

# Worker Representatives\*

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## Abstract

We study the selection of worker representatives and how representation affects worker outcomes. We focus on German works councilors—shop-floor representatives elected from the workforce. We paint a comprehensive picture of representatives’ characteristics spanning a period of more than forty years, combining rich administrative panel and representative survey data. Contrary to other domains of power where blue-collar workers are often underrepresented, we document that blue-collar workers have been close to proportionally represented among works councilors for the past four decades with a shrinking representation