of matched control workers. Panel (c) reveals that works councilors also exhibit lower separation rates post election than their matched controls. They are less likely to be employed by other companies and experience lower incidences of non-employment.

Finally, Panel (d) shows wage trajectories separately for blue- and white-collar works councilors compared to the respective control groups. White-collar profiles exhibit higher wage levels before election to the works council as a professional member. Notably, wage differences between works councilors and their control group are concentrated among blue- rather than white-collar councilors. In particular, blue-collar councilors have around 7% higher wages four years after election relative to their respective control group. In contrast, white-collar workers experience a wage increase of only around 2% that is insignificant at common significance levels.

Appendix Table A6 provides complementary summary statistics on careers of works council members. In the year of their first election, representatives in the matched sample are about 44 years old and have worked at the current establishment for approximately 12 years. They serve on average 12 years (corresponding to three terms) as professional council members, with 76% of works councilors serving for at least two terms. After exiting the works council, individuals have — if any — only short employment spells, especially at the same establishment.

## 4 Characteristics of Worker Representatives

### 4.1 Measuring Worker Representation

To study worker representation and its evolution over time, we construct aggregate measures at the year level reflecting the universe of German establishments with a works council.

We first define employee representation at time  $t$  and establishment  $e$  by the mean difference of characteristic  $Y_{it}$  between works council members and employees:

$$\Delta \bar{Y}_{et} = \bar{Y}_{et}^{wc} - \bar{Y}_{et}^{emp} = \frac{1}{N_{et}^{wc}} \sum_{i:wc_i=1} Y_{iet} - \frac{1}{N_{et}^{emp}} \sum_{i:wc_i=0} Y_{iet}. \quad (1)$$

Thus, a positive  $\Delta \bar{Y}_{et}$  implies overrepresentation along dimension  $Y$  (e.g., the share of individuals with characteristic  $Y$  is higher among works councilors than among employees if  $Y$  is binary), whereas a negative value corresponds to underrepresentation in the works council. We denote the number of employees and members of the works council in a given establishment by  $N_{et}^{emp}$  and  $N_{et}^{wc}$ , respectively.

To obtain a measure of aggregate representation, we then weight each establishment observation by its share in total employment ( $N_{et}^{emp}/N_t^{emp}$ ):

$$\Delta \bar{Y}_t = \sum_e \Delta \bar{Y}_{et} \frac{N_{et}^{emp}}{N_t^{emp}}. \quad (2)$$

Establishment identifiers in the administrative IEB dataset allow us to observe  $\Delta \bar{Y}_{et}$  at the establishment level. For the SOEP, however, we only observe a random sample from the German population without any detailed establishment information. To see how we can still construct a similar measure, note that our approach is equivalent to using observations at the level of works council members instead, where  $\Delta \bar{Y}_{kt}$  is the difference between  $Y_{ket}$  of member  $k$  and mean employee characteristics, and subsequently aggregating using the share of total employment represented by member  $k$  as weights. Re-writing the expression in terms of a difference between works council member and employee gives:

$$\Delta \bar{Y}_t = \sum_e \sum_{i:wc_i=1} \frac{N_{et}^{emp}/N_{et}^{wc}}{N_t^{emp}} Y_{iet} - \frac{1}{N_t^{emp}} \sum_e \sum_{i:wc_i=0} Y_{iet}. \quad (3)$$

The second term, mean employee characteristics, can be computed using the SOEP sample. The first term is a weighted average of works council member characteristics where the weights are the share of all employees in the sample that are represented by a given works council member. These weights can in principle be derived from the size of each establishment because works council size is determined by law based on the number of employees. We use the unweighted works council means in our main specification for simplicity, but report two complementary robustness checks to probe the sensitivity of the results when accounting for firm size: First, we use firm size information from the SOEP to construct a weighted version. As the SOEP only surveys firm size in coarse categories we construct separate weights using the floor, midpoints, and ceiling of these categories and compare the results to the unweighted version in Appendix Figure A1. Second, for a subset of SOEP individuals linked to the IEB we can construct weights based on the exact establishment-size distribution and compare the results to the unweighted baseline in Appendix Figure A2. In both checks, gaps that account for the establishment size are quantitatively similar to the baseline gaps



without weights.<sup>12</sup>

In the following section, we plot the representation gap  $\Delta \bar{Y}_t$  as defined by equation (2), displaying it separately for each individual year. We also present a cross-sectional version that pools all years for which survey data from the SOEP is available. Positive values mean that characteristic  $Y$  is overrepresented among works council members relative to the regular workforce, whereas negative values imply underrepresentation.

Since we study a large number of different outcomes, we also report  $p$ -values that account for multiple hypothesis testing following Romano and Wolf (2005) (see Clarke et al. (2020) for an implementation).

**Measuring Characteristics Pre- vs. Post Election** We measure representation gaps stemming from the selection of individuals with different characteristics into works council membership. To disentangle our representation measure from potential effects of *becoming* a representative, we measure characteristics in the pre-election period where warranted. This applies to all wage measures (log-wages and AKM person fixed effects) and the occupation measures in the administrative data, where we take the last observation pre-election. The appropriate choice is more nuanced for personality traits and preference measures. As these measures are not elicited in every survey wave, restricting the analysis to only the last pre-election period could result in a potentially non-representative subset of individuals. To address this, we measure the relevant information at the time works council membership is surveyed. For any missing data, we impute the most recent past observation.<sup>13</sup>

We empirically investigate whether preferences and personality measures change in response to an individual becoming a works council member. Our findings provide evidence against the notion that such a response occurs. Appendix Figure A3 shows estimates of becoming a council member on personality traits and preferences for the subset of individuals whose relevant characteristics we observe in both the pre- and post period. To analyze possible changes in preferences and personality, we employ two complementary approaches. First, we use a simple difference design comparing pre- and post-election periods among works council members, controlling for individual and time fixed effects. Second, we implement a difference-in-differences design that uses employees never observed as works council members as a control group. Across both analyses, we detect no statistically significant changes for any of the characteristics we consider. Many, though not all, specifications allow us to reject the presence of even moderate effect sizes.

## 4.2 Representation in the Cross-Section

We start by describing representation in the cross-section. Figure 4 displays the pooled representation gaps for different outcomes for professional representatives in the IEB as well as for professional and non-professional representatives in the SOEP. For all displayed gaps we focus on the period 2001-2019, that is the years for which we also have survey responses in the SOEP.

**Measures of Ability and Labor Market Performance** Standard selection models suggest that worker representatives may be subject to adverse selection (analogous to politicians, see Dal Bó et al. (2017))

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<sup>12</sup>There appear to be some differences in educational representation between SOEP and the linked SOEP-ADIAB, though the differences are not statistically significant and the qualitative patterns are consistent in both datasets.

<sup>13</sup>While the literature has stressed the persistence of personality traits over time (Cobb-Clark and Schurer, 2012), we also cannot fully rule out *a priori* that these characteristics change as a response to becoming a works council member.

as workers who have lucrative regular careers may have higher opportunity costs of selecting into worker representation. However, positive wage gains documented in the previous section might also attract higher-ability workers who may also have a higher chance of electoral success, which could lead to positive selection of worker representatives.

To investigate this hypothesis, we compare in Figure 4 the ability and labor market performance of worker representatives to those of the workforce they represent. We focus on two outcomes: the difference in log-wages of works councilors and the median employee at the establishment, and the difference of individual fixed effects relative to the establishment median from an AKM regression (Abowd et al., 1999; Card et al., 2013). To measure earnings potential outside of councilor duty, which is not confounded by the previously documented wage-effects of being a councilor, we measure these differences before works council membership. For log-wages as well as for the individual AKM fixed effects, we use the last year before becoming a professional worker representative.<sup>14</sup> For both measures, we restrict to full-time employees — hours are not observed in the IEB data — and use residualized versions that control for demographic factors including gender, education and age, as well as tenure at the current establishment.

We examine these wage differences separately for professional worker representatives in the IEB and all (professional and part-time) councilors in the SOEP. For all councilors we make use of the linked SOEP-ADIAB data which allows us to calculate analogous *within-establishment* differences for a subset of SOEP works councilors linked to the IEB.

We find that professional worker representatives are positively selected, both in terms of log-wages and AKM fixed effects. Compared to the median employee at their establishment, professional worker representatives earn about 5% higher wages. The findings for AKM person fixed effects are slightly larger, with a difference of about 10% to the median worker. In contrast, the group of all council members identified in the SOEP, which includes professional and part-time works councilors, earns very similar wages compared to the median worker at their establishment. The average log-wage difference is close to zero and we cannot reject equality at the 5% level. This also holds for the difference in the pre-period individual AKM fixed effect.

Our findings of higher pre-election wages and individual AKM fixed effects for professional works councilors speak to a positive selection (mirroring findings for politicians in Dal Bó et al., 2017). The fact that we do not find a similar wage effect when pooling professional and part-time works councilors in the SOEP data indicates that positive selection starts to emerge at the professional representation stage.

**Demographics: Gender and Education** Women are underrepresented among works council members. For both professional and non-professional works council members there is a statistically significant gap in representation of about 7ppt. For education, we see a slight underrepresentation of low-education workers (those without a vocational or university degree) of about 2 to 3ppt as well as of employees with a university degree with a gap of about 5-6ppt. As a consequence, vocational-degree holders are overrepresented by about 9ppt among professional works councilors (IEB) and by about 6ppt among all representatives (SOEP). The SOEP also allows us to examine parental education, namely whether the respondent’s father obtained a high school degree, as a measure of parental background. We don’t see differential selection into the works council

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<sup>14</sup>See Card et al. (2013, 2015); Bellmann et al. (2020) for information on estimation periods and other construction details of the AKM fixed effects.

based on this dimension.

**Blue-Collar Representation** We examine representation for four different measures of occupational background: blue-collar with and without simple services, routine, and manual occupations. While these categorizations partly overlap, they are not identical (for details see Appendix Section C). For professional council members, we assign the last occupation they worked in before joining the council. We first consider our main blue-collar worker definition, which includes employees working in occupations belonging to *simple manual occupations*, *simple service occupations*, *qualified manual occupations*, *technical occupations*, or *agricultural occupations* as defined in Blossfeld (1985). We see a moderate gap with blue-collar workers slightly underrepresented among professional works council members by around 4ppt. For our alternative blue-collar definition in the IEB that does not include simple service occupations, we find a slightly larger positive gap of 2ppt. Looking at occupations characterized by predominantly routine tasks we find a similar, small overrepresentation of about 4ppt. When looking at manual workers, we see instead a slight underrepresentation of professional councilors. Looking at all representatives in the SOEP, we see roughly similar, small representation gaps with all confidence intervals including zero.

**Preferences and Personality** In order to gain insight into the selection process for worker representation and its potential effects on council member objectives (which is relevant, e.g., if representatives cannot credibly commit to policies they do not support; Besley and Coate, 1997; Lee et al., 2004), we examine a range of preference and attitude measures. The SOEP repeatedly collects detailed data on a variety of preferences and attitude measures, which are not included in the IEB.

We start by investigating political engagement and political preferences. We construct an indicator variable for willingness to be politically engaged that equals one for individuals who indicate on a 4-point Likert scale that being politically and socially engaged is a life goal of high or very high importance. We observe a clear difference in the average importance that works council members and regular employees place on political engagement: council members report a notable 11ppt more often a high or very high importance of social or political activism as a life goal. This difference is significant at the 1% significance level, and also holds when using Romano-Wolf p-values that account for multiple hypothesis testing (see Appendix Table A2). Similarly, when asked about their level of political interest, works council members report on average 9ppt more often a high or very high interest in politics than regular employees. Again, the difference is significant at the 1% level and after adjusting for multiple hypothesis testing. Additionally, we also find differences in political preferences: Council members are about 0.1 standard deviations more left-leaning than the regular worker (Romano-Wolf p-value 0.07). Appendix Figure A4 plots the distribution of the underlying questions separately for works council members and the represented workforce. For all political preference measures, the distribution of works councilors is shifted, showing higher political interest and engagement throughout the whole distribution.

We now turn to an assessment of differences in personality traits between works councilors and the regular workforce. In Figure 4, we examine differences in each of the Big Five personality traits and in locus of control, using standardized measures for each of these constructs.<sup>15</sup> Works council members report higher

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<sup>15</sup>The Big Five traits are assessed using a short inventory of 15 items that were conceptualized based on the five-factor structure of the Big Five approach (Costa and McCrae, 1985). The items used in this short scale were taken from the Ten-Item Personality Inventory (TIPI) by Gosling et al. (2003) and the BFI-25. John et al. (1991) developed the BFI-25 through a

levels of openness of on average 0.13 of a standard deviation more than regular employees. This difference is significant at the 1% level and also holds when using p-values adjusted for multiple hypothesis testing. We also see a notable difference in extraversion of the two groups. Works councilors are on average 0.19 of a standard deviation more extrovert than regular employees. This difference is statistically significant and robust to multiple hypothesis testing (Romano-Wolf p-value  $< 0.01$ ). Council members also appear to be less neurotic with a difference of 0.93 standard deviations (Romano-Wolf p-value of 0.07). The mean difference in conscientiousness as well in agreeableness is close to zero and insignificant. Lastly, we also look at locus of control and a measure of pro-sociality. In both dimensions, council members are comparable to the regular workforce, with differences that are insignificant and close to zero. Appendix Figure A5 shows again the underlying differences in distributions. For variables where we see differences at the mean — extraversion, openness and in part neuroticism — these differences are present throughout the whole distribution.

In sum, works council members are similar to the regular workforce in terms of life goals, locus of control and Big Five personality traits conscientiousness and agreeableness, but are notably more politically interested, more left-leaning, less neurotic and show a substantially higher degree of openness and extraversion. These quantitative findings square well with qualitative studies on why workers chose to run for council membership (see also Boudreau et al. (2023) for evidence from union leaders in Myanmar). For example, (Jürgenhake et al., 2011, p. 34) reports the following quote on the motivation to run for professional works councilor (translated from German): “I have always been interested, open-minded, and also someone who dared to ask questions at company meetings. That already makes you stand out a bit: ‘She dares, she speaks up.’ So, I was asked, and at first, I did not want to. Because I already do other things voluntarily in my private life, which is also very time-consuming. But afterwards, I decided to run for it anyway.”

### 4.3 Representation over Time

The cross-sectional gaps presented in the previous section might mask important trends in representation over time. In this section we describe how representation evolved over more than 4 decades in West Germany.<sup>16</sup>

**Convergence in Blue-Collar Representation** Panel (a) of Figure 5 reports trends in representation of professional worker representatives for our different measures of occupational background. We see a moderate gap with blue-collar workers slightly underrepresented (by about 10ppt) in 1975 with a secular convergence and the gap closing over time. When excluding simple services, we find proportional representation throughout our sample period, implying that the initial gaps in blue-collar representation were driven by an underrepresentation of simple service occupations on works councils. We complement this series with a long-run time series on blue-collar representation from the Metal Union (IGM) that encompasses data since 1952 on establishments covered by IGM. Here, blue-collar status is not constructed from occupation codes, but directly reported by the establishments. The IGM series shows a stable, slightly increasing representation of blue-collar workers with a gap close to zero throughout the observation period. We find very similar results when we focus on workers in occupations characterized by predominantly routine tasks.

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principal component analysis and validated in a SOEP pretest. For more information about the development and validation of the scale, see Gerlitz and Schupp (2005) and Lang et al. (2011). Locus of Control (Rotter, 1966) is measured using a ten-item scale, of which seven items can be combined into an overall scale with good reliability (Specht et al., 2013).

<sup>16</sup>We restrict our sample to West Germany for the analysis of representation over time as data for East Germany is only available starting in 1992, but report results for East Germany in the appendix.

While there are no clear trends in representation, there has been a secular decline of blue-collar workers as a share of the overall workforce. Appendix Figure A6 provides an example of this decline, showing that the blue-collar worker share declined from almost 60% to slightly above 40% over the observation period for both representatives and employees.

**Educational Representation** Panel (b) in Figure 5 shows the evolution of representation separately for workers with a vocational degree and workers with a university degree over time. Workers with a vocational degree are constantly overrepresented over the whole period. Workers with a university degree in contrast were proportionally represented at the beginning of the observation period. This diverges to a slight underrepresentation by the end of the observation period. This decline is in spite of a substantial increase in the average education level over that period, as demonstrated in Appendix Figure A6.

When considering educational representation for all representatives in the SOEP in Figure 5, we see a similar pattern, where vocational-degree holders are represented proportionally in the recent period, while university-degree holders are underrepresented among works council members.

Overall, worker representatives are similar or exhibited convergence among a variety of domains that capture dimensions of occupational and educational background.

**Convergence in Female Representation** In Panel (c) of Figure 5, we examine gender representation and observe a striking convergence in the representation of female workers among professional worker representatives over the observation period. Starting out from an underrepresentation of 15ppt in 1976, this gap has reduced to less than 5ppt (but still persists as of 2018). Thus, women still remain somewhat underrepresented among professional worker representatives. The convergence occurred despite an increase in the share of females in the workforce over this period and a 2001 reform that mandated proportional representation of women (or men, if underrepresented).<sup>17</sup> Looking at all representatives, we see a similar degree of underrepresentation.

**Ability and Labor Market Performance** Studying the time trends of works council members' ability and labor market performance in terms of the measures displayed in 5 Panel (d), we find that professional works council members earn on average more than 5% higher — pre-election — wages throughout the observation period compared to the median employee at their establishment. The findings for AKM person fixed effects are very similar, with slightly larger differences to the median worker and again flat time trends. In contrast, all council members (professional and part-time) earn very similar wages compared to those of the median worker at their establishment, without any notable trends over time. This also holds for the difference in the pre-election year individual AKM fixed effect, indicating that professional works councilors are positively selected among all council members.

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<sup>17</sup>We do not detect a visible shift in representation of women on the works council after 2001. Note, however, that the law applies to *all* members of the works council (professional and part-time) and the lack of an increase in the IEB data is hence consistent with a low pass-through to professional works council positions.

## 4.4 Robustness and Heterogeneity

We next investigate whether the observed trends in representation gaps reflect trends that occur within establishments or stem from changes in the composition of establishments with a works council. First, we obtain the original time series discussed above by regressing representation gaps on the full set of year dummies. To construct a series net of compositional changes, that is only looking at changes within establishments, we then additionally include establishment fixed effects in the regression. Appendix Figure A7 plots the resulting year dummies and corresponding 95% confidence intervals from both regressions relative to the raw mean of the first observation period. For most outcomes both time series track each other closely.

When we examine trends in representation, our baseline sample is restricted to West Germany, for which we have continuous information since 1975. Appendix Figure A8 shows in addition the trends for East Germany for which we have data since 1992 (post-reunification). Compared to West Germany, East Germany starts out with a larger blue-collar representation gap of around -22ppt in 1993 but exhibits a stronger convergence over time similarly leading to a convergence in representation gaps by 2019 (although East Germany continues to exhibit somewhat larger gaps). The convergence in female representation is very similar between East and West with equally sized gaps throughout the observation period. When looking at education, the representation gaps in East Germany are reversed in the beginning: Until the 2010s, vocational degree holders were underrepresented, while university degree holders were significantly overrepresented. This observation, however, reverses after 2010, when the time series for East and West Germany converge.

## 5 Effects of Worker Representation

### 5.1 Blue-Collar Jobs as Core Dimension of Heterogeneity

Several studies have emphasized the importance of unions and worker representation in shaping wages, working conditions, and the social safety net. These studies have also highlighted the role of preference heterogeneity among union members, especially between blue- and white-collar workers (Korpi, 2006; Becher and Pontusson, 2011; Ibsen and Thelen, 2017; Cronert and Forsén, 2021). To explore the impact of blue-collar representation, we begin by analyzing heterogeneity in concerns and preferences between blue- and white-collar workers in our context.

Using data from the SOEP, we present the mean of preferences and characteristics separately for blue- and white-collar workers in Columns (1) and (2) of Table 1, along with the corresponding differences between the two groups (Column (3) of the same table and Figure 6).<sup>18</sup> Panel (a) shows differences in demographic background and unemployment experience. Notably, blue-collar workers have a 10.2ppt higher likelihood of having experienced unemployment in the past.<sup>19</sup> Panel (b) shows that blue-collar workers are also substantially (12.2ppt) more worried about their economic situation in general and their job security (14.7ppt) in particular. They are more worried about the devaluation of their skills (9.4ppt) and are slightly (0.038 of a standard deviation) less satisfied with their job. These differences manifest also in the subjective probability of various job changes, as shown in Panel (c). Blue-collar workers report an 11% (1.9ppt) higher probability of losing their job within the next two years, are more pessimistic about getting promoted (3.7ppt), and view

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<sup>18</sup>We report conventional standard errors but denote significance using Romano-Wolf p-values.

<sup>19</sup>Blue-collar workers are less likely to be female, hold a university degree, or have a father with a high-school degree.

it substantially less likely to receive further training (19.8ppt). Despite these assessments, blue-collar workers view it as less likely that they would quit voluntarily over the next two years. Turning to job-related burdens in Panel (d), we see that blue-collar workers are more likely to describe their current working conditions as characterized by “job at risk” (6ppt), “wage not fair given effort” (3ppt), “bad promotion prospects” (4.4ppt) and “insufficient recognition from superiors” (4ppt). However, they name significantly less often “interruptions at work” and “increasing time pressure” as a burden.

Most, though not all, of the differences in job-related preferences and worries between blue- and white-collar workers carry over to works council members (who have strong job protection while serving on the works council). Columns (4) – (6) of Table 1 repeat the previous analysis for individuals currently serving on the works council. In particular, even though perceived job security is notably higher for all groups, blue-collar workers still worry significantly more about their own economic situation and job security than their white-collar counterparts.

Taken together, blue-collar workers exhibit notably different preferences and worries related to characteristics of a job, which they keep as council members and might affect which firm policies blue-collar workers favor (Pitkin, 1967).

## 5.2 Identifying the Effects of Blue Collar Representation: Two Complementary Identification Strategies

We employ two complementary identification strategies to estimate the effect of blue-collar representation on worker outcomes: An event-study specification that leverages the sudden change in works council composition in election years relative to comparable control firms without such an increase, and an IV specification that leverages retirement-induced changes in the works council composition. We measure blue-collar status as working in a blue-collar occupation at labor market entry. We implement both specifications using the IEB data. This allows us to examine variation in the composition of professional worker representatives at the establishment level and to examine worker outcomes at the *establishment*  $\times$  *year* ( $\times$  *blue-collar*) level, using the same sampling choices as described in Section 2. We pool outcomes for both blue- and white-collar workers in our baseline specification, and investigate group differences in a second step. Going forward, we refer to the professional members of the works council as the works council.

**Event-Study Specification** We employ an event-study design that studies election-induced changes in the works council composition. We concentrate on the first large increase ( $\geq 33\text{ppt}$ ) in the establishment level blue-collar share in the works council that happens in an election year.

To construct a comparable control group, we match each treated establishment to a never-treated control establishment within the pre-treatment (i.e., pre-election) year. The matching allows us to compare similar treated and control establishments, with plausibly similar trends, as is common practice in the job-loss literature (Schmieder et al., 2023; Illing et al., 2024). Our set-up also avoids the concern of multiple periods or variation in treatment timing raised in the recent event-study literature (Roth et al., 2023). We use 1:1 nearest-neighbor matching with the following matching variables: the blue-collar group share in the workforce and among the works council, the log number of employees as well as 10 establishment size groups and 16 state dummies. Columns (2) and (3) of Appendix Table A4 compare the pre-event characteristics in the treatment

group with the matched control group. Establishments are comparable along many observed dimensions, including some not used for matching, like mean earnings.

We estimate the following model for outcomes of group  $g \in \{blue, white\}$  at establishment  $e$  in year  $t$ :

$$Y_{get} = \alpha_e + \beta_t + \sum_{\substack{h=-5, \\ h \neq -1}}^5 \tau_h I\{t = c_e + h\} \times Treat_e + \sum_{\substack{h=-5, \\ h \neq -1}}^5 \delta_h I\{t = c_e + h\} + \sum_{\substack{h=-5, \\ h \neq -1}}^5 \theta_h I\{t = c_e + h\} \times I\{g = blue\} + \varepsilon_{get}. \quad (4)$$

Treatment status is defined at the establishment level and denoted  $Treat_e \in \{0, 1\}$ . We include five leads and lags, with  $c_e$  denoting the establishment-specific treatment year defined by the treated establishment for each match-pair. To make estimates representative for the represented workforce, we weight each observation with the number of regular employees, capped at the 95th percentile of the establishment-size distribution to reduce the influence of outliers. While the baseline specification shown here pools effects for blue- and white-collar workers, we can extend the analysis to estimate separate treatment effects by group.

Besides the establishment fixed effects  $\alpha_e$ , we include year-fixed effects  $\beta_t$  and relative time fixed effects  $\delta_h$ , which we allow to vary by group in the form of  $\theta_h$ . Coefficient  $\tau_h$  shows the treatment effect in period  $h$  relative to the pre-event reference period  $h = -1$ . We complement our estimates corresponding to equation 4 with a pooled version where we replace the post-period coefficients with one post-treatment indicator. To examine potential pre-trend violations, we test for joint significance of the pre-event  $\tau_h$  and report the resulting p-values. Standard errors in all specifications are clustered at the match-pair level (Abadie and Spiess, 2022).

Panel (a) of Figure 7 shows the event-induced change in the blue-collar share of the works council: In the event year, the blue-collar share increases by 44ppt — from about 13% to 57% — compared to the pre-event year. The change is sudden, with flat pre-trends that are indistinguishable from zero. In the post-event years, the share remains constant and even increases slightly in the 5th year after the event (which corresponds to the first year after the next election) to exceed 50ppt.

**Retirement IV** A potential worry about the event-study specification is that workers endogenously elect blue-collar representatives in response to or anticipation of factors affecting the outcomes we study. For example, workers might elect representatives that signal a stronger emphasis on employment protection if they anticipate layoffs in the near future. To address this concern, we employ an IV strategy that isolates variation driven by incumbent worker representatives reaching retirement age. Our IV strategy uses the fact that, in Germany, a large share of individuals retires in their early 60s at salient, statutory retirement ages. Figure 8 shows large excess in employment exits when works councilors turn 60, 63 or 65 years, which is consistent with the findings of Seibold (2021) for the overall workforce. This creates turnover in works council members in election years and hence changes the works council composition. If a blue-collar member retires, it is likely that at least in some cases the replacement member is white-collar, while the opposite is true if a



white-collar worker were to exit.

Equation 5 formalizes this intuition of isolating retirement-induced variation by constructing an expected blue-collar share in the works council at time  $t$  and establishment  $e$ , which we use as our instrument:

$$E[swc_{e,t}^{blue}] = \underbrace{\frac{Nwc_{e,t-1}^{blue}}{Nwc_{e,t-1}}}_{\text{Lagged Share}} + \underbrace{\frac{Nwc_{e,t-1,retire}^{white} \times s_{e,t-1}^{blue}}{Nwc_{e,t-1}}}_{\Delta \text{From White-collar Retirements}} - \underbrace{\frac{Nwc_{e,t-1,retire}^{blue} \times (1 - s_{e,t-1}^{blue})}{Nwc_{e,t-1}}}_{\Delta \text{From Blue-collar Retirements}}. \quad (5)$$

Here,  $swc_{e,t}^{blue}$  denotes the blue-collar share in the works council in year  $t$  and establishment  $e$ . First, note that if there are no retirement exits (so  $Nwc_{e,t-1,retire}^{white} = Nwc_{e,t-1,retire}^{blue} = 0$ ), the predicted share simply equals the lagged share. When a white-collar councilor retires, we expect the blue-collar share to increase proportionally to the share of blue-collar employees in the establishment if councilors are replaced at random (the second term). Similarly, a retirement-induced blue-collar exit from the works council decreases the expected share (the third term).

The retirement-induced variation employed by this instrument is arguably exogenous to unobserved workplace conditions that might jointly affect membership composition and outcomes. We further add establishment and calendar year fixed effects to our IV specification, which purges out constant establishment and year factors such as the leniency of an establishment to have a higher blue-collar share at the establishment. In all specifications, we cluster standard errors at the establishment level.

The first stage regresses the actual blue-collar share in the works council in year  $t$  on the predicted share displayed in Equation (5). Instead of using the yearly share, we use an imputed version, where we count every individual as a member for the full election period. Thus, we effectively use only variation between election periods. Figure 8b visualizes the first stage as a binned scatter plot and shows how well the expected blue-collar share of works council members predicts the actual share after controlling for establishment and year effects. There is a strong linear relationship: The estimated coefficient is 0.805 (SE = 0.0058) implying a t-stat of above 130 alleviating potential weak-IV concerns.<sup>20</sup>

We estimate the following second stage specification:

$$Y_{eg,t+4} = \alpha + \beta \widehat{swc}_{e,t}^{blue} + \theta_{eg} + \eta_{tg} + \varepsilon_{egt}. \quad (6)$$

We measure outcome  $Y$  in  $t+4$  if not noted otherwise, due to the 4-year nature of election years. We estimate our second stage at the *establishment*  $\times$  *year*  $\times$  *group* level, where we control for *establishment*  $\times$  *group* ( $\theta_{eg}$ ) and *group*  $\times$  *year* fixed effects ( $\eta_{tg}$ ). Here,  $\beta$  corresponds to the treatment effect, pooled for both blue- and white-collar workers.

We employ two additional modifications of the IV specification. First, we measure outcomes relative to the pre-event period, i.e., we modify (6) to use  $\Delta Y_{eg,t} = Y_{eg,t+4} - Y_{eg,t-3}$  as the outcome instead. This difference-in-difference type specification allows us to examine whether establishments with retirement exits exhibit different trends. Second, instead of using *observed* retirement exits at age 63 we construct a

<sup>20</sup> A slope less than one implies that the replacement of an exiting council member is more likely to be of the same group than would be predicted by chance, suggesting some inertia that favors the existing group.

version of the predicted blue-collar share that uses *intended* retirement exits, meaning it is purely based on variation coming from an increased likelihood of retirement when crossing the age 63 threshold. This intent-to-treat specification addresses potential concerns of endogenous retirement exits as a response to (anticipated) changes at the establishment.

In addition, we implement a retirement-induced specification of the event-study. In particular we restrict the event-study sample to the subset of events, for which the retirement IV predicts an increase in the blue-collar works council share of at least 20ppt.

**Effects for Blue- vs. White-Collar Workers** While we mainly consider specifications pooling treatment effects for blue- and white-collar employees, we are also interested in the separate effect of blue-collar representation in the works council on blue- and white-collar workers. Equation 7 shows a modified second stage IV specification. Here  $\beta^{blue}$  captures the effect for blue-collar workers, whereas  $-\delta$  captures the effect of blue- relative to white-collar workers.

$$Y_{eg,t+4} = \alpha + \beta^{blue} \widehat{swc}_{e,t}^{blue} + \delta \widehat{swc}_{e,t}^{blue} \times I(g = white) + \theta_{eg} + \eta_{tg} + \varepsilon_{egt} \quad (7)$$

For the event-study specifications (both baseline and retirement-induced), we estimate separate regressions for blue- and white-collar workers, as well as triple-difference specifications, allowing us to examine the relative effect of blue- to white-collar worker representation.

### 5.3 Main Results

We now turn to discussing our main findings of how different outcomes are affected by group representation. We jointly discuss the results for the event-study- and IV specification.

**Separations** We report effects on separation outcomes in Figure 7 and column (1) of Table 2. Panel (b) of Figure 7 shows event-study results for the share of employees separating involuntarily from the current establishment in a given year, where we proxy for involuntary separations as separations involving at least a gap of three months of non-employment before the next employment spell. Pre-trends are flat and statistically indistinguishable from zero. Separations decrease in the first year, after which they remain about 1ppt lower relative to the pre-event year. When pooling over the post-event period, we estimate a treatment effect of -0.0076 (SE = 0.0020), as shown in Column (1) of Panel A in Table 2. Relative to a pre-event mean of 0.11, this constitutes a decrease of approximately 7% in involuntary separations.

Next, we investigate a revealed preference measure of job quality, voluntary separations, in Panel (c) of Figure 7. We define voluntary separations as separations directly followed by another employment spell within the next month (see also Harju et al., 2024). In order to address potential concerns about re-classification of establishment identifiers, we also exclude observations where more than 30% of workers of an establishment exhibit a voluntary switch in the same year. In contrast to involuntary separations, voluntary ones do not respond to the event and stay relatively flat, with no indication of a downward dip in the year post-event. Accordingly, we estimate a pooled post-event effect of 0.001 (SE = 0.0008), displayed in Column (1) of Panel B in Table 2. Our evidence thus does not point to blue-collar representation leading to workplaces becoming more or less attractive in terms of workers voting with their feet.

We also further investigate exits due to establishment closure (or extensive margin exits) in Panel (d) of Figure 7. We define permanent exits as the disappearing of an establishment ID with the share of voluntary separations in that year of no more than 30%. There, we find a decline of 0.0021 (SE = 0.0006). Blue-collar representatives thus appear effective at preventing job loss due to establishment closure.

As a complement to the event-study approach, we focus on retirement-induced variation in the IV specification. We examine the same separation outcomes in Panel A of Table 2, Column (2). We find qualitatively similar though smaller effects in the IV specification compared to the event studies with a decline in involuntary separations of -0.0036 (SE = 0.0022). This implies an effect size of about one quarter of the event-study estimate, when scaling with the corresponding increase in the blue-collar council share ( $\frac{1}{0.462}$  in the event-study and 1 in the IV specification).

Similar to the event-study design, we find no effects on voluntary separations in the IV specification. Similarly, the point estimate for the effect on establishment closure is essentially zero; the confidence interval includes the event-study estimate.

We see similar, albeit slightly larger, effects when restricting to retirement-induced events in the event-study design, i.e., when restricting to the subset of events where retirements only result in a sufficiently large increase of the blue-collar share on the works council. Column (3) of Table 2 shows the resulting estimates for this specification. For involuntary separations, the estimates are slightly larger than in the baseline event-study (-0.0102, SE = 0.0037), and the estimates for the effects on voluntary separations are small and insignificant.

The difference-in-difference type IV specification that estimates effects relative to the pre-event period in Column (4) of Table 2 delivers similar or, if anything, slightly larger results compared to the baseline specification. The point estimate for involuntary separations of -0.0059 (SE = 0.0027) is slightly larger than the baseline estimate. Estimates of other separation outcomes are close to their baseline counterparts.

A similar picture emerges for the intent-to-treat specification in Column (5) of Table 2 where the instrument is constructed based on individuals entering retirement age irrespective of their actual exit. The estimate for involuntary separations in this case is -0.0026 (SE = 0.0022). For the other outcomes, estimated effects are again small and not statistically significantly different from zero.

**Wages** We report effects on wages in Figure 9 and Table 3. In the event-study specifications, we document small, positive wage effects of 0.77 log points (SE = 0.30) at the 10th percentile (Panel (a) of Figure 9). Similarly, wage effects are slightly positive at the median and the 75th percentile (Panels (b) and (c)). Looking at changes in within-establishment inequality, measured as the ratio of the 75th to 25th wage percentile, in Panel (d), the results do not provide evidence for wage compression.

A roughly similar picture emerges from the IV specifications (Column (2) of Table 3), where we find positive effects of about 0.5 to 1.85 log points at the 10th, 50th, and 75th percentile of the wage distribution. The results point towards slight wage compression, although we cannot rule out equal effects for all three percentiles considered.

These positive wage effects vanish or even turn negative when implementing the difference-in-difference IV in Column (4). The stark contrast between this specification and the baseline IV specification suggests that the baseline specification suffers from differential pre-trends when considering wage outcomes.

Overall, there is some weak evidence for small wage gains at the lower part of the wage distribution, though these effects are sensitive to estimating effects relative to pre-treatment in the IV specifications.

**Differences between Blue- and White-Collar Workers** Motivated by the literature on substantive representation (Pitkin, 1967) and evidence of heterogeneity in blue- and white-collar workers’ attitudes and preferences (see Section 5.1), we investigate the hypothesis that treatment effects might differ by worker type. In particular, we examine to what extent effects differ between blue- and white-collar workers and find broadly similar effects for both groups of workers. Appendix Figures A10 and A11 show group-specific event-study estimates for turnover and wages, respectively, whereas Appendix Tables A7 and A8 show estimates for the event-study and IV specification. For turnover, the effect sizes are very similar for both blue- and white-collar workers. The effect for blue-collar workers is similar to the pooled baseline and the difference to white-collar workers is usually small and insignificant.

The finding of similar effect sizes for blue- and white-collar workers also holds for the IV specification. Appendix Table A7 Column (2) shows baseline results for turnover, which provide no evidence for systematic differences between blue- and white-collar workers.

For wages, the difference between blue- and white-collar workers is larger, but has opposing signs in the event-study and IV specification (Columns (1) and (2) of Appendix Table A8 respectively), which makes interpretation difficult in this case.

Taken together, elections of blue-collar representatives lead to similar effects on turnover for blue- and white-collar workers, whereas the group differences in the effects on wages are less conclusive.

## 5.4 Heterogeneity

To shed light on mechanisms, we investigate heterogeneity across a number of establishment-, representative- and worker-level characteristics. We find larger effects among workers with an above average AKM individual fixed effects. Effects appear larger when a blue-collar worker enters the works council for the first time and among younger, higher educated workers though these differences are not statistically significant. We find no evidence that higher wage gains of becoming a works council member mitigate the effects of representation. We report detailed results based on our event-study specifications in Tables 4 and 5 with results for turnover and wages, respectively.

**Firm-Level Heterogeneity** We study heterogeneity between firms by interacting the treatment variable in the baseline specification with the heterogeneity variable of interest. First, we examine whether events that induce a shift towards a blue-collar majority on the council lead to stronger effects. Column (1) of Table 4 shows heterogeneity by whether the treatment induced a shift from white- to blue-collar majority. The difference is insignificant and small. Column (2) examines differences by whether a first blue-collar worker enters the council (the majority of cases) versus those where a blue-collar councilor has already been present. Effects are larger when blue-collar workers enter for the first time, although these differences are not statistically significant. Column (3) investigates differences by firm size. Effects are about 1/4 smaller in establishments above the median firm size, though differences are again not statistically significant. Column (4) examines differences by industry. Compared to other industries, effects are slightly weaker in the

manufacturing sector, while this difference is again not statistically significant. Finally, Columns (5) and (6) examine whether the wage gains that newly elected professional works council members receive — relative to non-elected control workers — are correlated with the size of treatment effects. We implement this based on the sample from Section 3 by first calculating the wage gain of a newly elected works councilor over the first election period relative to a matched control worker. In a second step, we calculate the establishment-level mean of this variable. The size of this wage gain measure is not predictive for the effect size of separations.

**Worker-Level Heterogeneity** We examine heterogeneity between workers by re-collapsing the individual level data on the more granular establishment  $\times$  blue-/white-collar  $\times$  individual heterogeneity group  $\times$  year level by adding the individual-heterogeneity group dimension. We estimate the event-study specification on this dataset and interact the individual heterogeneity measure with the treatment. In this case, we control for individual-heterogeneity  $\times$  establishment level fixed effects. Column (7) shows differences in heterogeneity by whether individuals are above vs. below age 50. Workers above 50 are 0.27ppt less affected, with the difference not significant at common levels. Column (8) shows differences by whether education level is above vs. below high school degree. The estimated difference is notable but not statistically significant. Column (9) examines whether the effects are concentrated among individuals with above or below-average ability, which we proxy by using the within-establishment rank of the individual fixed effect from an AKM decomposition (Bellmann et al., 2020). The effects are significantly larger for individuals with individual fixed effects above that of the median worker at the establishment.

**Composition of Hires and Separations** We also investigate how blue-collar representation affects changes in the composition of workers newly hired or separated from the establishment. We define hires as new entries at the establishment between year  $t - 1$  and  $t$  and separations as exits between year  $t$  and  $t + 1$ . For both groups, we broaden the set of worker groups to also include non-standard employment types such as mini-jobbers and vocational trainees.

We find no systematic evidence for a change in the number or the composition of hires along a variety of dimensions as documented in Appendix Table A9. Finally, we assess whether the composition of worker exits responds to the increased number of blue-collar workers. Appendix Table A10 documents that there are no significant changes in the composition of regular (social security reliable) jobs, trainees and the share of mini-jobs.

## 5.5 Robustness

We implement a number of tests and alternative specifications to probe the robustness of our findings. Results are presented in Appendix Tables A11 and A12.

**Alternative Blue-Collar Definitions** Our first set of robustness tests, documented in Appendix Table A11, examines the robustness of the event-study and IV specifications to alternative occupation-based group definitions, namely workers that perform primarily routine jobs (Columns (3) and (4)), and a more narrow blue-collar definition that excludes simple service occupations (Columns (5) and (6)). Panels (a) - (c) examine robustness for different turnover outcomes. In all cases, estimates for involuntary turnover are negative, and in the same ballpark as the baseline result (Columns (1) and (2)). For the event-study design, the effect size

for blue-collar jobs excluding simple services is slightly larger than the baseline effect (-0.0098, SE = 0.0033), which is also the case when considering routine jobs (-0.0095, SE = 0.0027). For the IV specifications, effect sizes are smaller and insignificant in both specifications but still of roughly similar magnitude compared to those of the baseline estimate. For voluntary turnover, estimates remain close to zero in all cases, with all coefficients smaller than 0.001 in absolute terms. For permanent exits, coefficients in the event study are consistently close to the baseline specification. Turning to wages in Appendix Table A12, we see positive effects in most specifications at the 10 percentile, though coefficients appear somewhat less stable between specifications than for turnover outcomes.

**Varying Post-Event Window** Results are relatively similar when varying the post-event window over which the treatment effects are calculated. Results in Columns (7) and (8) of Appendix Table A11 examine outcomes over a 3-year window post-event instead of the 5-year window in the baseline specification. Columns (9) and (10) look at a 7-year window post-event. Both specifications deliver results that are quite similar to the baseline estimates.

**Only Election Year Results** Our baseline works council definition is based on an imputed works council measure, that assigns within-election period changes to election years. This could introduce measurement error if some turnover actually happens within election periods, but should only attenuate our findings. Column (10) of Appendix Table A11 reports results for cases where the actual and imputed definitions coincide. Effect sizes are very similar to the baseline estimate (-0.0073, SE = 0.0027), speaking against an important role of attenuation of our baseline results.

**Different Retirement Thresholds** Our retirement IV uses exits at age 63, yet in Figure 8, we also observe excess exits at age 60 and 65. Columns (11) and (12) of Appendix Table A11 therefore report whether the results also replicate when we use exits at age 60 or 65 as an instrument. The results of both these specifications are comparable to the baseline threshold of age 63.

**Alternative Turnover Definitions** We consider alternative turnover definitions in Appendix Table A13. Panel A restricts to non-permanent exits (i.e., individuals returning to the labor market eventually), we see effect sizes about half of that of our baseline specification in the event-study sample and even smaller effect sizes in the IV specification, which speaks to an important role of individuals dropping out of the labor market after separation. Finally, Panel B looks at a balanced sample of establishments where we restrict to the subset of treated and matched-control pairs that stay in the sample between years -1 to 5 around the event. All specifications deliver estimates that are close to the baseline estimates. This is in line with establishment closures only playing a small role for the overall effect. Overall, differential attrition seems to not play a major role in our setting.

**Fixed Worker Composition** The effects on wages could stem in part from changes in the composition of workers. Appendix Figure A12 shows event-study graphs for the subset of workers that stay at the same establishment in the +/- 5-year window around the event. Results look broadly similar to the main specification which speaks against an important role of worker selection.

## 6 Conclusion

Our analysis of data stemming from over four decades documents broadly proportional representation of blue-collar workers in German works councils. This finding of descriptive representation (Pitkin, 1967), which starkly contrasts with the underrepresentation of these workers in many other domains of power, highlights the role that works councils play in providing a platform for worker voice. Event studies revealed that blue-collar workers experience substantial (own) wage gains when they become representatives. We found that worker representatives overall are positively selected in terms of earnings and person-fixed effects, showing more extroverted and open personalities, less neuroticism, and a greater interest in politics. Comparing blue- and white-collar workers and representatives, we find that both blue-collar workers and representatives are more concerned about job security and the prospects of job loss.

Our analysis indicates that the election of blue-collar representatives affects worker outcomes: descriptive representation leads to substantive representation for blue-collar workers on works councils. Blue-collar representatives increase employment protection, an area of heightened concern among blue-collar workers.

Our results on the effects of works council representation contrast with more muted effects of worker representation on corporate boards, including in the context of Germany (Jäger et al., 2020, 2022b). We hypothesize that works councils may have the potential to more directly affect firm and worker outcomes due to their wide-ranging codetermination rights that can directly affect work organization. We leave a further study of the extensive margin effects of works councils to future work.

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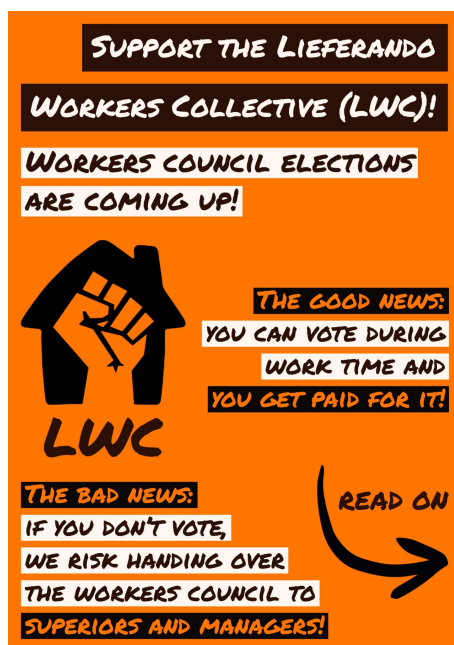
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## Figures & Tables

Figure 1: Works Council Elections: Examples of Protests and Election Campaigns at Food Delivery Firm



(a) Food Delivery Driver and Rider Protest (January 2022)



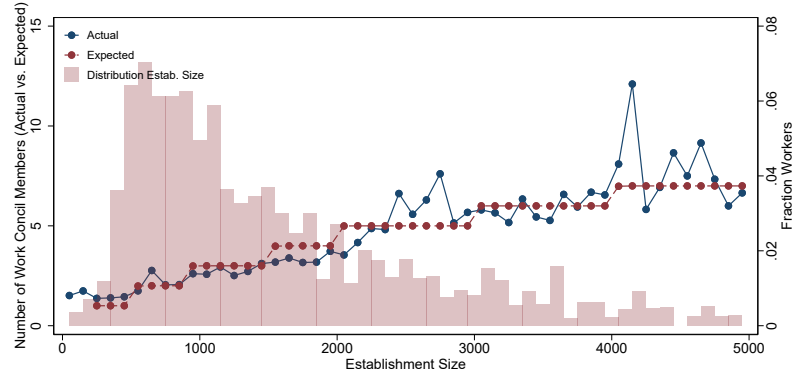
(b) Campaign Flyer By Lieferando Workers Collective



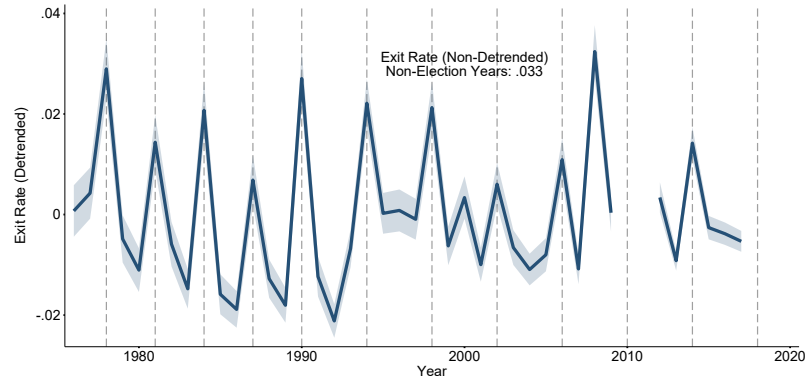
(c) Campaign Flyer By DGB Member Union

**Notes:** The figure provides examples of campaigns during the lead-up to the 2022 works council elections. Panel (a) shows a protest by drivers and riders for a food delivery firm and illustrates demands in response to the dismissal of a rider (Source: picture alliance/dpa/dpa-Zentralbild — Jan Woitas). Panels (b) and (c) show campaign flyers for the 2022 works council election at a food delivery firm, with Panel (b) showing a flyer by the Lieferando Workers Collective and Panel (c) a flyer by Liefern am Limit, a union associated with the German Trade Union Federation (DGB) (see sources here and here).

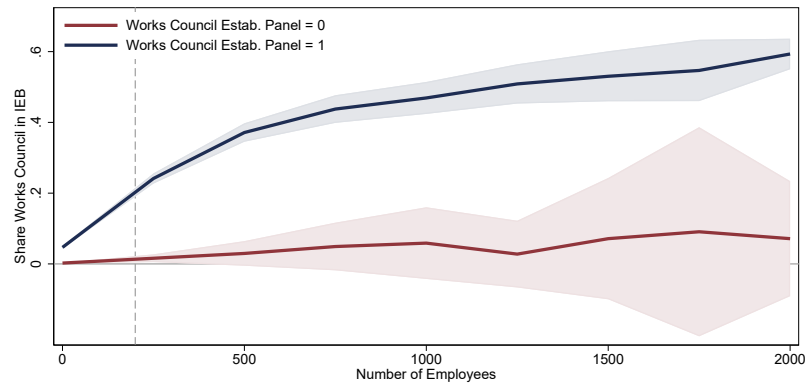
Figure 2: Validation Exercises for the Works Council Measure in the Administrative Data



(a) Expected vs. Actual Number of Professional Councilors by Estab. Size



(b) Excess Professional Works Councilor Exits in Election Years



(c) Professional Works Councilors in IEB vs. Councilor Status in Estab. Panel

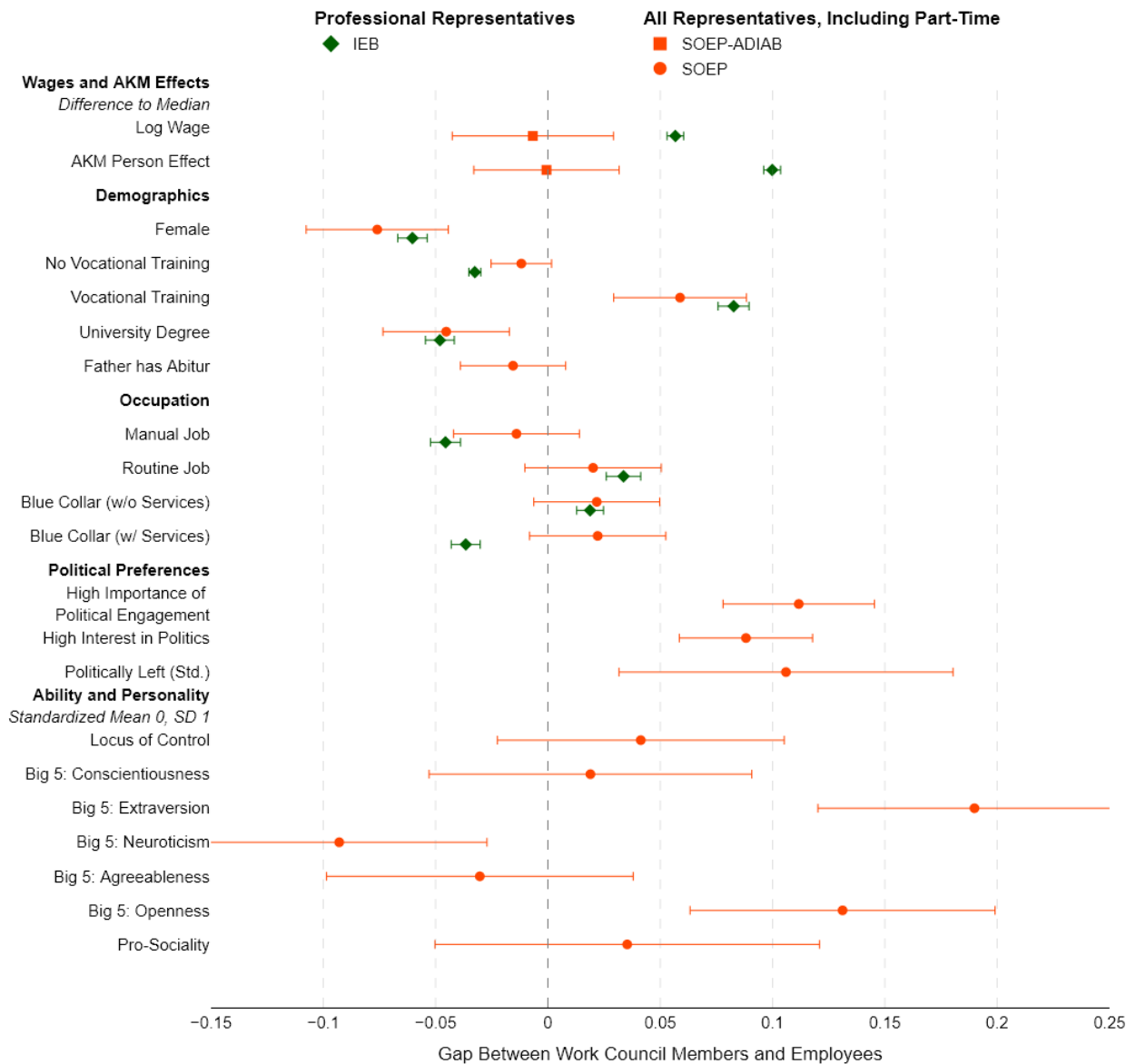
**Notes:** This figure shows three different validation exercises for the professional works councilors measure in the admin data. Panel (a) shows the alignment of the expected works council size by number of employees and the actually observed works council members for that period. It also shows the firm-size distribution (weighted with the number of individuals) for our sample in the baseline year. Panel (b) plots the de-trended share of individuals exiting professional works council status defined as individuals leaving works council member-status but remaining at the establishment, with the non-election year mean displayed in the figure. The year 2011 is excluded due to occupational re-coding in that year. Panel (c) compares information on the existence of a works council from the IAB Establishment Panel with the existence of at least one professional works councilor at the establishment based on the linked administrative data and our measure of professional works councilor. Comparisons are by establishment size, with a step size of 250; values above 2000 are winsorized. The comparison is restricted to all establishments that report always or never to have a works council in the IAB Establishment Panel, and reports, for each of these groups, the share of establishments with at least one a professional works councilor based on our IEB definition. Shaded areas/horizontal lines indicate the 95% confidence interval.

Figure 3: Career Effects of Becoming a Professional Works Council Member



**Notes:** This figure shows wage and employment profiles of professional works councilors around the time they became professional works councilors relative to a matched control worker from the same *establishment*  $\times$  *tenure*  $\times$  *blue-/white-collar* cell. Matching is performed in the year of entry into the firm. We use 1:1 propensity score matching based on wages, education levels, age, age squared and 2-digit occupation (pooled over all establishments) to assign the observationally closest control within each cell. Additionally, we require all individuals to be full-time employed at the match establishment in the event and pre-event periods. Panel (a) shows the evolution of log real wages before and after the event conditionally on staying in employment. The dotted line in the background shows the share of treated individuals in a works council ranging from 0 in the pre-period to 1 in the year of the event. Panel (b) depicts the evolution of the level of real wages including periods of non- and unemployment as zeros. Panel (c) provides insights into labor market status around the event, segmenting labor market status into four mutually exclusive and exhaustive categories: employed at the match firm, employed at another firm, unemployed (UI receipt) and out of the labor force. Panel (d) plots log wage profiles separately for blue and white-collar workers as defined in the year of matching. The test for differential pre-trends reported in Panels (a), (b), and (d) tests the joint hypothesis that each individual pre-period difference is not different from the average pre-period difference. Sample size at  $k = 0$ : Without balance restrictions  $N^t = N^c = 3,050$  in Panels (b) and (c), with balance restriction  $N^t = N^c = 1,619$  in (a) and (d).

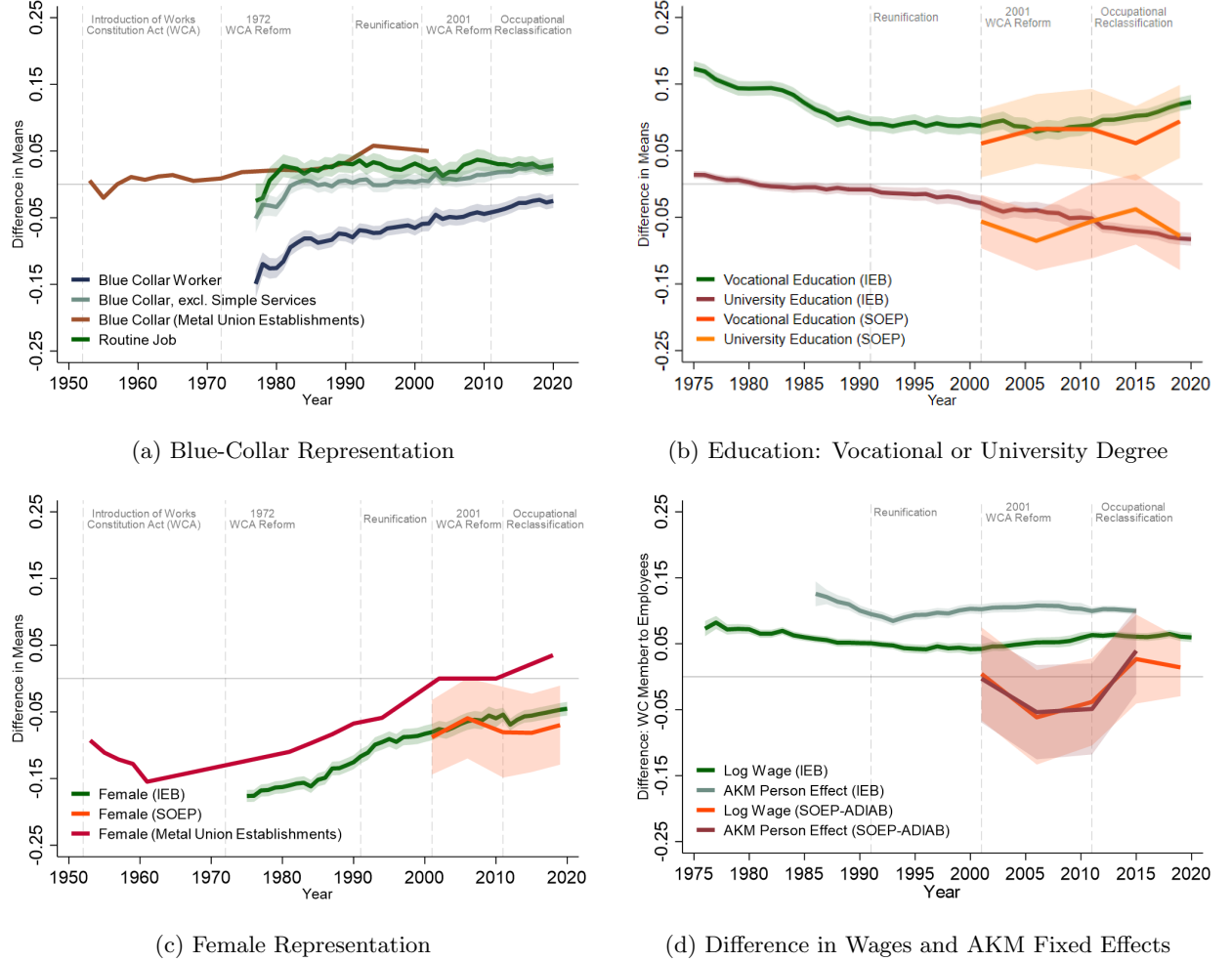
Figure 4: Works Council Representatives vs. Employees: Demographics, Occupation, Political Preferences and Personality (SOEP)



**Notes:** This figure compares characteristics of works council members to employees in works council establishments based on the IEB data and survey measures from the SOEP. It plots the representation gap defined as the difference in the average value of a measure of a given characteristic among works council members and the average value of the corresponding measure of the respective characteristic among employees in establishments with a works council. For the SOEP and SOEP-ADIAB data, we pool over all years in which work council membership is surveyed in the years 2001-2019, while the IEB is pooled over all years 2001-2019. We adjust the IEB data for a break in 2011 due to the occupational reclassification by estimating an RD model with a second-order polynomial and a bandwidth of 5 years on each side, and adding the estimated discontinuity to the pre-break period. SOEP-ADIAB and IEB data are weighted to be representative of employees of establishments with a works council. Bars indicate 95% confidence intervals with standard errors clustered at the individual/establishment level. SOEP non-WC-member employees are only included for workplaces with a works council. For details on the variable construction, see Appendix Section B. For wage and AKM differences, we report the mean difference to the establishment median (excluding the works council) measured in the year before joining the council. We use wage residuals from a regression on tenure, occupational status, education in years, gender, and age.



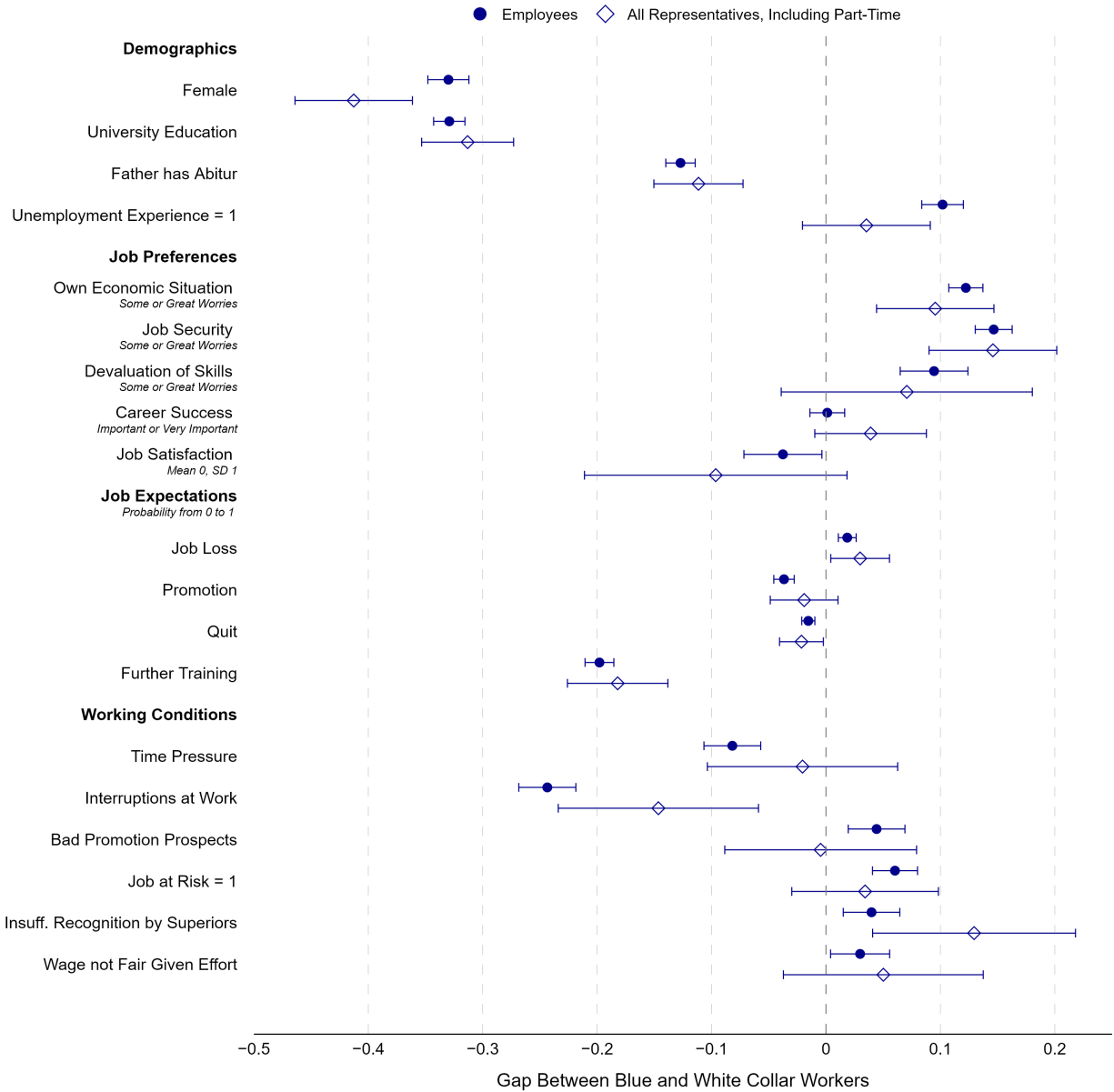
Figure 5: Works Council Representatives vs. Employees: Convergence in Blue-Collar, Female and Educational Representation, Stable Differences in Pre-Election Wages and AKM Fixed Effects



**Notes:** This figure shows the evolution of the difference in demographic characteristics between works council members and regular employees (not in a works council) in establishments with works councils over time. Shaded regions represent 95% confidence intervals. The time series for professional works council members is based on administrative data from the IEB, the time series for all works council members (professional and regular) is based on survey data from the SOEP. The IGM data comes from yearly reports by the Metal Union (IGM) and includes establishments covered by IGM collective bargaining agreements. For details on the datasets, see section 2. The time series are weighted to be representative of (regular) employees at establishments with a works council. We correct the IEB time series for a break in 2011 due to the occupational reclassification, by estimating an RD model with a second-order polynomial and a bandwidth of 5 years on each side and adding the estimated discontinuity to the *past* time series.

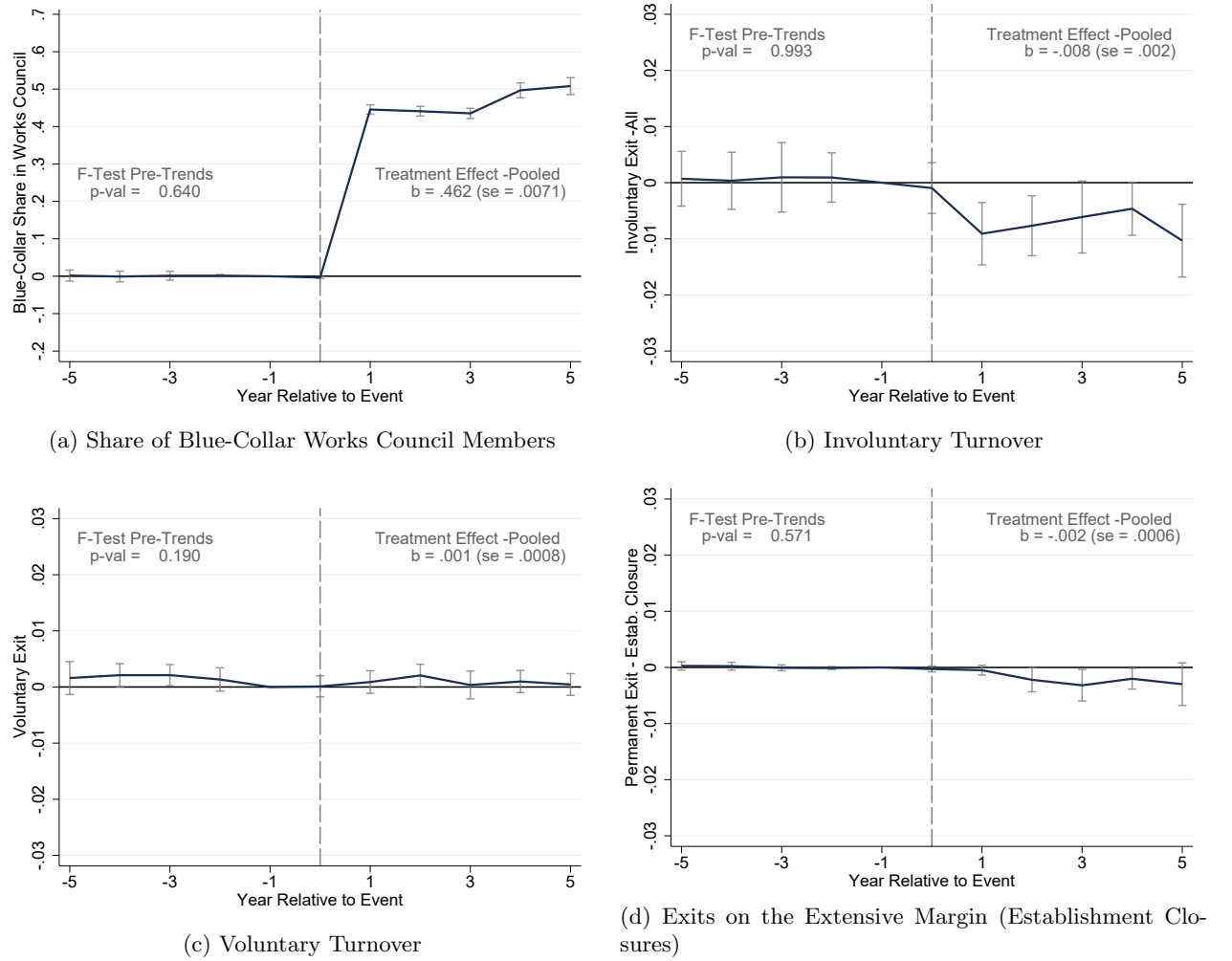


Figure 6: Blue-Collar versus White-Collar Preferences by Works Council Membership (SOEP)



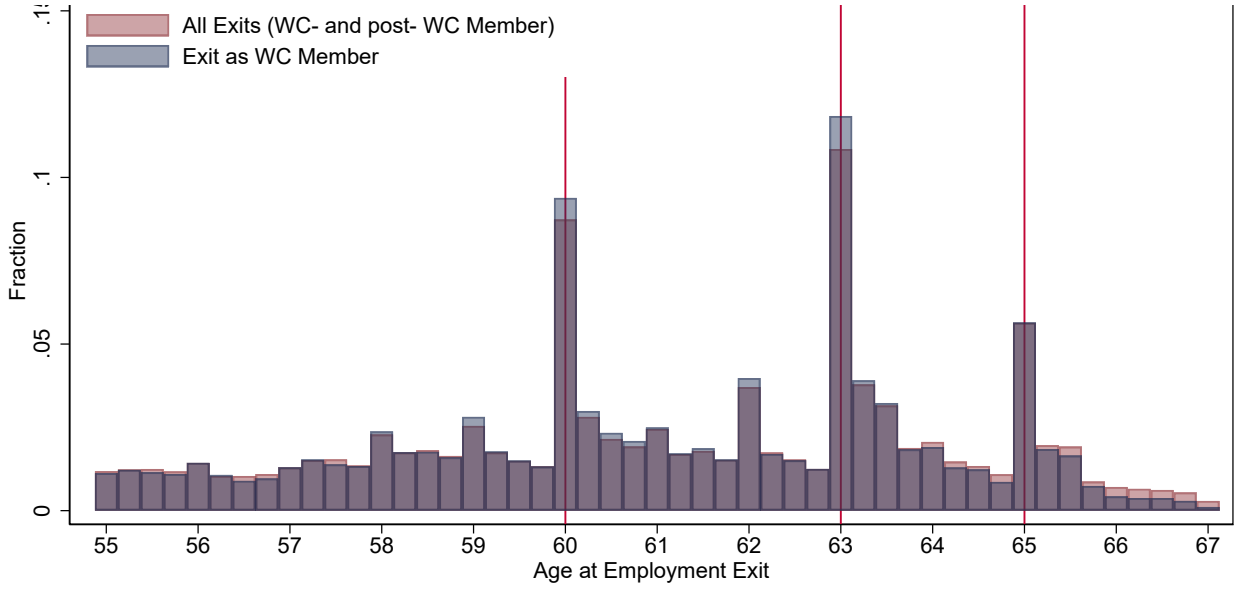
**Notes:** This figure compares characteristics of blue-collar to white-collar workers separately for employees and works council members. For each variable, the t-test for a difference in means comparing blue- to white-collar workers is plotted. Bars indicate 95% confidence intervals based on a normal approximation constructed using standard errors clustered at the individual level. Non-WC-member employees are only included for workplaces with a works council. For details on the variable construction, see Appendix Section B. Sample: age 20-65, full-time or part-time employment, not in school, no self-employed, no civil service, no apprenticeship or managerial position. Sample size (individuals):  $N_{blue}^{rep} = 486$ ,  $N_{white}^{rep} = 743$ ,  $N_{blue}^{emp} = 5066$ , and  $N_{white}^{emp} = 8436$ .

Figure 7: Event Study Estimates: Effect of Blue-Collar Representation on Turnover of Blue- and White-Collar Workers

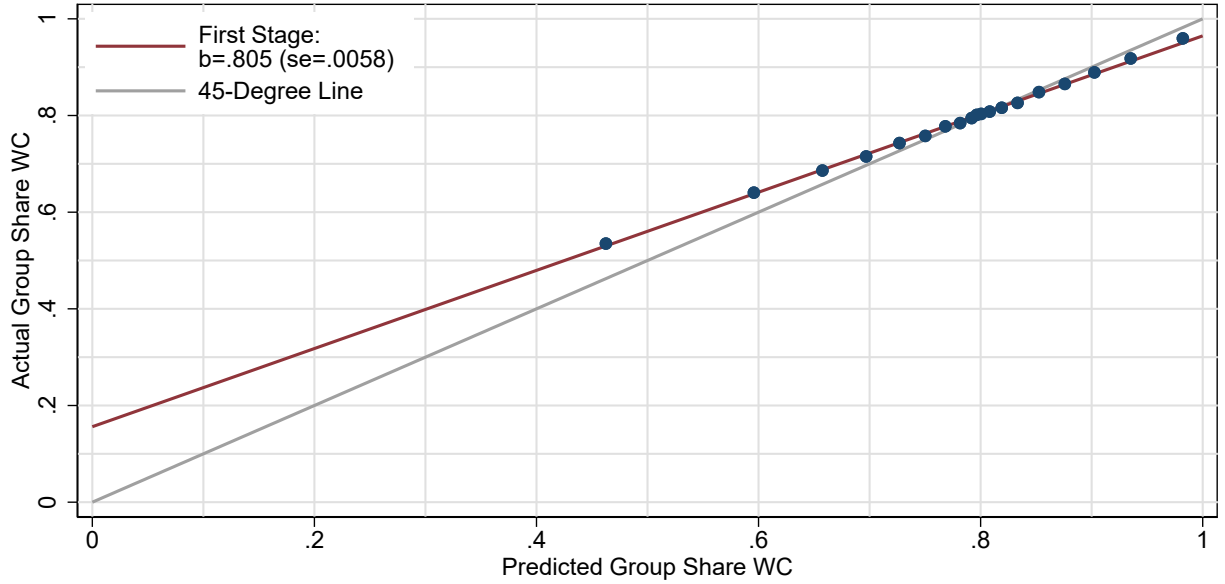


**Notes:** The figure presents event-study estimates for treated establishments that experienced their first large increase in the share of professional blue-collar representatives in their works council (increase of a  $\geq 33\%$  relative to pre-event year). Event-study specifications include matched control establishments that never underwent such an increase, using pre-event 1:1 propensity score matching based on log-firm-size, firm size dummies, blue-collar composition of the workforce and works council, and state-dummies in the year prior to event. Event study specifications are pooled for both groups, include establishment, year-to-event, year-to-event-group, and year FE. The estimates are weighted by the size of the workforce, excluding professional works council members. Corresponding event-study estimates separately by group are included in Appendix Figure A10. Standard errors are clustered at the establishment level.

Figure 8: Retirement IV: Excess-Exits and First Stage



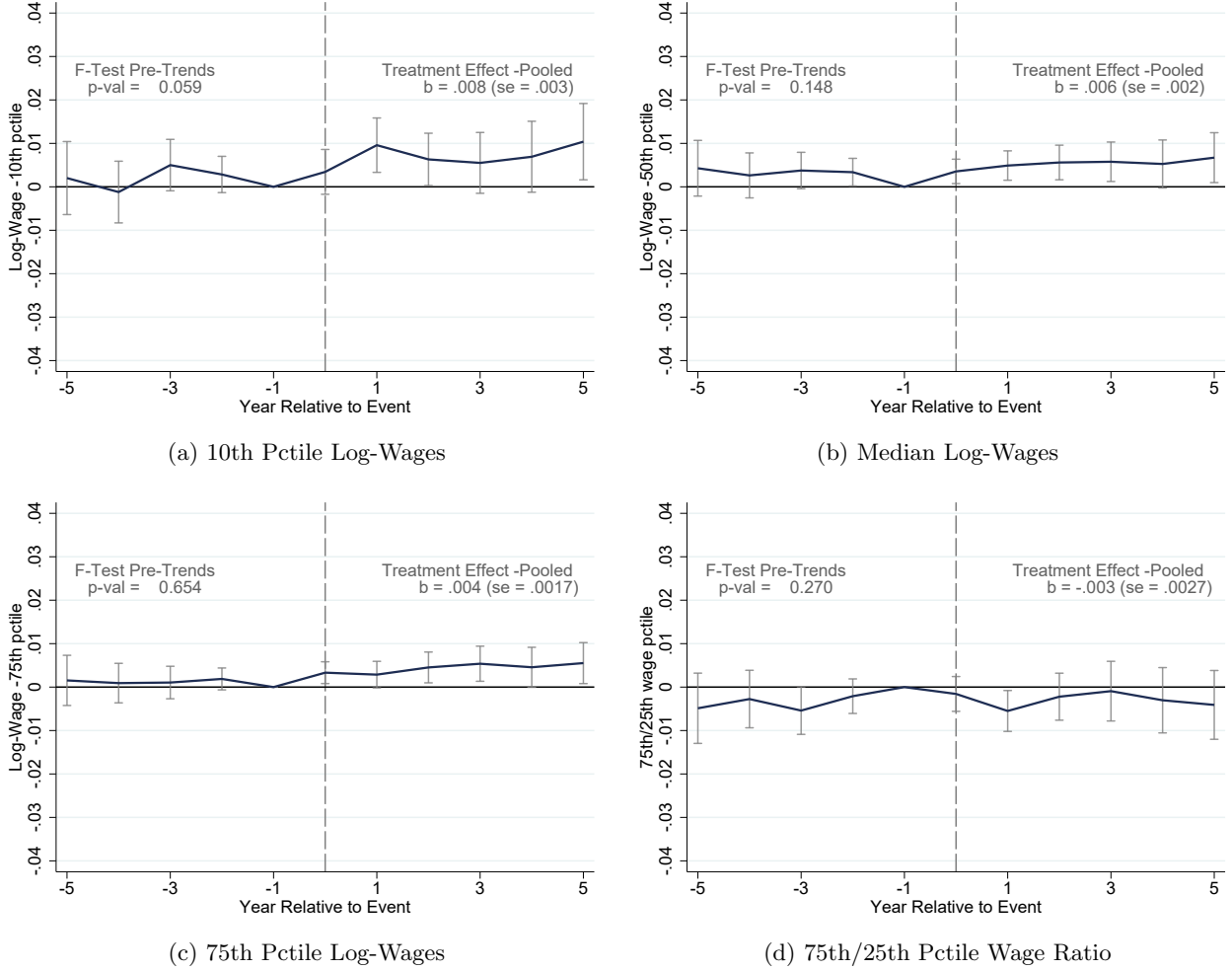
(a) Excess Exits at Common Retirement Ages



(b) First Stage of Group Representation: Actual (Imputed) - and Predicted Works Council Share

**Notes:** Panel (a) shows the distribution of the employment exit age (the age at the last observed employment spell) for professional works council members separately for whether they are a professional member at there last job, vs. all exits of individuals ever classified as professional councilors. Vertical lines at 60, 63 and 65 indicate common retirement ages (Seibold, 2021). Panel (b) displays the first stage binned scatter plots from regressing the actual group-share on the expected (exit-induced) group-share, controlling for establishment and year FE. First stage-coefficients and standard errors, clustered at the establishment level, are reported in the legend. Displayed figures are conditional on the instrument being non-zero. The corresponding 2nd-Stage IV estimates are displayed in Table 2 and 3.

Figure 9: Event Study Estimates: Effect of Blue-Collar Representation on Wages



**Notes:** The figure presents event-study estimates for treated establishments that experienced their first large increase in the share of professional blue-collar representatives in their works council (increase of a  $\geq 33\%$  relative to pre-event year) at treated establishments. Event-study specifications include matched control establishments that never underwent such an increase, using pre-event 1:1 propensity score matching based on log-firm-size, firm size dummies, blue-collar composition of the workforce and works council, and state-dummies in the year prior to event. Event study specifications are pooled for both groups, include establishment, year-to-event, year-to-event-group, and year FE. The estimates are weighted by the size of the workforce, excluding professional works council members. Corresponding event-study estimates separately by group are included in Appendix Figure A10. Standard errors are clustered at the establishment level.

Table 1: Differences between Blue- and White-Collar Workers

	Employees (Never in Works Council)			Works Council Member		
	(1) Blue-Collar	(2) White-Collar	(3) Difference (SE)	(4) Blue-Collar	(5) White-Collar	(6) Difference (SE)
<b>Panel A: Demographics and Labor Market Experience</b>						
Female	0.269	0.599	-0.33*** (0.009)	0.152	0.565	-0.413*** (0.026)
Education: Has University	0.061	0.39	-0.329*** (0.007)	0.035	0.349	-0.313*** (0.021)
I: Father has Abitur	0.06	0.187	-0.127*** (0.007)	0.059	0.171	-0.111*** (0.02)
I: Has Unemployment Experience	0.37	0.268	0.102*** (0.009)	0.291	0.256	0.035 (0.028)
<b>Panel B: Job Preferences</b>						
<i>Are you worried about ...</i>						
... own Economic Situation	0.74	0.617	0.122*** (0.008)	0.721	0.625	0.095*** (0.026)
... Job Security	0.56	0.413	0.147*** (0.008)	0.53	0.385	0.146*** (0.028)
... Devaluation of Skills	0.321	0.226	0.094*** (0.015)	0.273	0.202	0.071 (0.056)
Career Success: Important or Very Important	0.822	0.821	0.001 (0.008)	0.85	0.811	0.039 (0.025)
Job Satisfaction (Std.)	-0.038	-0.0	-0.038* (0.017)	-0.096	0.0	-0.096 (0.059)
<b>Panel C: Occupational Expectations over Next Two Years</b>						
<i>How likely is it that you will experience the following career changes within the next two years? (0-100%)</i>						
Job Loss	19.351	17.495	1.857*** (0.398)	18.831	15.848	2.983 (1.309)
Promotion	16.647	20.317	-3.671*** (0.455)	17.04	18.95	-1.909 (1.511)
Quit	6.535	8.084	-1.549*** (0.292)	5.845	7.991	-2.145 (0.977)
Further Training	27.431	47.231	-19.8*** (0.642)	30.85	49.058	-18.208*** (2.24)
<b>Panel D: Job Situation</b>						
<i>With which statements about possible job-related burdens of your current job do you agree?</i>						
Increasing Time Pressure	0.582	0.664	-0.082*** (0.013)	0.651	0.671	-0.021 (0.042)
Interruptions at Work	0.411	0.655	-0.244*** (0.013)	0.54	0.687	-0.146** (0.045)
Bad Promotion Prospects	0.641	0.597	0.044*** (0.013)	0.649	0.654	-0.005 (0.043)
Job at Risk	0.211	0.151	0.06*** (0.01)	0.176	0.142	0.034 (0.033)
Insufficient Recognition by Superiors	0.375	0.335	0.04*** (0.013)	0.51	0.38	0.129* (0.045)
Wage Not Fair Given Effort	0.504	0.474	0.03* (0.013)	0.588	0.538	0.05 (0.045)
N Observations	7529	13431		598	970	
N Individuals	5066	8436		486	743	

**Notes:** The table shows differences between blue and white-collar workers using the SOEP survey data. Blue-collar jobs are defined as agricultural, simple and qualified manual occupations, simple service occupations, and technicians. See Appendix Section C for details. *Panel (a)*: Indicator variables on demographic background and labor market experience. *Panel (b)*: Individual worries are surveyed on a three-step scale (big, some or no worries) and we combine the first two categories. We standardize reported job satisfaction (0-10 scale) to have mean zero and SD one in the sample. *Panel (c)*: Answers for occupation expectations are on a 0 (definitely not) to 100 (certainly) scale in steps of 10. *Panel (d)*: Each item asks whether individuals agree that their current job is characterized by a given feature. For details on outcomes, see Appendix Section B. Sample: Survey years 1999-2019, full-time or part-time employment and occupation information, age 20-65, not self-employed, not in civil service, not in an apprenticeship or school. Note some variables are only surveyed in a subset of years. Standard errors are clustered at the individual level. Asterisks denote significance levels 0.1, 0.05, and 0.01 using Romano-Wolf p-values correcting for testing all displayed hypotheses simultaneously. For details see Clarke et al. (2020).

Table 2: Effects of Blue-Collar Representation on Turnover of Blue- and White-Collar Workers

	Baseline Specifications		Retirement-Induced	Alternative IV Specifications	
	Event (1)	IV (2)	Event (3)	DiD-IV (4)	ITT-IV (5)
<b>Panel A: Involuntary Exits</b>					
Blue-Collar Representation	-0.0076*** [0.0020]	-0.0036* [0.0022]	-0.0102*** [0.0037]	-0.0059** [0.0027]	-0.0026 [0.0022]
Mean Dep Var	0.08	0.12	0.08	0.12	0.12
N Obs.	75120	337059	13810	295459	337059
N Establishments	2190	16986	391	15476	16986
<b>Panel B: Voluntary Exits</b>					
Blue-Collar Representation	0.0010 [0.0008]	-0.0009 [0.0007]	0.0024 [0.0027]	-0.0005 [0.0009]	-0.0009 [0.0007]
Mean Dep Var	0.01	0.01	0.01	0.01	0.01
N Obs.	74160	314775	13654	273790	314775
N Establishments	2190	16352	391	14853	16352
<b>Panel C: Exits on the Extensive Margin (Establishment Closures)</b>					
Blue-Collar Representation	-0.0021*** [0.0006]	0.0000 [0.0015]	-0.0020 [0.0015]	0.0001 [0.0017]	0.0005 [0.0016]
Mean Dep Var	0.00	0.04	0.00	0.05	0.04
N Obs.	75120	337059	13810	295459	337059
N Establishments	2190	16986	391	15476	16986
Increase Council Share	.462	1	.465	1	1

**Notes:** The table presents robustness estimates of the effect of blue-collar representation on outcomes. All estimates are based on event-study and retirement-IV estimates as outlined in the text. Standard errors (clustered at the event level) in parenthesis. \*, \*\* and \*\*\* refer to significance at the 10%, 5% and 1% significance level. Columns (1) and (2) represent baseline results for event study and IV specification respectively. Column (3) restricts to retirement-induced events for the event study specification. Column (4) employs a difference-in-difference type IV that estimates effects relative to 4 years before the event. Column (5) shows coefficient estimates for an intention to treat IV, where the threshold of crossing retirement age (becoming 63 and older) is used instead of actual retirement exits.

Table 3: Effects of Blue-Collar Representation on Wages of Blue- and White-Collar Workers

	Baseline Specifications		Retirement-Induced	Alternative IV Specifications	
	Event (1)	IV (2)	Event (3)	DiD-IV (4)	ITT-IV (5)
<b>Panel A: Log-Wage 10th Percentile</b>					
Blue-Collar Representation	0.0077*** [0.0030]	0.0185*** [0.0066]	0.0037 [0.0058]	-0.0098 [0.0060]	0.0185*** [0.0068]
Mean Dep Var	4.12	4.18	4.12	4.20	4.18
N Obs.	75120	337059	13810	295459	337059
N Establishments	2190	16986	391	15476	16986
<b>Panel B: Median Log-Wage</b>					
Blue-Collar Representation	0.0056*** [0.0020]	0.0127*** [0.0041]	0.0038 [0.0043]	-0.0086** [0.0041]	0.0119*** [0.0042]
Mean Dep Var	4.50	4.57	4.48	4.59	4.57
N Obs.	75120	337059	13810	295459	337059
N Establishments	2190	16986	391	15476	16986
<b>Panel C: Log-Wage 75th Percentile</b>					
Blue-Collar Representation	0.0045*** [0.0017]	0.0052 [0.0032]	0.0040 [0.0035]	-0.0106*** [0.0036]	0.0049 [0.0033]
Mean Dep Var	4.67	4.74	4.65	4.77	4.74
N Obs.	75120	337059	13810	295459	337059
N Establishments	2190	16986	391	15476	16986
Increase Council Share	.462	1	.465	1	1

**Notes:** The table presents robustness estimates of the effect of blue-collar representation on outcomes. All estimates are based on event-study and retirement-IV estimates as outlined in the text. Standard errors (clustered at the event level) in parenthesis. \*, \*\* and \*\*\* refer to significance on the 10%, 5% and 1% significance level. Columns (1) and (2) display baseline results for event study and IV specifications respectively. Column (3) restricts to retirement-induced events for the event study specification. Column (4) employs a difference-in-difference type IV that estimates effects relative to four years prior to the event. Column (5) shows coefficient estimates for an intention to treat IV, where the threshold of crossing retirement age (becoming 63 and older) is used instead of actual retirement exits.

Table 4: Heterogeneity in Treatment Effects — Turnover

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
			Establishment.	Heterogeneity					
	Majority > .5	First BC	Large Firms	Manufacturing Sector	High Wage Gains of WC	Positive Wage Gains of WC	Age > 50	Educ high	Above Median individual AKM FE
<b>Panel A: Involuntary Exits</b>									
Effect of Blue-Collar Representation	-0.0076***	-0.0060*	-0.0084***	-0.0092***	-0.0076*	-0.0078*	-0.0075***	-0.0065*	-0.0017
	[0.0021]	[0.0025]	[0.0021]	[0.0023]	[0.0035]	[0.0035]	[0.0021]	[0.0027]	[0.0023]
Effect of Blue-Collar Representation x Hetero Var	-0.0002	-0.0024	0.0016	0.0022	0.0002	0.0005	0.0027	-0.0023	-0.0026**
	[0.0020]	[0.0019]	[0.0017]	[0.0018]	[0.0029]	[0.0027]	[0.0015]	[0.0013]	[0.0010]
Mean Dep Var	0.080	0.080	0.080	0.080	0.077	0.077	0.099	0.075	0.050
Mean Hetero Var	0.219	0.704	0.384	0.696	0.460	0.712	0.499	0.476	0.501
N Obs.	75120	75120	75120	75120	20686	20686	148364	137132	117773
N Estab.	2190	2190	2190	2190	573	573	2190	2190	1688
<b>Panel B: Voluntary Exits</b>									
Effect of Blue-Collar Representation	0.0011	0.0026*	0.0004	0.0007	0.0006	0.0002	0.0009	0.0003	0.0014
	[0.0008]	[0.0011]	[0.0008]	[0.0011]	[0.0012]	[0.0014]	[0.0007]	[0.0008]	[0.0008]
Effect of Blue-Collar Representation x Hetero Var	-0.0003	-0.0023*	0.0011	0.0004	-0.0008	-0.0000	-0.0004	0.0007	0.0004
	[0.0009]	[0.0010]	[0.0008]	[0.0009]	[0.0011]	[0.0011]	[0.0003]	[0.0005]	[0.0003]
Mean Dep Var	0.011	0.011	0.011	0.011	0.011	0.011	0.008	0.013	0.007
Mean Hetero Var	0.218	0.704	0.385	0.696	0.461	0.712	0.500	0.474	0.501
N Obs.	74160	74160	74160	74160	20429	20429	146548	134621	116496
N Estab.	2190	2190	2190	2190	573	573	2190	2190	1688
<b>Panel C: Permanent Exits</b>									
Effect of Blue-Collar Representation	-0.0021**	-0.0015	-0.0012	-0.0027**	-0.0020*	-0.0022*			
	[0.0006]	[0.0008]	[0.0008]	[0.0009]	[0.0009]	[0.0009]			
Effect of Blue-Collar Representation x Hetero Var	0.0002	-0.0008	-0.0018**	0.0009	0.0003	0.0005			
	[0.0007]	[0.0007]	[0.0006]	[0.0007]	[0.0008]	[0.0005]			
Mean Dep Var	0.001	0.001	0.001	0.001	0.001	0.001			
Mean Hetero Var	0.219	0.704	0.384	0.696	0.460	0.712			
N Obs.	75120	75120	75120	75120	20686	20686			
N Estab.	2190	2190	2190	2190	573	573			

**Notes:** The table shows heterogeneity in treatment effects for turnover outcomes by establishment characteristics (Column (1) - (6)) and by individual characteristics within establishment (Column (7) - (9)). Column (1) shows heterogeneity by whether the event changes the majority in the council to a strict (above 0.5) majority for blue-collar worker, Column (2) by whether already at least one blue-collar worker was in the council before vs. cases where it is the first council. Column (3) reports results for establishments below- vs. above median establishment size, Column (4) shows differences by manufacturing industry or not, Column (5) and (6) look at heterogeneity in the wage gains of WC members based on the estimates in Section 3. Column (5) shows above vs. below median wage gains and Column (6) looks at positive vs. negative wage gains. Column (7) compares differences by individuals above vs. below age 50, Column (8) compares individuals with above vs. below high-school education and Column (9) compares individuals with above vs. below median individual AKM fixed effects in the within establishment distribution.



Table 5: Heterogeneity in Treatment Effects — Wages

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Establishment. Heterogeneity						Individual Heterogeneity		
	Majority > .5	First BC	Large Firms	Manufacturing Sector	High Wage Gains of WC	Positive Wage Gains of WC	Age > 50	Educ high	Above Median individual AKM FE
<b>Panel A: 10th Pctile Log Wages</b>									
Effect of Blue-Collar Representation	0.0080*	0.0080	0.0045	-0.0053	0.0008	-0.0062	0.0046	0.0047	0.0026
	[0.0031]	[0.0048]	[0.0033]	[0.0048]	[0.0059]	[0.0084]	[0.0038]	[0.0039]	[0.0047]
Effect of Blue-Collar Representation x Hetero Var	-0.0012	-0.0004	0.0065	0.0182***	0.0040	0.0121	0.0003*	0.0004	0.0006
	[0.0053]	[0.0049]	[0.0040]	[0.0047]	[0.0063]	[0.0083]	[0.0002]	[0.0009]	[0.0004]
Mean Dep Var	4.200	4.200	4.200	4.200	4.230	4.230	4.207	4.217	4.231
Mean Hetero Var	0.219	0.704	0.384	0.696	0.460	0.712	0.499	0.476	0.501
N Obs.	75120	75120	75120	75120	20686	20686	148364	137132	117773
N Estab.	2190	2190	2190	2190	573	573	2190	2190	1688
<b>Panel B: Median Log Wages</b>									
Effect of Blue-Collar Representation	0.0059**	0.0059*	0.0015	-0.0027	0.0046	-0.0000	0.0021	0.0022	0.0013
	[0.0021]	[0.0029]	[0.0022]	[0.0030]	[0.0035]	[0.0047]	[0.0031]	[0.0031]	[0.0038]
Effect of Blue-Collar Representation x Hetero Var	-0.0012	-0.0004	0.0082**	0.0116***	0.0008	0.0068	0.0003*	-0.0000	0.0007*
	[0.0034]	[0.0030]	[0.0025]	[0.0030]	[0.0046]	[0.0052]	[0.0002]	[0.0007]	[0.0003]
Mean Dep Var	4.563	4.563	4.563	4.563	4.578	4.578	4.509	4.517	4.539
Mean Hetero Var	0.219	0.704	0.384	0.696	0.460	0.712	0.499	0.476	0.501
N Obs.	75120	75120	75120	75120	20686	20686	148364	137132	117773
N Estab.	2190	2190	2190	2190	573	573	2190	2190	1688
<b>Panel C: 75th Pctile Log Wages</b>									
Effect of Blue-Collar Representation	0.0047**	0.0044	0.0011	-0.0001	0.0017	-0.0007	0.0009	0.0007	-0.0004
	[0.0017]	[0.0024]	[0.0019]	[0.0025]	[0.0034]	[0.0048]	[0.0030]	[0.0031]	[0.0037]
Effect of Blue-Collar Representation x Hetero Var	-0.0011	0.0001	0.0066**	0.0064*	-0.0009	0.0028	0.0002	-0.0001	0.0006*
	[0.0029]	[0.0026]	[0.0023]	[0.0026]	[0.0042]	[0.0050]	[0.0001]	[0.0007]	[0.0003]
Mean Dep Var	4.726	4.726	4.726	4.726	4.735	4.735	4.674	4.682	4.707
Mean Hetero Var	0.219	0.704	0.384	0.696	0.460	0.712	0.499	0.476	0.501
N Obs.	75120	75120	75120	75120	20686	20686	148364	137132	117773
N Estab.	2190	2190	2190	2190	573	573	2190	2190	1688

**Notes:** The table shows heterogeneity in treatment effects for wage outcomes by establishment characteristics (Column (1) - (6)) and by individual characteristics within establishment (Column (7) - (9)). Column (1) shows heterogeneity by whether the event changes the majority in the council to a strict (above 0.5) majority for blue-collar worker, Column (2) by whether already at least one blue-collar worker was in the council before vs. cases where it is the first council. Column (3) reports results for establishments below-, vs. above median establishment-size, Column (4) shows differences by manufacturing industry or not, Column (5) and (6) look at heterogeneity in the wage gains of WC members based on the estimates in Section 3. Column (5) shows above vs. below median wage gains and Column (6) looks at positive vs. negative wage gains. Column (7) compares differences by individuals above vs. below age 50, Column (8) compares individuals with above vs. below high-school education and Column (9) compares individuals with above vs. below median individual AKM fixed effects in the within establishment distribution.

# Online Appendix of: Worker Representatives

Julian Budde, Thomas Dohmen, Simon Jäger, and Simon Trenkle

## Contents

<b>A</b>	<b>Data and Sample Selection</b>	<b>48</b>
A.1	IEB . . . . .	48
A.2	SOEP . . . . .	48
A.3	Metal Union (IGM) Data . . . . .	49
<b>B</b>	<b>SOEP Outcomes</b>	<b>49</b>
B.1	Timing of SOEP Outcomes . . . . .	51
<b>C</b>	<b>Occupation Coding</b>	<b>51</b>
C.1	Blue Collar Definition . . . . .	51
C.2	Complementary Task Classifications . . . . .	52
<b>D</b>	<b>Appendix Figures</b>	<b>54</b>
<b>E</b>	<b>Appendix Tables</b>	<b>66</b>

## A Data and Sample Selection

### A.1 IEB

We draw a sub-sample from the universe of employment relationships subject to social security contributions for the period 1975-2019. This sample includes the full history of all individuals working as a representative in some function (“Verbandsleiter, Funktionär”, Occupation Code *Klassifikation der Berufe* (KldB) 1988 = 763). For these histories, the sampled dataset also includes detailed information on their *co-worker* histories, including education, occupational classifications, gross labor income and (un-)employment spells.

The dataset is constructed in the following way: (1) We first determine all establishment-year cells with a *representative* (KldB 1988 = 763). We then determine the set of relevant *co-workers* using the full history of representatives. This allows us to generate co-worker information for the full biography of representatives, for example for different establishments or years prior to works council membership.

(2) In a second step we generate biographical information for all representatives and co-workers, before reducing the dataset to a yearly panel of employment spells active on the 30th of June (a common cutoff date used in aggregated IAB data).

(3) Lastly, we collapse the co-worker information on the establishment-year level and keep observations of individuals observed in a works council at least once throughout their career. For example, this includes generating information on the individual wage rank, the number of employees working in different occupation groups or having attained different education levels in a given establishment and year.

### A.2 SOEP

The Socio-Economic Panel (SOEP) is a representative annual household panel survey that has been running since 1984. In the most recent waves, about 15,000 households or 30,000 individuals are surveyed each year.

We mostly utilize the “Core” dataset of the SOEP, which among other things contains answers from annual personal survey questionnaires. For details see Goebel et al. (2019).

To identify individual works council membership as well as the presence of a works council at the respondent’s establishment we use two questions from the personal questionnaire:

- “Are you a member of one of the following organisations or unions? — Works or staff council at your place of work?”
- “Does an employee’s council exist at your place of work?”

The question on individual work council *membership* is surveyed 2001, 2003, 2006, 2007, 2011, 2015, and 2019. The question on the *existence* of a works council at the current establishment is surveyed in 2001, 2006, 2011, 2016 and 2019.

To select consistent samples of employees and representatives we restrict the sample to years in which both questions are surveyed (2001, 2006, 2011, and 2019) and restrict to cases where a works council at the current establishment exists. Additionally, we include the year 2015 and impute establishment-level work council existence.<sup>1</sup> Note that some outcomes are not surveyed every year so we resort to imputing outcomes from earlier years, see Section B.

We do not restrict the work council member sample any further, except for excluding individuals reporting to be civil servants, since the institutional setting is different in this case. For the sample of employees represented by the works council we set the following restrictions: age 20-65, full-time or part-time employment, not in school, not self-employed, not a civil servant, not in non-employment or apprenticeship, not in a management position and with non-missing establishment size information<sup>2</sup>.

### A.3 Metal Union (IGM) Data

The German Metal Union “IG Metall” publishes annual reports on the activities of the union and its covered establishments. These reports also cover information on council elections. In particular, it covers information on the workforce and the works council of establishments that are covered by a collective agreement. The IGM covers automobile-, steel-, it and communication-, engineering-, metal and electronic-, railway-, and related sectors. The separate reporting of blue-collar versus white-collar workers stems from the fact that these groups (*Arbeiter* and *Angestellte* in German) historically had different collective bargaining agreements and also partly differing social security institutions.

## B SOEP Outcomes

**Parental Education:** Parental education (separately by father and mother) is surveyed in the biography questionnaire of the SOEP and recorded in 10 levels (0 Don’t know, 1 Hauptschule, 2 Realschule, 3 Fachoberschule, 4 Abitur, 5 Other, 6 None, 8 Migrants: Mandatory Schooling, 9 Migrants: Further Education). We generate a dummy for whether the father has Abitur (category 4), but exclude individuals who don’t recall their father’s education level (category 0) or report another education level (category 5).

**Own Education:** We construct an education variable to resemble the educational classification in the IEB using the ISCED97 classification (variable *pgiscd97* in the SOEP-generated dataset *pgen*) as follows: *No vocational degree*: inadequate and general elementary education. *Vocational degree*: middle vocational, Abitur and vocational, as well as higher vocational education. *University degree*: all higher education.

<sup>1</sup>Imputing is conditional on not changing jobs and older information takes precedence (since establishing a works council is a higher probability event than disestablishing). For example, if someone reports to work at an establishment with a works council in 2011 and does not change jobs, we assume the existence of a council also in 2015. If the individual was not surveyed in 2011 or changed jobs, but has not changed jobs from 2015 to 2016, we will use the 2016 information.

<sup>2</sup>Restricting to non-missing establishment size categories is quantitatively inconsequential, affecting (< 1%) of all observations conditional on the other restrictions.

**Blue Collar, Manual, Routine Occupations:** See Section C.

**Wages:** Wages are the self-reported current gross labor income referring to the previous month in the current job (variable *pglabgro* in the SOEP-generated dataset *pgen*). Respondents are asked to consider over-time payments but to exclude one-time payments. Item non-response is imputed by the SOEP using either longitudinal individual information or a wage regression. For details see the SOEP-Core *pgen* survey paper. Throughout the analysis we consider real labor income indexed to 2010 using the CPI.

**Goals in Life:** We use three of the irregularly occurring goal in life questions: (i) the importance of career success, (ii) the importance of being there for others, and (iii) the importance of social and political activism. All three variables are measured on a 4-point scale from (1) very important to (4) not important at all. For out sample, the goal in life questions is surveyed in 2004, 2008, 2010, 2012, 2016.

**Political Interest:** Interest in politics on a 1-4 scale (1 = very strong, 2 = strong, 3 = not so strong, 4 = none at all). Surveyed in all years since the beginning of the SOEP.

**Political Preference - Right-Left:** Self-reported position on a 0 (most left) to 10 scale (most right), surveyed in years 2005, 2009, 2014 and 2019.

**Big Five:** The Big Five dimensions are each surveyed by three facets. Questions are included in the years 2005, 2009, 2012, 2013, 2017 and 2019. The survey module reads as follows: *People can have many different qualities—some are listed below. You will probably find that some of these descriptions fit you completely and that some do not fit you at all. Others may fit to a certain extent. Please answer on a scale from 1 to 7, where 1 means “does not describe me at all”, and 7 meaning “describes me perfectly”.*

The descriptions given in the survey are (sorted by their Big Five dimension):

- *Extraversion:* Communicative/talkative. Outgoing/sociable. Reserved.
- *Conscientiousness:* A thorough worker. Effective and efficient in completing tasks. Somewhat lazy.
- *Openness:* I am original, someone who comes up with new ideas. Someone who values artistic, aesthetic experiences. Imaginative.
- *Agreeableness:* Sometimes a bit rude to others. Forgiving. Considerate and kind to others.
- *Neuroticism:* A worrier. Nervous. Relaxed, able to deal with stress.

All dimensions are constructed by adding up all three facets (reverting items if necessary). For openness we do not use the “curiosity” facet because it is not surveyed in all years.

**Locus of Control:** The locus of control measure is constructed from the following items:

*The following statements describe different attitudes towards life and the future. To which degree do you personally agree with the individual statements? (7 step scale):* (1) “How my life goes depends on me.”, (2) “Compared to other people, I have not achieved what I deserve.”, (3) “What a person achieves in life is above all a question of fate or luck.”, (4) “I frequently have the experience that other people have a controlling influence over my life.”, (5) “One has to work hard in order to succeed”, (6) “If I run up against difficulties in life, I often doubt my own abilities.”, (7) “The opportunities that I have in life are determined by the social conditions.”, (8) “Inborn I have little control over the things that happen in my life.”

We extract one factor using a principal component analysis and revert the factor such that a higher value represents a higher *internal* locus of control.

**Tenure:** Measured as the time with the same employer in years based on the start date with the current employer and the date of the interview (variable *pperzeit* in the SOEP-generated *pgen* dataset). Gaps in between employment spells at the same employer are not excluded. The variable is available for all survey years.

**Unemployment experience:** Total unemployment of the respondent up to the point of the interview measured in years (variable *pgexpue* in the SOEP-generated *pgen* dataset). The variable combines information from the 12-month calendar module surveying activities of respondents’ throughout the last calendar year, as well as annual information from the biography questionnaire from individuals entering the SOEP. The variable is available for all survey years.

**Worries:** We focus on five worries: general economic development, personal economic situation, personal job security, devaluation of occupational skills and not keeping up with technological change. The first three topics are surveyed in every wave, while worries about the devaluation of skills and technological change are only added in the 2019 survey. Worries are reported on a three point scale: (1) great worries, (2) some worries, (3) no worries.

**Job Satisfaction:** Job satisfaction is surveyed each year (conditional on employment), using the question: “How satisfied are you today with the following areas of your life? - (if employed) With your job?” (answers on a 0-10 scale).

**Occupational Expectations Next Two Years:** Occupational expectations are surveyed for all employed individuals bi-annually from 1999-2009 as well as 2013, 2015 and 2018.<sup>3</sup> The survey question is: “How likely is it, that the following changes will occur within the next two years?”. The changes in question are: Pro-actively looking for a new job, losing ones job, be promoted in the current establishment, becoming self-employed (if not already self-employed), change occupations, temporarily or permanently exit the workforce, worsening of the position in the current establishment, retire (if not already), change from part-time to full-time or vice-versa, participate in further training in the form of workshops/courses/seminars, and receive a salary increase beyond increases due to collective bargaining agreements.

**Job Situation:** All items are originally from the effort-reward imbalance module and surveyed in 2006, 2011, 2012 and 2016. Each questions asks whether individuals agree or disagree with a particular proposition about their job. Conditional on agreement (or disagreement for some items), individuals are asked how much stress results from this situation (none, mediocre, strong, or very strong). The propositions we focus on are

- Increasing time pressure: “The amount of work has increased steadily over the last two years.”
- Interruptions at work: “I am often interrupted and distracted while working.”
- Promotion prospects: “The chances of promotion in my company are bad.”
- Job at risk: “My job is in jeopardy.”
- Recognition from superiors: “I receive the recognition I deserve from my superiors.”
- Wage fair: “When I consider all my accomplishments and efforts, my pay seems appropriate.”

## B.1 Timing of SOEP Outcomes

Not all outcomes above are observed in the years in which works council membership is surveyed. When required, we impute SOEP outcomes *forward* in time and hold years in which works council membership is surveyed fixed (2001, 2006, 2011, 2015, 2019). For example, Big Five items are surveyed in 2005, so we use these values for the 2006 sample. The following table displays the timing of most relevant variables (excluding those annually surveyed).

# C Occupation Coding

## C.1 Blue Collar Definition

We define blue collar workers based on a classification suggested by Blossfeld (1985) grouping occupations into 12 categories based on the 1988 3-digit KldB. To generate the Blossfeld classification we use the same occupation information as for the task classification in both the IEB draw and the SOEP (see below).

---

<sup>3</sup>Expectations have also been surveyed before but using a four-category scale instead of percentages. Because works council membership is only surveyed from 2001 onward we do not make use of this data.

## SOEP Variable Availability

Variable	99	01	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19
WC Member		✓				✓					✓				✓				✓
Goals in Life				✓				✓		✓		✓				✓			
Political Orientation					✓				✓					✓					✓
Big Five					✓				✓			✓	✓				✓		✓
Locus	✓				✓					✓					✓				
Occupational Expectations	✓	✓	✓		✓		✓		✓				✓		✓			✓	
Job Situation						✓					✓	✓				✓			

We define the following groups as *blue collar*: Occupations with mainly agricultural tasks; simple manual occupations (share of unqualified individuals  $\geq 60\%$ ); qualified manual occupations (share of unqualified individuals at most 40%); simple service occupations; and technicians.

The following groups are defined as *white collar*: engineers; qualified service occupations; semi-professions (scientifically oriented service occupations); professions (highly-qualified service occupations); simple business and administrative occupations; qualified business and administrative occupations; managerial occupations.

Table A3 displays the largest 15 occupation groups separately by blue and white collar status using the SOEP data.

## C.2 Complementary Task Classifications

Throughout the analysis we use additional task-based occupation classifications following Dengler et al. (2014), who propose task measures based on an expert database used by the German Federal Employment Agency for career guidance and job placement. In particular, we use their 2011 version based on the 3-digit 1988 KldB occupation code. Note that for the IEB data, in 2011 notifications switch to the new 2010 KldB occupation code. For the years 2011 and later we use the variable recoded to the KldB 1988 classification provided by the IAB. For the SOEP, we use variables generated by the SOEP based on respondents' self-reported occupation titles (variables *pgkldb2010* and *pgkldb92* in the dataset *pgen*). 4-digit KldB 1992 information is available from 1984-2017 while 3-digit KldB 2010 information is available from 2013-2019. We recode both to KldB 1988 3-digit levels and use KldB 1992 information up to and including 2012 and KldB 2010 information beyond.

Dengler et al. (2014) distinguish five tasks: manual routine, cognitive routine, analytical non-routine, interactive non-routine, and manual non-routine. Each occupation is assigned an estimated share of performed tasks falling into each of these five categories. We classify occupations as “manual”, whenever their largest share of tasks is either manual routine or manual non-routine. We classify occupations as “routine”, whenever their largest share of tasks is either cognitive routine or manual routine. The correlation between our blue collar classification (including simple services) and the two classifications is 0.52 (“manual”) and 0.16 (“routine”) in our main SOEP sample.

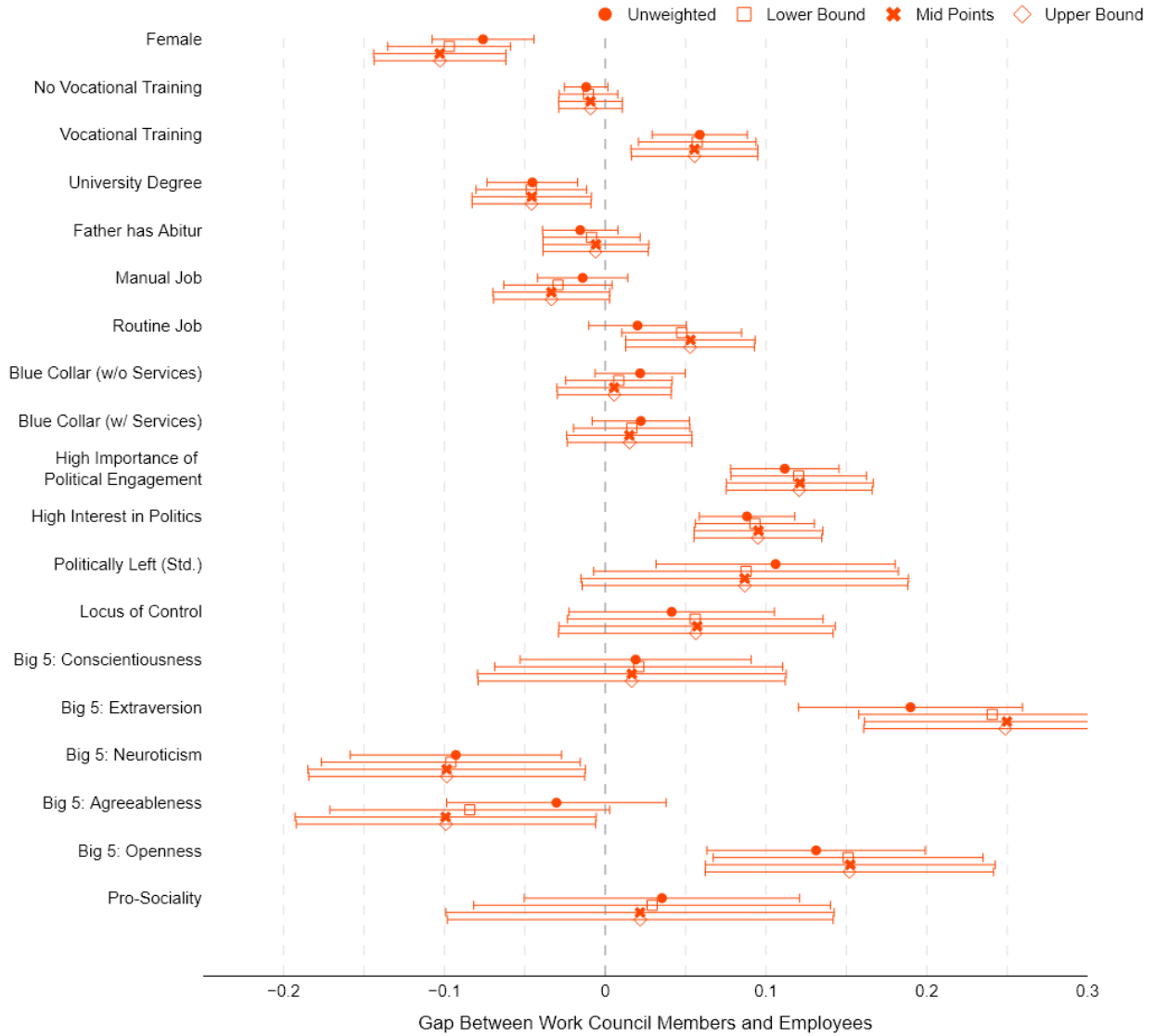
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**Goebel, Jan, Markus M Grabka, Stefan Liebig, Martin Kroh, David Richter, Carsten Schröder, and Jürgen Schupp**, “The German Socio-Economic Panel (SOEP),” *Jahrbücher Für Nationalökonomie Und Statistik*, 2019, *239* (2), 345–360.

## D Appendix Figures

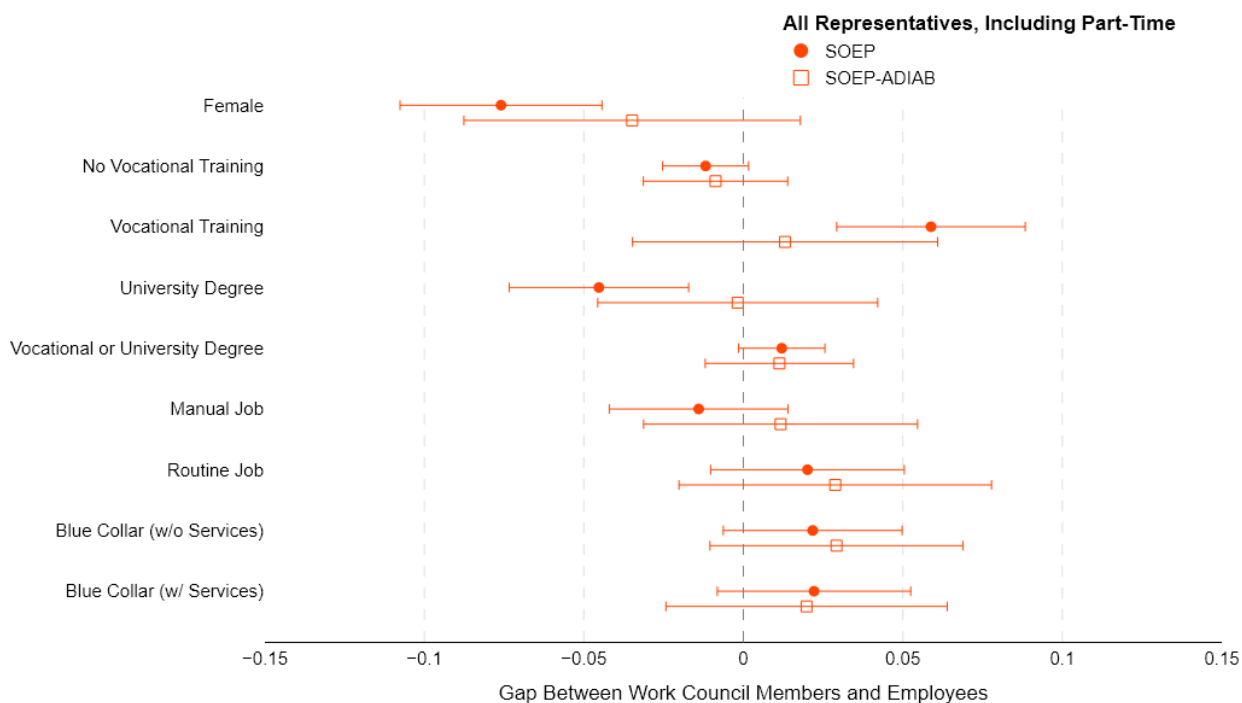
Figure A1: SOEP: Differences WC to Employees by Weighting Scheme



**Notes:** This figure plots difference in mean characteristics between works council members and represented employees for different weighting schemes. Sample restrictions and variable definitions are similar to the main specifications reported in the paper. Weighting schemes differ by the weight they give to works council member observations. Employee observations receive a weight of one in all specifications. Works council weights are the number of employees represented by a given councillor, which we proxy by the establishment size divided by the legally required works council size (which itself is a function of establishment size). The SOEP only includes coarse information on establishment size reported in categories of different size. *No weighting* assigns a weight of 1 to all works council observations. *Lower*, *mid*, *upper* bound compute the weights (number of represented employees) based on the lower bound, mid point, or upper bound of the firm size category respectively. For the largest, open-end category we assume a cap of 50,000 employees. The firm size categories are as follows (as recorded in the SOEP generated variable `pgbetr`): Below 5, 5-10, 11-20, below 20, 5-20, 20-100, 100-200, 20-200, 200-2000, 2000 and more. Note the overlapping categories are a result of different formulations in the survey over time.

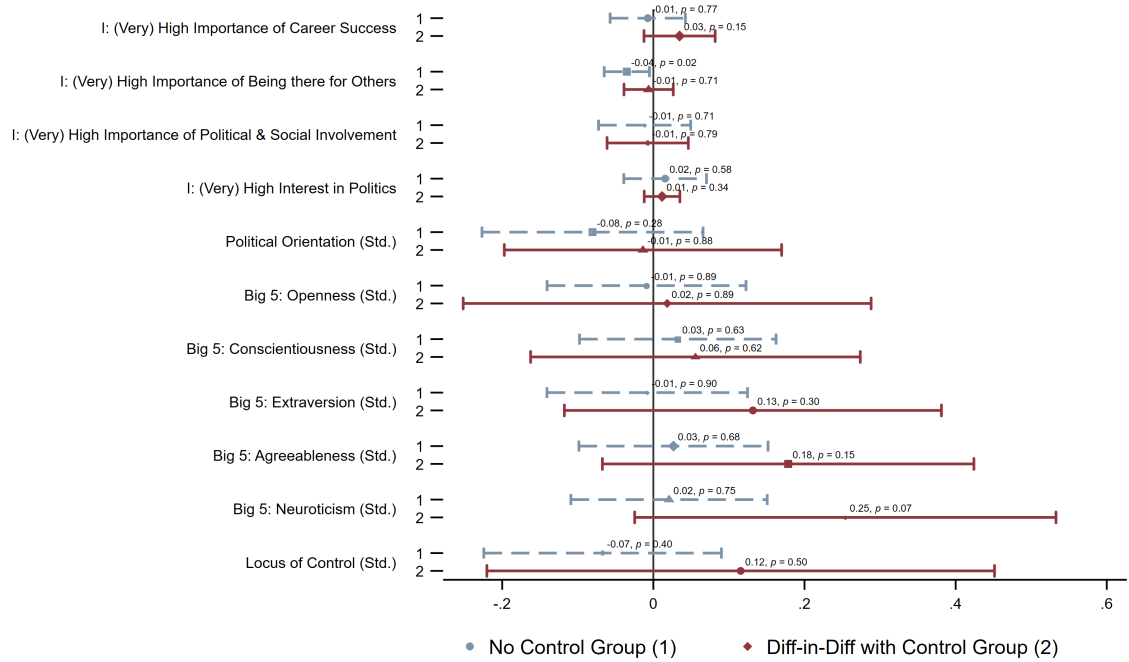


Figure A2: Works Council Representatives vs. Employees: Comparing population-level and establishment-level measures using the SOEP linked to the Administrative data



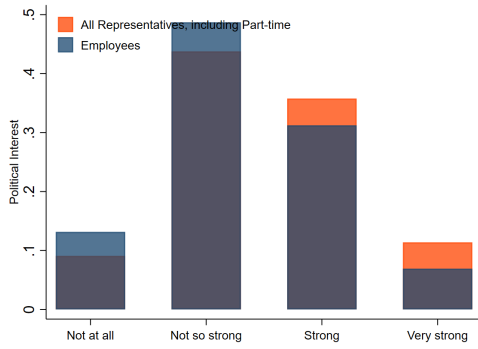
**Notes:** This figure shows mean differences for demographic and occupational characteristics between works council members and non-members. *SOEP* refers to the sample of all representatives (professional and non-professional) from the SOEP survey, whereas *SOEP-ADIAB* refers to the sub-sample of the SOEP linked to the administrative IEB data. Outcomes in the SOEP-ADIAB are constructed using the administrative IEB data, while those for the SOEP are based on survey responses. For the SOEP we report the difference in means for a random sample of employees from establishments with works councils, while the SOEP-ADIAB data allows us to directly consider the difference to employees working at the same establishments at which works councillors are observed.

Figure A3: SOEP - Pre Measurements

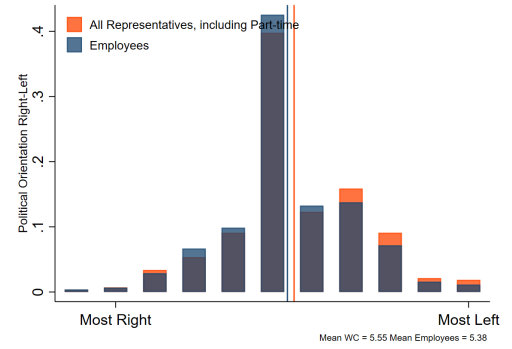


**Notes:** This figure estimates whether joining a works council has an effect on preference- and personality measures in the SOEP. We construct a sample of work council members for which we observe measures at least one time before and one time after joining the works council. The graph displays the results of two regressions for each characteristic. For (1) we restrict to work council members and regress each outcome on election period dummies and a post-works-council-entry dummy. The figure reports for each outcome the coefficient and 95% confidence interval from the post-works-council-entry dummy. Specification (2) additionally includes never treated control units (employees who are never observed as works councilors) where we randomly pick two successive election periods for each individual. We restrict to employees from establishments with a works council, but do not restrict the sample any further to maximize sample size. We regress each outcome on a dummy for works council membership, post entry period, and election period indicators. We report the coefficient on WC membership which measures the differential change in the outcome variable for work council members.

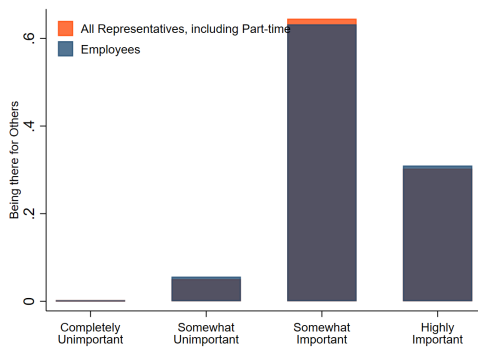
Figure A4: Works Council Representatives: Distributions of Political Preferences (SOEP)



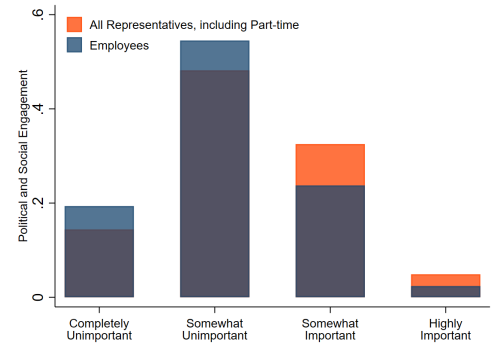
(a) Political Interest



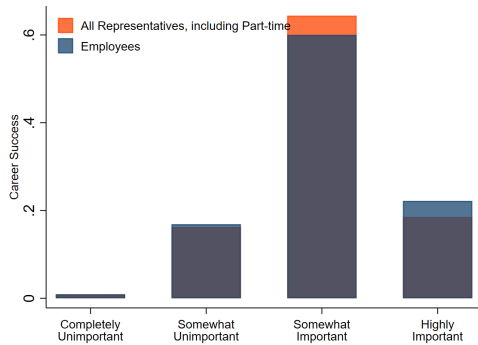
(b) Political Orientation Left-Right



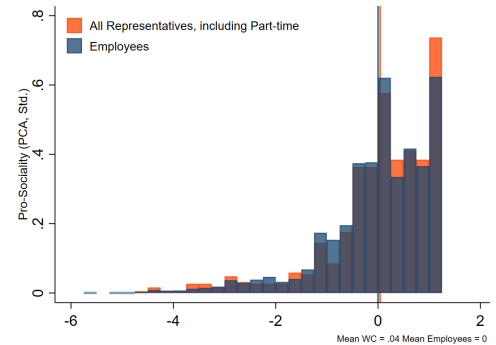
(c) Importance: Being There For Others



(d) Importance: Political and Social Involvement



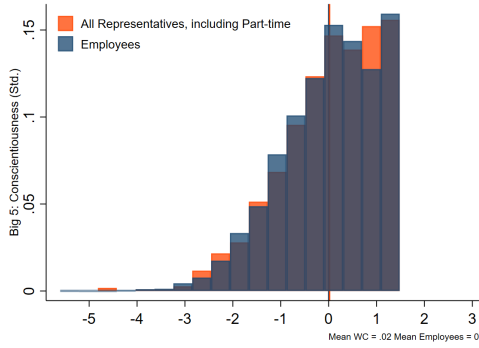
(e) Importance: Career Success



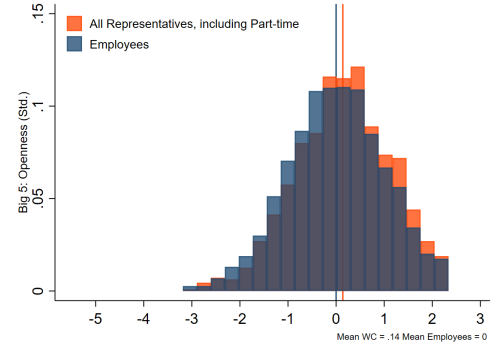
(f) Pro-Sociality (PCA, Std.)

**Notes:** This figure compares the distribution of characteristics of works council members to those of employees in establishments with a works council using survey measures from the SOEP. Employees not in a works council are only included for workplaces with a works council. For details on the variable construction see Appendix Section B.

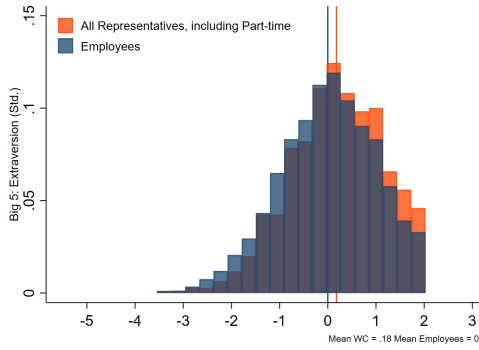
Figure A5: Works Council Representatives: Distributions of Personality Measures (SOEP)



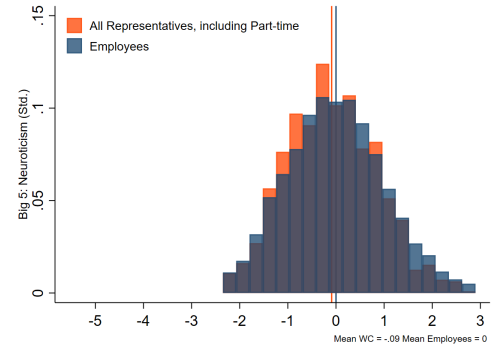
(a) Big Five: Conscientiousness



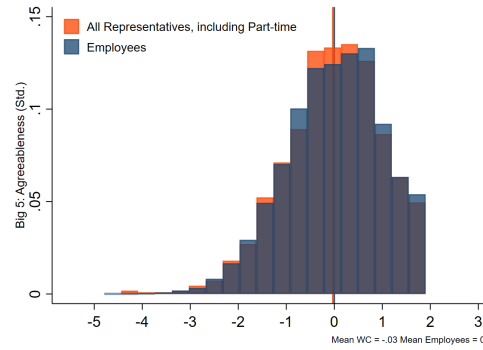
(b) Big 5: Openness



(c) Big 5: Extraversion



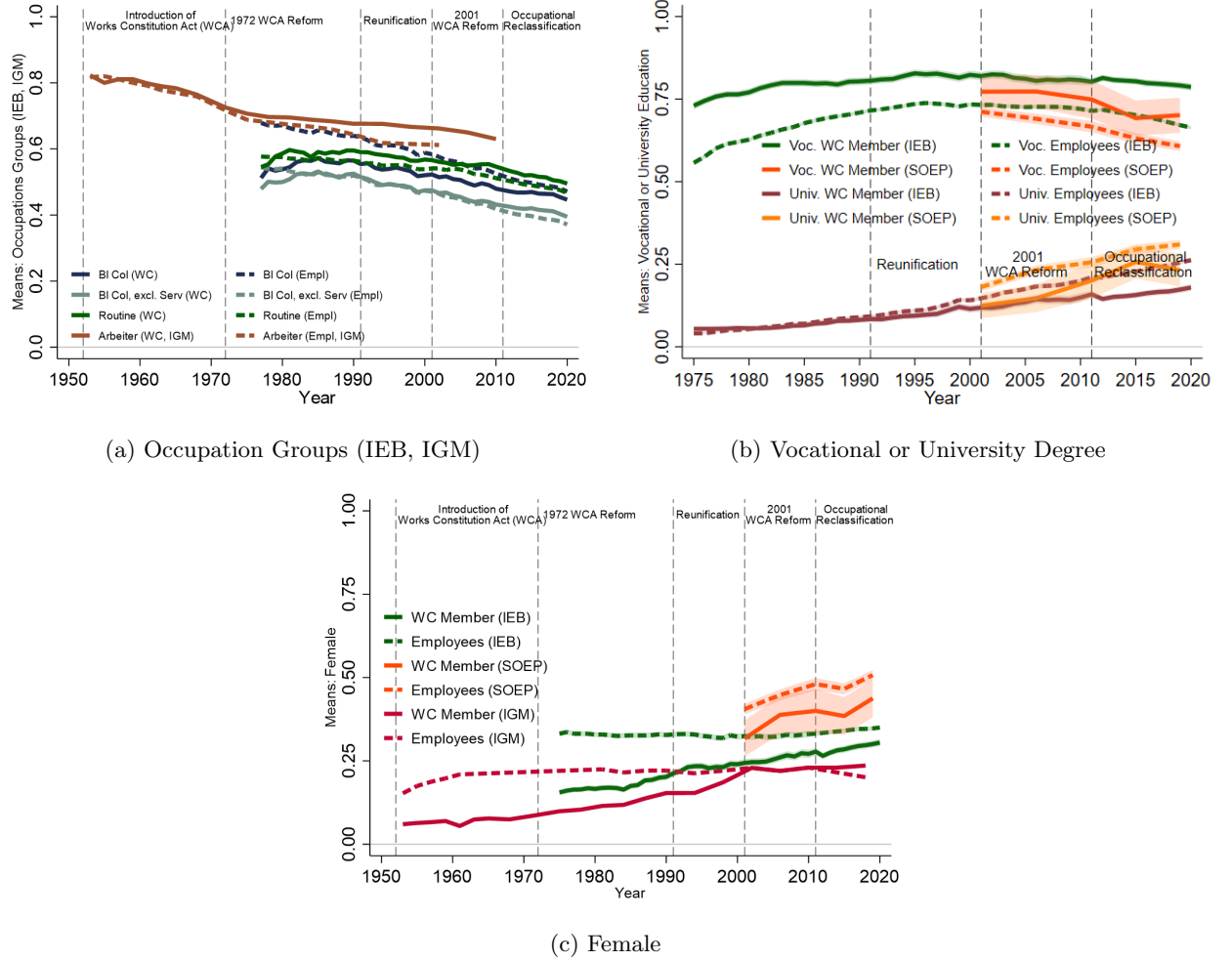
(d) Big 5: Neuroticism



(e) Big 5: Agreeableness

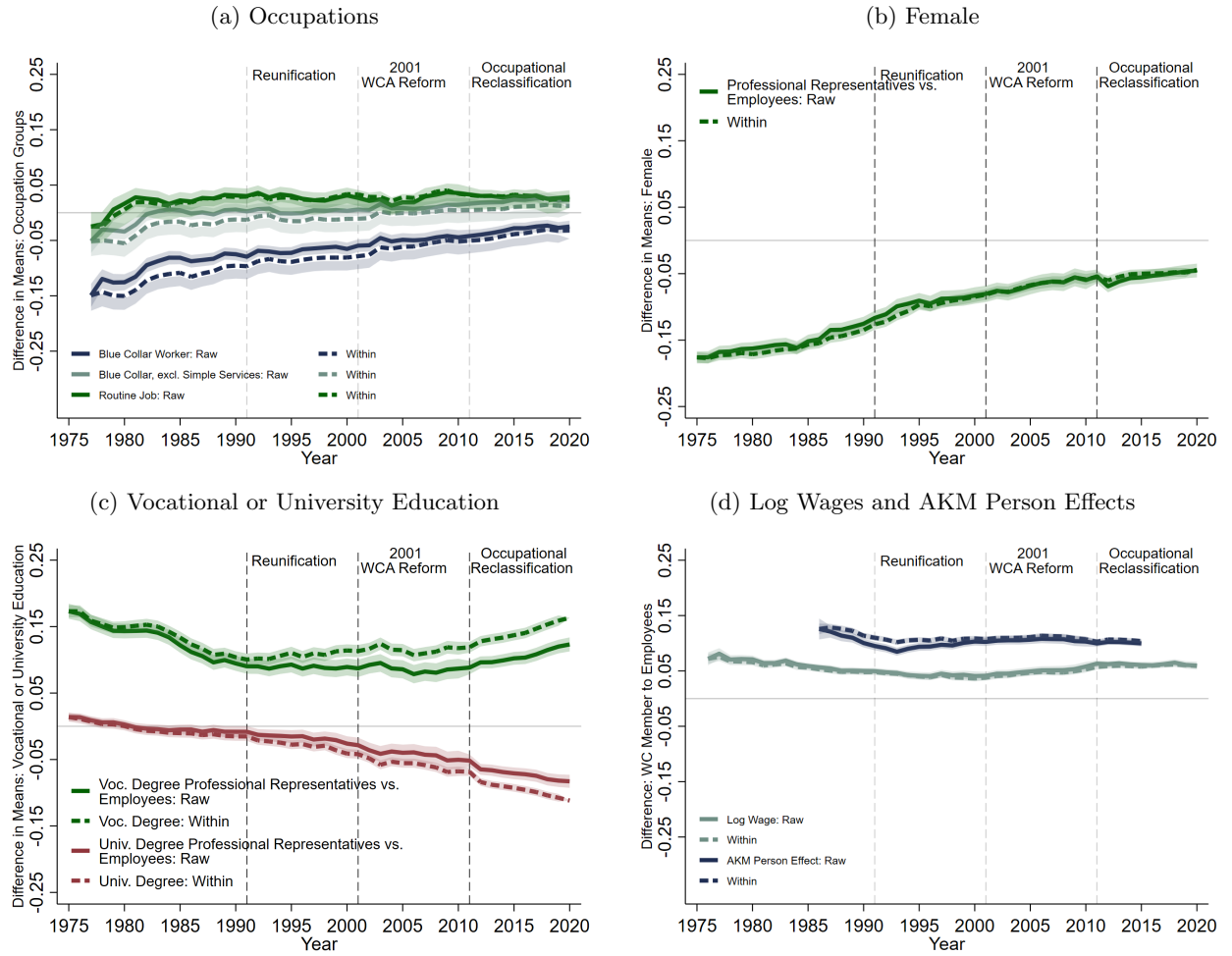
**Notes:** This figure compares the distribution of characteristics of works council members to those of employees in establishments with a works council using survey measures from the SOEP. Employees not in a works council are only included for workplaces with a works council. For details on the variable construction see Appendix Section B.

Figure A6: Works Council Representatives vs. Employees: Levels in Demographic Factors and Parental Background



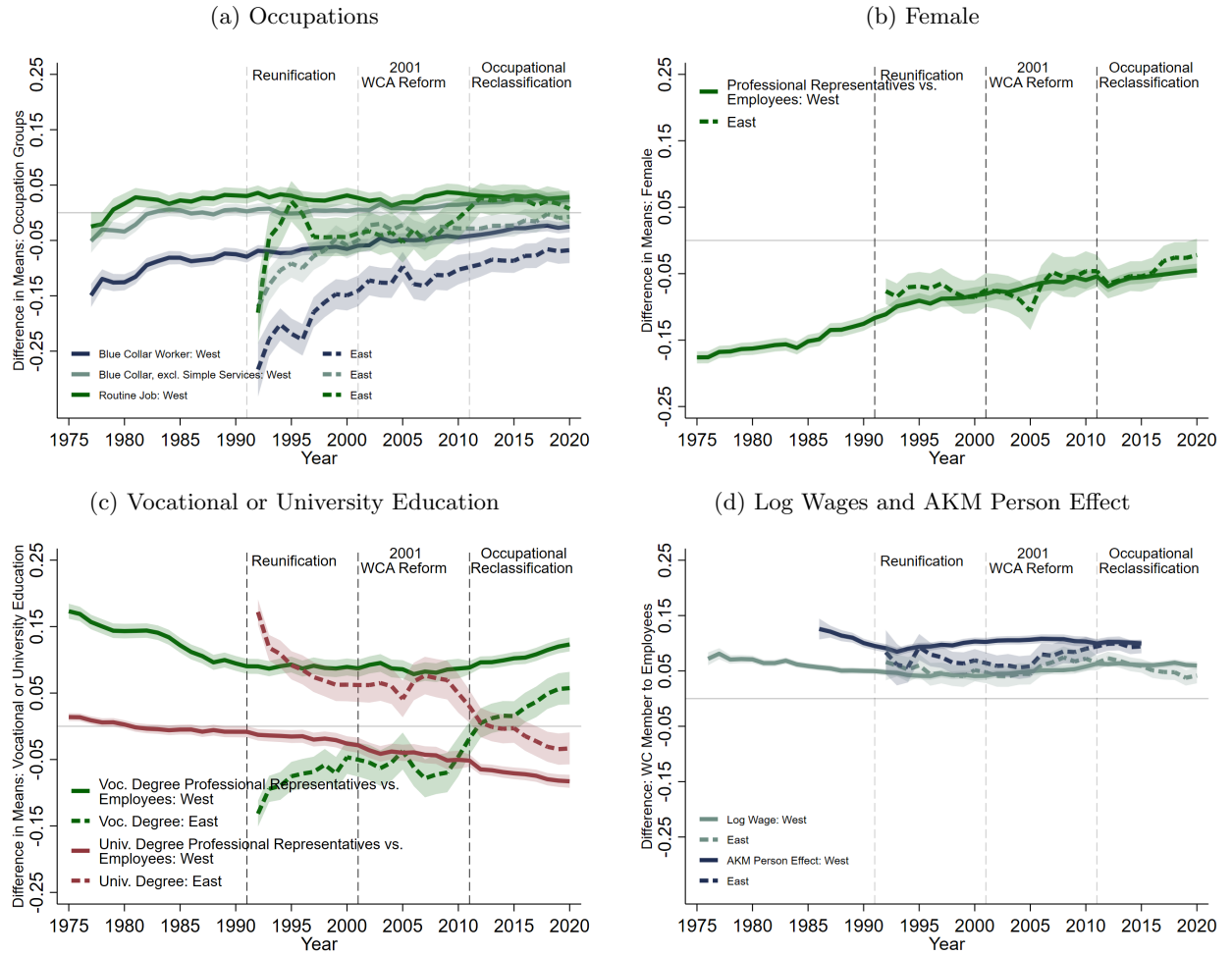
This figure shows the evolution of demographic characteristics for works council members and the employees they represented in establishments with works councils. Shaded regions are 95% confidence intervals. We plot time series for two different samples: the administrative sample from the IEB (including professional works councillors) and the SOEP household panel (including all works council member). The IEB time series is weighted by establishment size, while the SOEP time series gives equal weight to each surveyed individual. We correct the IEB time series for a break in 2011 due to the Occupational Reclassification by estimating a RD model with a second order polynomial and adding the estimated discontinuity to the *pre 2011* time series.

Figure A7: Raw vs. Within Establishment Trends in Representation Gaps



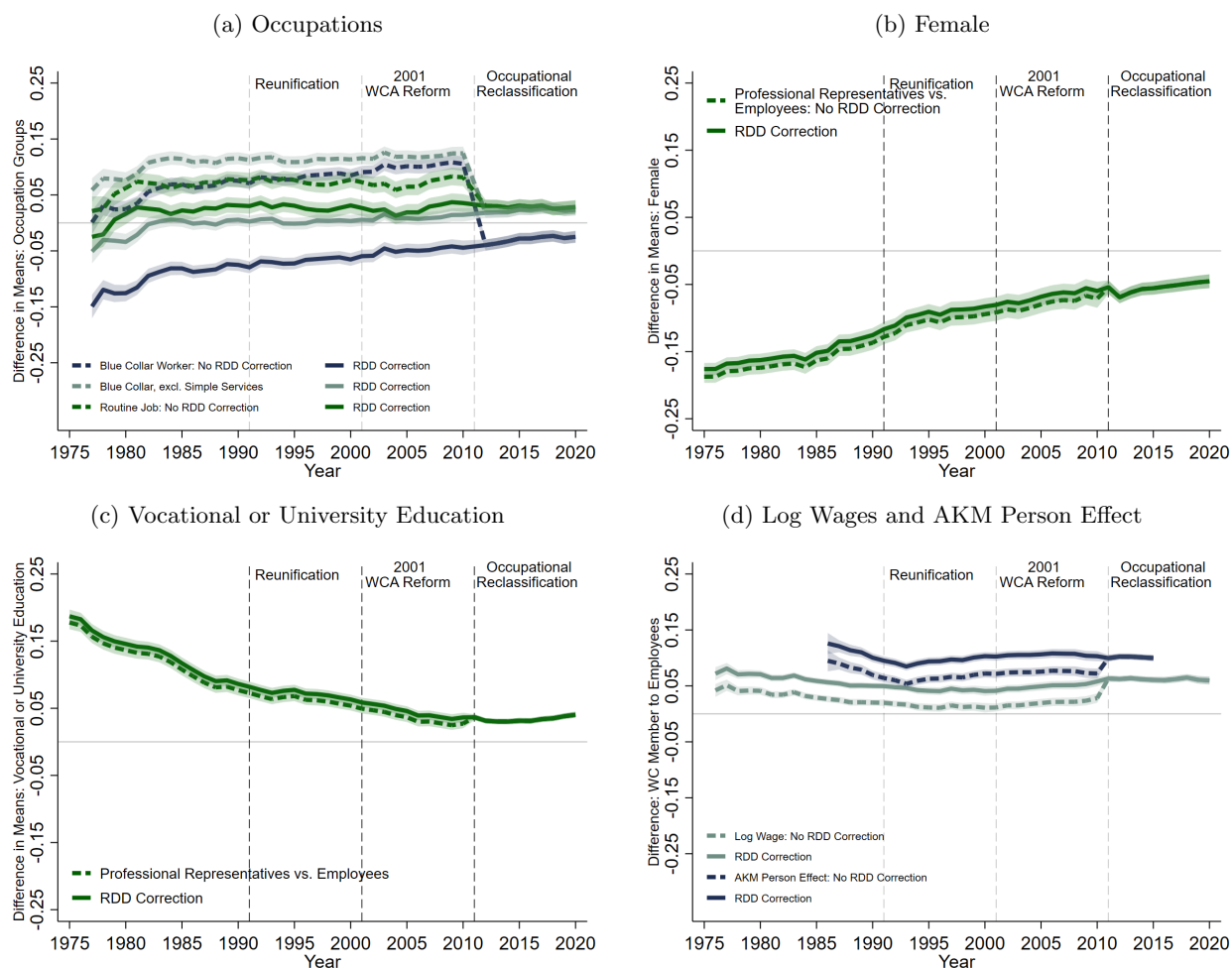
**Notes:** This figure compares the overall trend in representation gaps with the trend in the within-establishment gaps. The latter is obtained by regressing the establishment-year level gaps on a full set of year indicators and controlling for establishment fixed effects. We plot the resulting year dummies with the first year normalized to the raw time series. For details on variable construction see text and main figures.

Figure A8: East vs. West Germany



**Notes:** This figure compares the trend in representation gaps between West Germany (the baseline sample) and East Germany for which data is available since 1992.

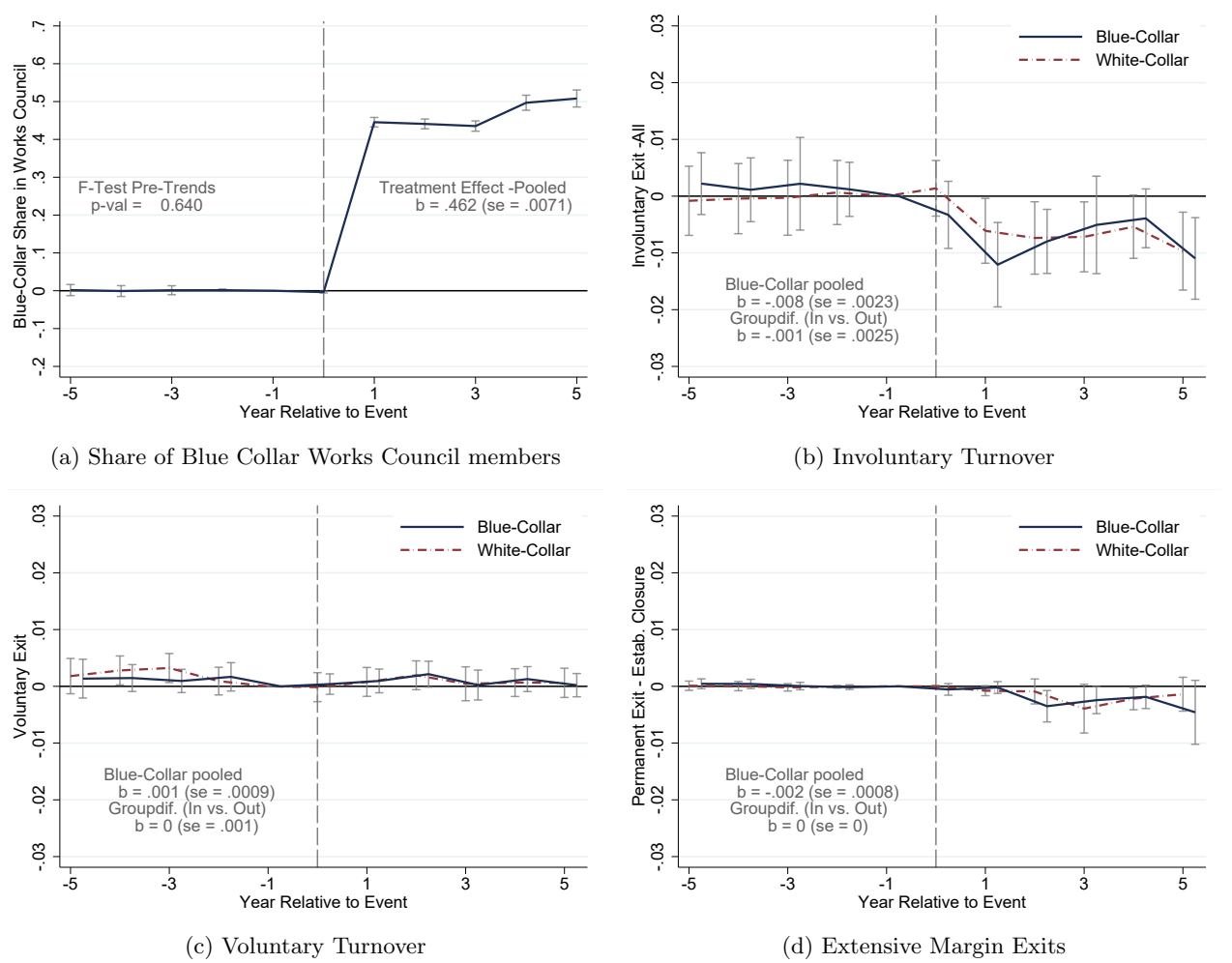
Figure A9: Corrected vs. Uncorrected Time Series



**Notes:** This figure compares the time series corrected for the structural break due to the change in the occupational code in 2010/2011 with the time series that does not correct for this break. The correction entails estimating a RD model with a second order polynomial and adding the estimated discontinuity to the *pre 2011* time series.

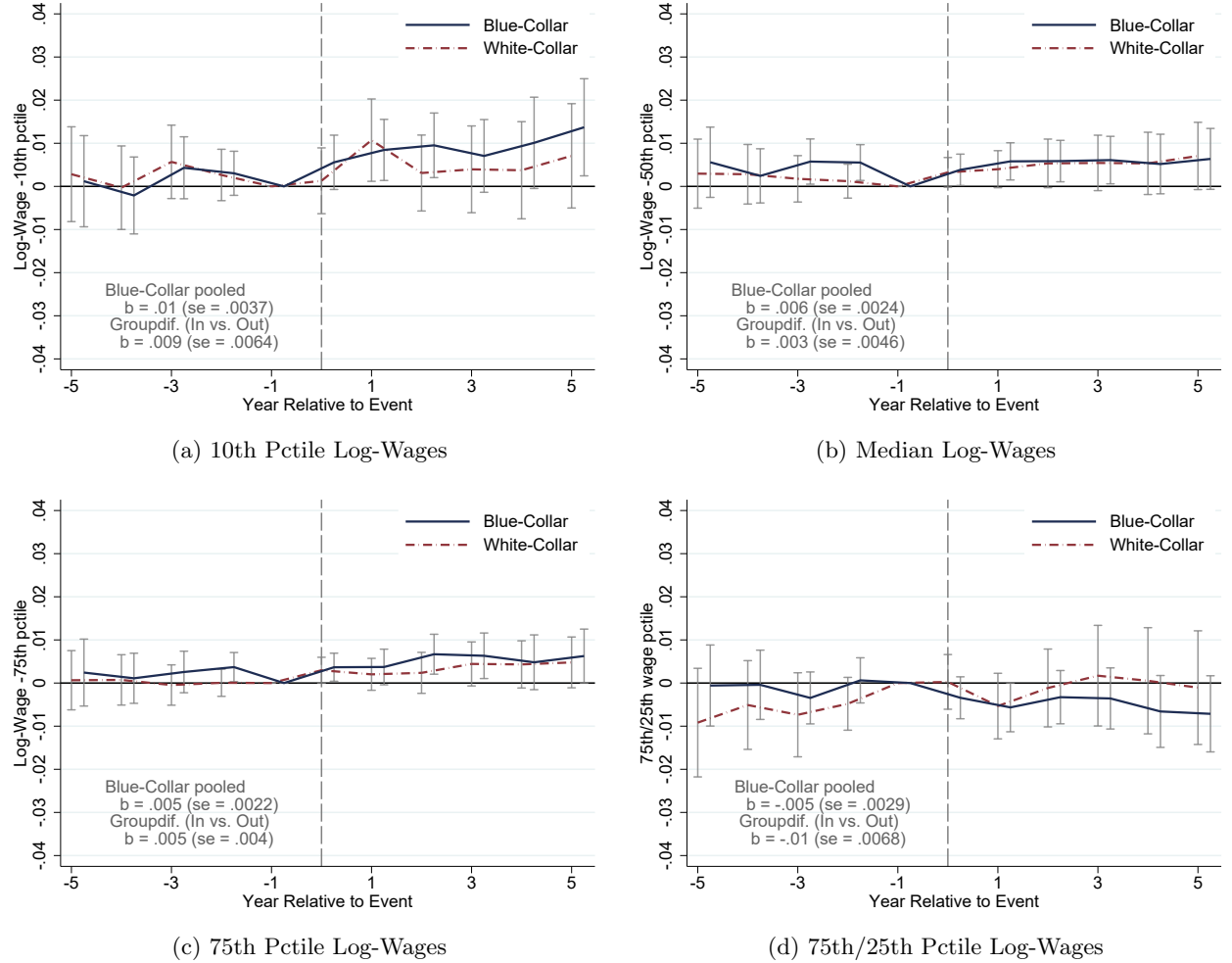


Figure A10: Event Study Estimates: Effect of Blue-Collar Works Councils on Worker Exit, Separately for Blue- and White Collar Worker



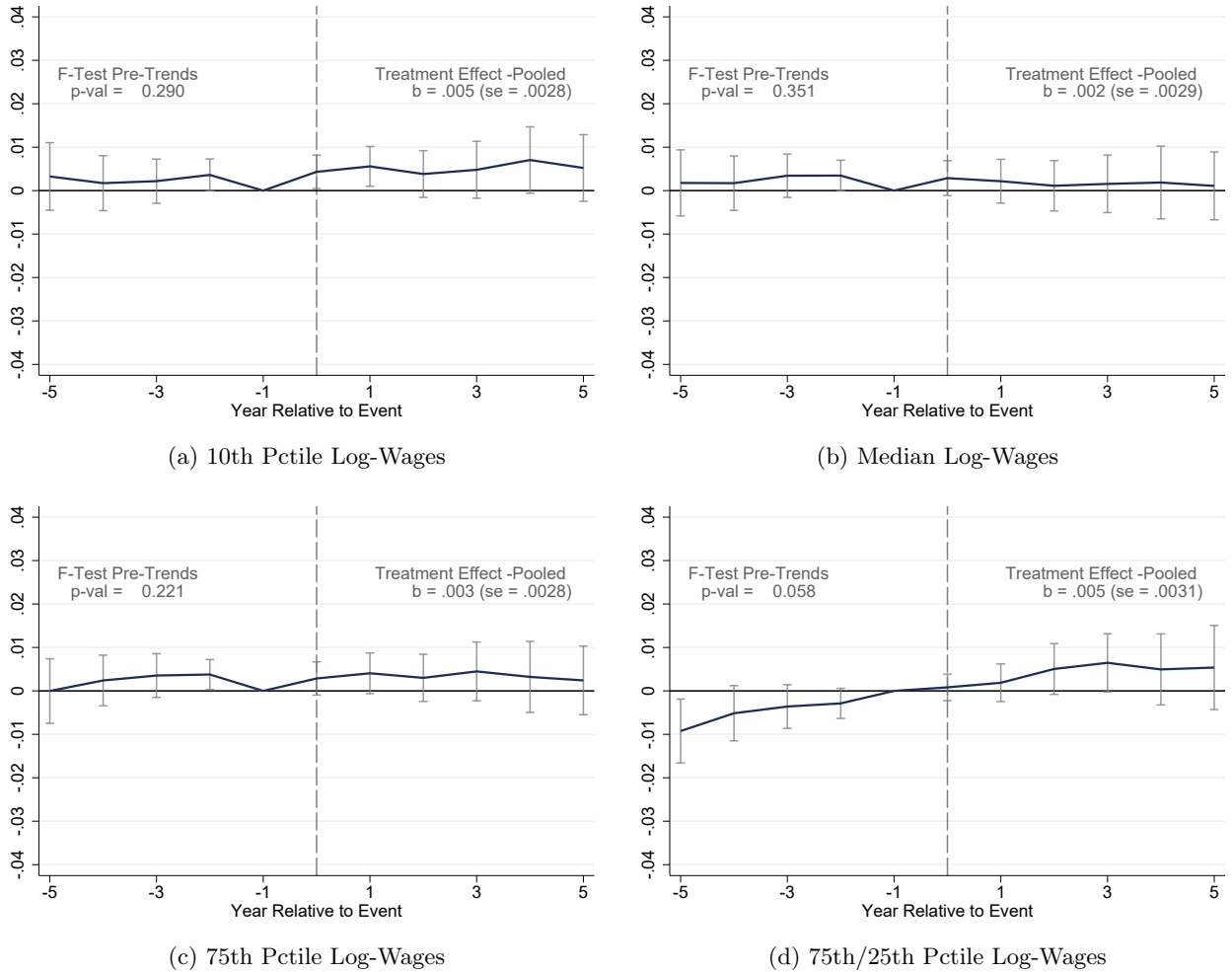
**Notes:** This figure shows event-study estimates of the first large increase in the share of blue-collar workers in the works council (increase of  $\geq 33\%$  relative to pre-event year) at treated establishments. Event-study specifications include matched control never treated establishment pre-event (1:1 propensity score matching in year prior to event, matching variables include log-firm-size and firm size dummies, blue-collar composition of the workforce and works council, and state-dummies). Event study specifications are estimated separately for each group, include establishment, year-to-event and year FE and are weighted with the size of the workforce (excluding full-time Works Council members). SE clustered at the establishment level. The blue line shows outcomes for blue-collar workers, the red line outcomes for white-collar workers.

Figure A11: Event Study Estimates: Effect of Blue-Collar Works Councils on Wages, Separately for Blue- and White Collar Worker



**Notes:** This figure shows event-study estimates of the first large increase in the share of blue-collar workers in the works council (increase of  $\geq 33\%$  relative to pre-event year) at treated establishments. It restricts to retirement-IV-induced events. Event-study specifications include matched control never treated establishment pre-event (1:1 propensity score matching in year prior to event, matching variables include log-firm-size and firm size dummies, blue-collar composition of the workforce and works council, and state-dummies). Event study specifications are estimated separately for each group, include establishment, year-to-event and year FE and are weighted with the size of the workforce (excluding full-time Works Council members). SE clustered at the establishment level. The green line shows outcomes for the (own) blue-collar group, the red line outcomes for the (other) white-collar group.

Figure A12: Event Study for Balanced Sample: Effect of Blue-Collar Works Councils on Wages



**Notes:** This figure shows event-study estimates of the first large increase in the share of blue-collar workers in the works council (increase of  $\geq 33\%$  relative to pre-event year) at treated establishments for the subset of workers who stay in the establishment throughout the observation period — the balanced sample. Event-study specifications include matched control never treated establishments pre-event (1:1 propensity score matching in year prior to event, matching variables include log-firm-size and firm size dummies, blue-collar composition of the workforce and works council, and state-dummies).

## E Appendix Tables

Table A1: Size of the Works Council by Number of Employees

(1) N Workers	(2) N All WC Members	(3) N Professional WC Members
21-50	3	0
51-100	5	0
101-200	7	0
201-400	9	1*
401-500	11	1
501-700	11	2
701-900	13	2
901-1,000	13	3
1,001-1,500	15	3
1,501-2,000	17	4
2,001-2,500	19	5
2,501-3,000	21	5
3,001-3,500	23	6
3,501-4,000	25	6
4,001-4,500	27	7
4,501-5,000	29	7
5,001-6,000	31	8
6,001-7,000	33	9
7,001-8,000	35	10
8,001-9,000	35	11

**Notes:** This table shows the number of all works council members and the number of professional works council members by establishment size according to law since the year 2001. \*Works councils at establishments with at least 200 (instead of 201) are eligible for at least one professional works council. Column (1) refers to the number of workers at an establishment that are eligible to vote in works council elections. Column (2) refers to the overall number of works council members (professional and non-professional) a works council is eligible to. This size increases in establishments from 9,001 onwards by two members for every additional 3,000 workers eligible to vote. Column (3) refers to the corresponding number of professional works council members. This number increases to 12 professional members for an establishment size between 9001 and 10,000. And from 10,001 onwards by one member for every additional 2000 workers eligible to vote. Source: *Betriebsverfassungsgesetz* §9 and §38.

Table A2: Summary SOEP: Works Council Member and Employees

	(1) Representatives	(2) Employees	(3) Difference (SE)	(4) RW p-Value
<b>Panel A: Demographics, Parental Background and Occupation</b>				
Age	45.845	43.908	1.937*** (0.293)	
German Citizen	0.923	0.912	0.01 (0.008)	
Female	0.402	0.478	-0.076*** (0.016)	< 0.01
Father has Abitur	0.131	0.147	-0.016 (0.012)	0.76
No Vocational Training	0.054	0.066	-0.012* (0.007)	0.55
Vocational Training	0.715	0.657	0.059*** (0.015)	< 0.01
University Degree	0.228	0.273	-0.045*** (0.014)	0.03
Blue Collar (excl. Simple Services)	0.282	0.26	0.022 (0.014)	0.67
Blue Collar (incl. Simple Services)	0.381	0.359	0.022 (0.015)	0.71
Manual Job	0.295	0.309	-0.014 (0.014)	0.76
Routine Job	0.406	0.386	0.02 (0.015)	0.76
<b>Panel B: Ability, Wages and Labor Market Experience</b>				
Log Monthly Gross Real Wage (EUR)	7.915	7.838	0.077*** (0.015)	
Tenure (Years)	15.741	12.658	3.083*** (0.294)	
I: Has Unemployment Experiences	0.265	0.304	-0.039*** (0.015)	
Unemployment Exp. (Months, Cond. on > 0)	16.434	19.566	-3.132** (1.479)	
Job Satisfaction (Std.)	-0.05	0.0	-0.05* (0.03)	
<b>Panel C: Political Preferences</b>				
Career Success: (Very) Important	0.827	0.822	0.005 (0.013)	
Being there for Others: (Very) Important	0.947	0.942	0.005 (0.007)	
Political and Social Involvement: (Very) Important	0.373	0.262	0.112*** (0.017)	< 0.01
Political Interest: Strong or Very Strong	0.47	0.382	0.088*** (0.015)	< 0.01
Political Orientation: Left (Std.)	0.106	-0.0	0.106*** (0.038)	0.07
<b>Panel D: Personality</b>				
Big 5: Openness (Std.)	0.131	0.0	0.131*** (0.035)	< 0.01
Big 5: Conscientiousness (Std.)	0.019	0.0	0.019 (0.037)	0.76
Big 5: Extraversion (Std.)	0.19	0.0	0.19*** (0.036)	< 0.01
Big 5: Agreeableness (Std.)	-0.03	-0.0	-0.03 (0.035)	0.76
Big 5: Neuroticism (Std.)	-0.093	-0.0	-0.093*** (0.034)	0.07
Locus of Control (Std.)	0.041	-0.0	0.041 (0.033)	0.76
Pro-Sociality (Std.)	0.035	0.0	0.035 (0.044)	0.76
N Observations	1616	21426		
N Individuals	1236	13351		

**Notes:** This table describes characteristics of works council members and employees they represent in the SOEP sample. Column (1) includes everyone who reports to be a works council member in the current year only excluding individuals in civil service. Column (2) is the sample of employees represented by works councils: age 20-65, full-time, regular employment, not in civil service or self-employed, not currently in a managerial position, and never observed as a works council member. For variable definitions see Appendix Section B. In addition to standard errors for variables reported in Figure 4 we report Romano-Wolf p-values adjusting for multiple hypothesis testing in column (3). Asterisks denote significance at the 0.1, 0.05, and 0.01 level using *unadjusted* tests.

Table A3: Occupations SOEP: By Blue Collar (incl. Simple Services)

Blue Collar	Occupation	Blossfeld	Share	Cum Share
0	Office specialists	Qual Commerc. and Admin.	0.18	0.18
0	Salespersons	Smpl Commerc. and Admin.	0.08	0.25
0	Nurses, midwives	Semi-Professions	0.05	0.30
0	Data processing specialists	Qual Commerc. and Admin.	0.05	0.35
0	Social workers, care workers	Semi-Professions	0.05	0.40
0	Bank specialists	Qual Commerc. and Admin.	0.05	0.45
0	Wholesale and retail trade buyers, buyers	Qual Commerc. and Admin.	0.04	0.49
0	Medical receptionists	Qualified Services	0.04	0.52
0	Home wardens, social work teachers	Semi-Professions	0.03	0.55
0	Accountants	Qual Commerc. and Admin.	0.03	0.58
0	Mechanical, motor engineers	Engineer	0.03	0.61
0	Nursery teachers, child nurses	Semi-Professions	0.02	0.63
0	Primary, secondary, special school teachers	Semi-Professions	0.02	0.65
0	Management consultants, organisers	Managers	0.02	0.67
0	Architects, civil engineers	Engineer	0.02	0.68
1	Motor vehicle drivers	Simple Services	0.07	0.07
1	Electrical fitters, mechanics	Qualified Manual	0.04	0.11
1	Cooks	Qualified Manual	0.03	0.14
1	Glass, buildings cleaners	Simple Services	0.03	0.18
1	Motor vehicle repairers	Qualified Manual	0.03	0.21
1	Warehouse managers, warehousemen	Simple Services	0.03	0.24
1	Stores, transport workers	Simple Services	0.03	0.26
1	Plumbers	Qualified Manual	0.03	0.29
1	Engine fitters	Qualified Manual	0.02	0.31
1	Bricklayers	Qualified Manual	0.02	0.33
1	Carpenters	Qualified Manual	0.02	0.35
1	Foremen, master mechanics	Technician	0.02	0.37
1	Steel smiths	Qualified Manual	0.02	0.39
1	Household cleaners	Simple Services	0.02	0.40
1	Chemical plant operatives	Simple Manual	0.02	0.42

**Notes:** This table tabulates the 15 largest occupation groups (KldB 1988 3-digit) using the SOEP survey for the Blue Collar group. We employ the usual sample restrictions (age 20-65, no civil servants or self-employed) but keep all information regardless of work council existence/information and for the years 1984-2019. For details on the group definitions and occupation coding in the SOEP see the Appendix. Column (2) refers to the 1988 3-digit KldB occupation code; column (3) refers to the Blossfeld occupation classification we use to classify blue collar workers.

Table A4: Summary Table – Different IEB Samples

	(1) Representation	(2) Event-Study	(3) Event-Study	(4) IV Sample
		Treated	Control	
<b>Panel A: Establishment &amp; Industry Characteristics</b>				
Number WC Members	7.151567	5.281979	6.002086	8.007461
Number all Employees	4809.157	4590.071	3690.245	5843.882
N emp. $\leq 250$	.0628953	.0150836	.014839	.0409384
N emp. $> 250 \& \leq 500$	.1514256	.1042654	.0884952	.1200308
N emp. $> 500 \& \leq 1000$	.2092977	.2492527	.2244331	.1980689
N emp. $> 1000$	.5763815	.6313983	.6722327	.6409619
log(all emp)	7.368453	7.437384	7.523137	7.590356
West Germany = 1	.9130204	.9325956	.9061611	.9164261
Manufacturing Sector = 1	.6369627	.7339614	.6846902	.6588834
<b>Panel B: Composition Workforce</b>				
Share Employees in Blue- Collar Jobs	.6163229	.6960707	.6834512	.6091463
Share WC in Blue- Collar Jobs	.4744683	.3624852	.2896103	.6014642
Share Female	.2951043	.2664442	.2879534	.2825945
Share Vocational Degree	.6878266	.571021	.5716354	.5871991
Share University Degree	.1349094	.0750114	.071915	.1183455
Age in Years	40.52113	39.45296	39.48498	40.31519
Monthly Earnings in Euro	3063.091	2058.123	2041.903	3058.175
Number of Observations	257120	20197	17692	159145
Number of Establishments	27073	2261	2261	15594

**Notes:** This table provides summary statistics for the different samples used in the administrative data. Column (1) summarizes the representation sample used in the descriptive part. Column (2) and (3) show the event-study sample for the treated and matched control establishments respectively. Column (4) shows the IV sample. All observations are at the establishment level, weighted with the number of employees.

Table A5: Works council establishments in Establishment Panel with and without observed professional councilor in the IEB data

	(1) IEB Full-time Council	(2) IEB Full-time Council	(3) Difference between (1) and (2)	(4) Difference between (1) and (2)
	no	yes	mean	se
<b>Panel A: Establishment Characteristics and Workforce</b>				
establishment age	20.812	21.514	-0.7022*	0.2730
log-median wage	4.613	4.697	-0.0831***	0.0072
share blue-collar worker	0.423	0.539	-0.1167***	0.0076
share females	0.465	0.341	0.1249***	0.0061
share low educated	0.712	0.747	-0.0354***	0.0048
share medium educated	0.122	0.096	0.0259***	0.0023
share high educated	0.166	0.157	0.0095*	0.0037
<b>Panel B: Industries</b>				
Agriculture	0.001	0.000	0.0005	0.0006
Mining, Energy	0.028	0.028	-0.0003	0.0040
Food	0.027	0.028	-0.0008	0.0039
Consumption Goods	0.036	0.048	-0.0124**	0.0047
Production Goods	0.063	0.156	-0.0927***	0.0070
Investment Goods	0.133	0.310	-0.1778***	0.0093
Construction	0.018	0.008	0.0096***	0.0029
Retail	0.070	0.046	0.0245***	0.0058
Traffic, Telecommunication	0.042	0.063	-0.0206***	0.0052
Credit, Insurance	0.076	0.030	0.0454***	0.0057
Restaurants	0.006	0.003	0.0039*	0.0017
Education	0.043	0.010	0.0332***	0.0042
Health	0.161	0.068	0.0934***	0.0080
Commercial Services	0.104	0.068	0.0369***	0.0069
Other Services	0.029	0.016	0.0132***	0.0037
Non-Profit	0.024	0.003	0.0209***	0.0030
Non-Profit	0.139	0.115	0.0231**	0.0081
N	4782	2689		

**Notes:** This table uses information from the LIAB — an establishment level survey (the IAB establishment panel) merged with employee records from the IEB — to select all establishments that have a works council based on establishment panel information. Based on this sample, we compare establishment-level characteristics of those who do not have a full-time works council based on our admin data measure (Column 1) vs. those that do (Column 2). Column 3 shows the mean difference and Column 4 the corresponding standard errors. \*, \*\* and \*\*\* refer to the mean difference in Column 3 being significantly different from zero on the .05, .01 and .001 significance level. N refers to the number of establishments.



Table A6: Summary IEB: Characteristics of Works Council Membership

	(1) Mean	(2) SD	(3) P25	(4) Median	(5) P75
<b>Panel A: Full-Time Representatives - Full Sample</b>					
Age at Entry, years	44.17	10.65	36	45	52
Tenure at Entry, years	8.03	8.48	1	4	13
Experience at Entry, years	15.18	11.29	4	14	24
Years in Works Council	8.44	6.06	4	7	12
Number of Election Periods in Works Council	2.42	1.59	1	2	3
I: At Least 2 Election Periods in Works Council	0.65	0.48	0	1	1
Years in Establishment after leaving Works Council	0.70	2.75	0	0	0
Years working after leaving Works Council	4.56	7.22	0	0	8
<i>N</i>	46435				
<b>Panel B: Full-Time Representatives - Matched Life-Cycle Sample</b>					
Age at Entry, years	43.55	7.94	38	43	49
Tenure at Entry, years	11.60	5.68	7	10	15
Experience at Entry, years	16.48	6.80	11	16	21
Years in Works Council	11.92	7.45	5	11	16
Number of Election Periods in Works Council	3.27	1.97	2	3	5
I: At Least 2 Election Periods in Works Council	0.76	0.43	1	1	1
Years in Establishment after leaving Works Council	0.93	3.27	0	0	0
Years working after leaving Works Council	5.09	7.01	0	1	8
<i>N</i>	3614				
<b>Panel C: Full-Time Reps - Matched Life-Cycle Sample + Balance Restriction</b>					
Age at Entry, years	41.57	6.37	37	42	46
Tenure at Entry, years	12.13	5.59	7	11	16
Experience at Entry, years	16.54	6.28	12	16	21
Years in Works Council	14.26	7.34	8	14	20
Number of Election Periods in Works Council	3.81	1.97	2	4	5
I: At Least 2 Election Periods in Works Council	0.84	0.37	1	1	1
Years in Establishment after leaving Works Council	1.18	3.70	0	0	0
Years working after leaving Works Council	5.73	7.34	0	2	10
<i>N</i>	2373				

**Notes:** This table shows summary statistics for professional worker representatives (works councilors) observed in the IEB data. We impute work council membership on the election-period level: everyone with at least one membership spell in an election-period is counted as a member for the whole period. Panel A reports summaries for the complete sample, while Panel B focuses on the sub-sample of matched representatives used for analyzing career effects (Figure 3). Panel C further restricts to the sub-sample with non-zero wages in a window around the entry year (5 years before until 10 years after). Due to censoring – social security records are available from 1975 only – experience and tenure should be viewed as a lower bound.

Table A7: Effects of Blue-Collar Representation on Turnover separately for Blue- and White- Collar Worker

	Baseline Specifications		Retirement-Induced	Alternative IV Specifications	
	Event (1)	IV (2)	Event (3)	DiD-IV (4)	ITT-IV (5)
<b>Panel A: Involuntary Exits</b>					
Blue-Collar Worker	-0.0082*** [0.0022]	-0.0043 [0.0026]	-0.0072* [0.0042]	-0.0066** [0.0033]	-0.0032 [0.0027]
Blue- rel. to White-Collar Worker	-0.0011 [0.0025]	-0.0014 [0.0021]	0.0061 [0.0049]	-0.0014 [0.0029]	-0.0012 [0.0021]
Mean Dep Var	0.08	0.12	0.08	0.12	0.12
N Obs.	75120	337059	13810	295459	337059
N Establishments	2190	16986	391	15476	16986
<b>Panel B: Voluntary Exits</b>					
Blue-Collar Worker	0.0012 [0.0009]	-0.0015** [0.0007]	0.0035 [0.0025]	-0.0008 [0.0009]	-0.0015** [0.0007]
Blue- rel. to White-Collar Worker	0.0005 [0.0010]	-0.0011 [0.0008]	0.0021 [0.0031]	-0.0007 [0.0011]	-0.0012 [0.0008]
Mean Dep Var	0.01	0.01	0.01	0.01	0.01
N Obs.	74160	314775	13654	273790	314775
N Establishments	2190	16352	391	14853	16352
<b>Panel C: Exits on the Extensive Margin (Establishment Closures)</b>					
Blue-Collar Worker	-0.0023 [.]	0.0004 [0.0017]	-0.0021 [.]	0.0007 [0.0018]	0.0011 [0.0018]
Blue- rel. to White-Collar Worker	-0.0004 [.]	0.0007 [0.0015]	-0.0002 [.]	0.0013 [0.0016]	0.0011 [0.0015]
Mean Dep Var	0.00	0.04	0.00	0.05	0.04
N Obs.	75120	337059	13810	295459	337059
N Establishments	2190	16986	391	15476	16986
Increase Council Share	.462	1	.465	1	1

**Notes:** This table presents estimates of the effect of blue-collar representation on outcomes separately for blue- and white-collar workers. All estimates are based on event-study and retirement-IV estimates as outlined in the text. Standard errors (clustered at the event level) in parenthesis. \*, \*\* and \*\*\* refer to significance on the 10%, 5% and 1% significance level. Columns (1) and (2) represent baseline results for event study and IV specification respectively. Column (3) restricts to retirement-induced events for the event study specification. Column (4) employs a difference in difference type IV that estimates effects relative to 4 years before the event. Column (5) shows coefficient form an intention to treat IV, where instead of actual retirement exits the threshold of crossing retirement age (becoming 63 and older) is used.

Table A8: Effects of Blue-Collar Representation on Wages separately for Blue- and White-Collar Worker

	Baseline Specifications		Retirement-Induced	Alternative IV Specifications	
	Event (1)	IV (2)	Event (3)	DiD-IV (4)	ITT-IV (5)
<b>Panel A: Log-Wage 10th Percentile</b>					
Blue-Collar Worker	0.0124*** [0.0042]	-0.0090 [0.0089]	-0.0009 [0.0077]	-0.0151* [0.0078]	-0.0104 [0.0090]
Blue- rel. to White-Collar Worker	0.0093 [0.0064]	-0.0547*** [0.0103]	-0.0092 [0.0155]	-0.0104 [0.0105]	-0.0576*** [0.0105]
Mean Dep Var	4.12	4.18	4.12	4.20	4.18
N Obs.	75120	337059	13810	295459	337059
N Establishments	2190	16986	391	15476	16986
<b>Panel B: Median Log-Wage</b>					
Blue-Collar Worker	0.0073** [0.0029]	-0.0003 [0.0052]	0.0054 [0.0062]	-0.0031 [0.0052]	-0.0018 [0.0053]
Blue- rel. to White-Collar Worker	0.0034 [0.0046]	-0.0258*** [0.0058]	0.0033 [0.0132]	0.0110* [0.0064]	-0.0272*** [0.0060]
Mean Dep Var	4.50	4.57	4.48	4.59	4.57
N Obs.	75120	337059	13810	295459	337059
N Establishments	2190	16986	391	15476	16986
<b>Panel C: Log-Wage 75th Percentile</b>					
Blue-Collar Worker	0.0068** [0.0027]	0.0021 [0.0046]	0.0043 [0.0057]	-0.0022 [0.0050]	0.0014 [0.0047]
Blue- rel. to White-Collar Worker	0.0048 [0.0040]	-0.0061 [0.0049]	0.0006 [0.0095]	0.0167*** [0.0058]	-0.0069 [0.0050]
Mean Dep Var	4.67	4.74	4.65	4.77	4.74
N Obs.	75120	337059	13810	295459	337059
N Establishments	2190	16986	391	15476	16986
Increase Council Share	.462	1	.465	1	1

**Notes:** This table presents estimates of the effect of blue-collar representation on outcomes separately for blue- and white-collar workers. All estimates are based on event-study and retirement-IV estimates as outlined in the text. Standard errors (clustered at the event level) in parenthesis. \*, \*\* and \*\*\* refer to significance on the 10%, 5% and 1% significance level. Columns (1) and (2) represent baseline results for event study and IV specification respectively. Column (3) restricts to retirement-induced events for the event study specification. Column (4) employs a difference in difference type IV that estimates effects relative to 4 years before the event. Column (5) shows coefficients from an intention to treat IV, where instead of actual retirement exits the threshold of crossing retirement age (becoming 63 and older) is used.

Table A9: Effects of Blue-Collar Representation on Hiring Composition

	Baseline Specifications		Retirement-Induced	Alternative IV Specifications	
	Event (1)	IV (2)	Event (3)	DiD-IV (4)	ITT-IV (5)
<b>Panel A: Log-Hires</b>					
Blue-Collar Representation	0.0265 [0.0279]	0.0617* [0.0343]	-0.0437 [0.0643]	0.0249 [0.0396]	0.0674* [0.0355]
Mean Dep Var	3.11	2.55	3.19	2.66	2.55
N Obs.	70533	271395	13146	224838	271395
N Establishments	2190	15071	391	13280	15071
<b>Panel B: Share Hires Regular Worker</b>					
Blue-Collar Representation	-0.0071 [0.0065]	0.0228*** [0.0072]	-0.0044 [0.0140]	0.0181* [0.0094]	0.0238*** [0.0075]
Mean Dep Var	0.73	0.71	0.73	0.71	0.71
N Obs.	70533	271395	13146	224838	271395
N Establishments	2190	15071	391	13280	15071
<b>Panel C: Share Hires Trainees</b>					
Blue-Collar Representation	0.0082 [0.0064]	-0.0112 [0.0069]	0.0084 [0.0140]	-0.0154* [0.0089]	-0.0116 [0.0071]
Mean Dep Var	0.23	0.21	0.25	0.21	0.21
N Obs.	70533	271395	13146	224838	271395
N Establishments	2190	15071	391	13280	15071
<b>Panel D: Share Hires Mini-Jobs</b>					
Blue-Collar Representation	-0.0021** [0.0011]	-0.0140*** [0.0024]	-0.0031 [0.0020]	-0.0067*** [0.0023]	-0.0142*** [0.0024]
Mean Dep Var	0.02	0.05	0.01	0.05	0.05
N Obs.	70533	271395	13146	224838	271395
N Establishments	2190	15071	391	13280	15071
Increase Council Share	.462	1	.465	1	1

**Notes:** This table presents estimates of the effect of blue-collar representation on the composition of new hires between  $t$  and  $t+1$  for different on outcomes. All estimates are based on event-study and retirement-IV estimates as outlined in the text. Standard errors (clustered at the event level) in parenthesis. \*, \*\* and \*\*\* refer to significance on the 10%, 5% and 1% significance level. Columns (1) and (2) represent baseline results for event study and IV specification respectively. Column (3) restricts to retirement-induced events for the event study specification. Column (4) employs a difference in difference type IV that estimates effects relative to 4 years before the event. Column (5) shows coefficient form an intention to treat IV, where instead of actual retirement exits the threshold of crossing retirement age (becoming 63 and older) is used.

Table A10: Effects of Blue-Collar Representation on Exit Composition

	Baseline Specifications		Retirement-Induced	Alternative IV Specifications	
	Event (1)	IV (2)	Event (3)	DiD-IV (4)	ITT-IV (5)
<b>Panel A: Share Exits Regular Worker</b>					
Blue-Collar Representation	-0.0026 [0.0036]	0.0127*** [0.0046]	0.0082 [0.0070]	0.0043 [0.0055]	0.0131*** [0.0048]
Mean Dep Var	0.87	0.83	0.89	0.82	0.83
N Obs.	72367	289997	13417	240592	289997
N Establishments	2190	15827	391	13747	15827
<b>Panel B: Share Exits Trainees</b>					
Blue-Collar Representation	0.0050 [0.0031]	-0.0097*** [0.0032]	-0.0049 [0.0064]	-0.0030 [0.0037]	-0.0103*** [0.0033]
Mean Dep Var	0.07	0.06	0.08	0.07	0.06
N Obs.	72367	289997	13417	240592	289997
N Establishments	2190	15827	391	13747	15827
<b>Panel C: Share Exits Mini-Jobs</b>					
Blue-Collar Representation	-0.0006 [0.0008]	-0.0100*** [0.0020]	-0.0019 [0.0013]	-0.0032* [0.0019]	-0.0104*** [0.0020]
Mean Dep Var	0.02	0.05	0.01	0.04	0.05
N Obs.	72367	289997	13417	240592	289997
N Establishments	2190	15827	391	13747	15827
Increase Council Share	.462	1	.465	1	1

**Notes:** This table presents estimates of the effect of blue-collar representation on the composition of workers exiting the establishment between year  $t$  and  $t+1$ . All estimates are based on event-study and retirement-IV estimates as outlined in the text. Standard errors (clustered at the event level) in parenthesis. \*, \*\* and \*\*\* refer to significance on the 10%, 5% and 1% significance level. Columns (1) and (2) represent baseline results for event study and IV specification respectively. Column (3) restricts to retirement-induced events for the event study specification. Column (4) employs a difference in difference type IV that estimates effects relative to 4 years before the event. Column (5) shows coefficient from an intention to treat IV, where instead of actual retirement exits the threshold of crossing retirement age (becoming 63 and older) is used.

Table A11: Robustness of Blue-Collar Representation - Turnover Outcomes

	Baseline		Different Occupation-Groups				Varying Post-Event Window				Election Years	Varying Retirement Thresholds	
	Specifications		Routine		Blue Col. /wo service		short post (t+3)		long post (t+7)		Only	Ret. Age 60	Ret. Age 65
	Event (1)	IV (2)	Event (3)	IV (4)	Event (5)	IV (6)	Event (7)	IV (8)	Event (9)	IV (10)	Event (11)	IV (12)	IV (13)
<b>Panel A: Involuntary Exits</b>													
Blue-Collar Representation	-0.0076*** [0.0020]	-0.0036* [0.0022]	-0.0095*** [0.0027]	-0.0013 [0.0021]	-0.0098*** [0.0033]	-0.0027 [0.0021]	-0.0088*** [0.0026]	-0.0026 [0.0020]	-0.0082*** [0.0023]	-0.0030 [0.0026]	-0.0073*** [0.0027]	-0.0028 [0.0022]	-0.0037* [0.0021]
Mean Dep Var	0.08	0.12	0.11	0.12	0.11	0.12	0.08	0.12	0.08	0.12	0.08	0.12	0.12
N Obs.	75120	337059	85286	348255	72504	325285	31390	355462	37532	280550	20840	337059	337059
N Establishments	2190	16986	2489	16954	2083	16995	2190	17447	2190	14772	1939	16986	16986
<b>Panel B: Voluntary Exits</b>													
Blue-Collar Representation	0.0010 [0.0008]	-0.0009 [0.0007]	-0.0009** [0.0005]	-0.0010 [0.0007]	-0.0003 [0.0004]	-0.0005 [0.0007]	0.0012 [0.0009]	-0.0010 [0.0007]	0.0010 [0.0009]	-0.0008 [0.0009]	-0.0002 [0.0012]	-0.0008 [0.0007]	-0.0010 [0.0007]
Mean Dep Var	0.01	0.01	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
N Obs.	74160	314775	84759	325512	72020	303550	31045	333352	37046	255354	20540	314775	314775
N Establishments	2190	16352	2489	16312	2083	16357	2190	16903	2190	11475	1931	16352	16352
<b>Panel C: Exits on the Extensive Margin (Establishment Closures)</b>													
Blue-Collar Representation	-0.0021*** [0.0006]	0.0000 [0.0015]	-0.0032*** [0.0010]	-0.0003 [0.0014]	-0.0026** [0.0011]	-0.0001 [0.0016]	-0.0020*** [0.0007]	0.0006 [0.0013]	-0.0024*** [0.0008]	0.0007 [0.0020]	-0.0024** [0.0010]	0.0005 [0.0015]	0.0002 [0.0015]
Mean Dep Var	0.00	0.04	0.00	0.04	0.00	0.04	0.00	0.04	0.00	0.05	0.00	0.04	0.04
N Obs.	75120	337059	85286	348255	72504	325285	31390	355462	37532	280550	20840	337059	337059
N Establishments	2190	16986	2489	16954	2083	16995	2190	17447	2190	14772	1939	16986	16986

**Notes:** This table presents robustness estimates of the effect of blue-collar representation on outcomes. All estimates are based on event-study estimates as outlined in the text. Standard errors (clustered at the event level) in parenthesis. \*, \*\* and \*\*\* refer to significance on the 10%, 5% and 1% significance level. Columns (1) and (2) represent baseline results for event study and IV specification respectively. Column (3) — (6) show event study and IV estimates for alternative groupings of occupations. Column (3) and (4) selects occupations that are based on their task content mainly routine work, whereas Column (5) and (6) employ a more narrow blue-collar definition that classifies simple service occupations as white- instead of blue-collar. Columns (7) — (10) show variations in the length of the post-event window, with Columns (7) and (8) having 3 post-event years and Columns (9) and (10) having 7 (instead of 5) years respectively. Column (11) shows event study results restricted to events where actual and imputed events coincide. Columns (12) and (13) employ different age-thresholds of the retirement exit IV. Column (12) uses works councilors crossing the age 60 threshold, whereas Column (13) looks at the crossing of the age threshold 65.

Table A12: Robustness of Blue-Collar Representation - Wage Outcomes

	Baseline		Different Occupation-Groups				Varying Post-Event Window				Election Years	Varying Retirement Thresholds		
	Specifications		Routine		Blue Col. /wo service		short post (t+3)		long post (t+7)			Only	Ret. Age 60	Ret. Age 65
	Event (1)	IV (2)	Event (3)	IV (4)	Event (5)	IV (6)	Event (7)	IV (8)	Event (9)	IV (10)		Event (11)	IV (12)	IV (13)
Panel A: Log Wages 10th Percentile														
Blue-Collar Representation	0.0077*** [0.0030]	0.0185*** [0.0066]	0.0019 [0.0030]	0.0217*** [0.0062]	0.0017 [0.0031]	0.0250*** [0.0070]	0.0080** [0.0033]	0.0202*** [0.0066]	0.0096*** [0.0037]	0.0074 [0.0074]	0.0090** [0.0044]	0.0172** [0.0067]	0.0191*** [0.0066]	
Mean Dep Var	4.12	4.18	4.11	4.20	4.11	4.21	4.13	4.18	4.13	4.19	4.11	4.18	4.18	
N Obs.	75120	337059	85286	348255	72504	325285	31390	355462	37532	280550	20840	337059	337059	
N Establishments	2190	16986	2489	16954	2083	16995	2190	17447	2190	14772	1939	16986	16986	
Panel B: Log Wages Median														
Blue-Collar Representation	0.0056*** [0.0020]	0.0127*** [0.0041]	-0.0014 [0.0026]	0.0217*** [0.0046]	0.0002 [0.0023]	0.0174*** [0.0050]	0.0054** [0.0022]	0.0141*** [0.0040]	0.0059** [0.0024]	0.0073 [0.0047]	0.0012 [0.0036]	0.0122*** [0.0042]	0.0132*** [0.0041]	
Mean Dep Var	4.50	4.57	4.47	4.58	4.46	4.57	4.42	4.57	4.42	4.58	4.41	4.57	4.57	
N Obs.	75120	337059	85286	348255	72504	325285	31390	355462	37532	280550	20840	337059	337059	
N Establishments	2190	16986	2489	16954	2083	16995	2190	17447	2190	14772	1939	16986	16986	
Panel C: Log Wages 75th Percentile														
Blue-Collar Representation	0.0045*** [0.0017]	0.0052 [0.0032]	-0.0002 [0.0024]	0.0148*** [0.0037]	0.0002 [0.0020]	0.0104*** [0.0038]	0.0050** [0.0020]	0.0063** [0.0032]	0.0055** [0.0022]	0.0046 [0.0037]	-0.0010 [0.0033]	0.0048 [0.0033]	0.0057* [0.0032]	
Mean Dep Var	4.67	4.74	4.63	4.75	4.63	4.75	4.56	4.74	4.56	4.76	4.55	4.74	4.74	
N Obs.	75120	337059	85286	348255	72504	325285	31390	355462	37532	280550	20840	337059	337059	
N Establishments	2190	16986	2489	16954	2083	16995	2190	17447	2190	14772	1939	16986	16986	

**Notes:** This table presents robustness estimates of the effect of blue-collar representation on outcomes. All estimates are based on event-study estimates as outlined in the text. Standard errors (clustered at the event level) in parenthesis. \*, \*\* and \*\*\* refer to significance on the 10%, 5% and 1% significance level. Columns (1) and (2) represent baseline results for event study and IV specification respectively. Column (3) — (6) show event study and IV estimates for alternative groupings of occupations. Column (3) and (4) selects occupations that are based on their task content mainly routine work, whereas Column (5) and (6) employs a more narrow blue-collar definition that classifies simple service occupations as white- instead of blue-collar. Columns (7) — (10) show variations in the length of the post-event window, with Columns (7) and (8) having 3 post-event years and Columns (9) and (10) having 7 (instead of 5) years respectively. Column (11) shows event study results restricted to events where actual and imputed events coincide. Columns (12) and (13) employ different age-thresholds of the retirement exit IV. Column (12) uses works councilors crossing the age 60 threshold, whereas Column (13) looks at the crossing of the age threshold 65.

Table A13: Effects of Blue-Collar Representation for alternative Turnover Definitions

	Baseline Specifications		Retirement-Induced	Alternative IV Specifications	
	Event (1)	IV (2)	Event (3)	DiD-IV (4)	ITT-IV (5)
<b>Panel A: Non-Permanent Involuntary Exits</b>					
Blue-Collar Representation	-0.0030*** [0.0009]	0.0004 [0.0012]	-0.0018 [0.0012]	-0.0003 [0.0014]	0.0008 [0.0013]
Mean Dep Var	0.00	0.01	0.00	0.01	0.01
N Obs.	75120	337059	13810	295459	337059
N Establishments	2190	16986	391	15476	16986
<b>Panel B: Involuntary Exits - Balanced Panel</b>					
Blue-Collar Representation	-0.0078*** [0.0022]	-0.0036** [0.0015]	-0.0143*** [0.0048]	-0.0065*** [0.0022]	-0.0028* [0.0015]
Mean Dep Var	0.08	0.08	0.08	0.08	0.08
N Obs.	32842	256641	6486	209014	256641
N Establishments	845	11455	166	9792	11455
Increase Council Share	.462	1	.465	1	1

**Notes:** This table presents robustness estimates of the effect of blue-collar representation on outcomes. All estimates are based on event-study and retirement-IV estimates as outlined in the text. Standard errors (clustered at the event level) in parenthesis. \*, \*\* and \*\*\* refer to significance on the 10%, 5% and 1% significance level. Columns (1) and (2) represent baseline results for event study and IV specification respectively. Column (3) restricts to retirement-induced events for the event study specification. Column (4) employs a difference in difference type IV that estimates effects relative to 4 years before the event. Column (5) shows coefficient for an intention to treat IV, where instead of actual retirement exits the threshold of crossing retirement age (becoming 63 and older) is used.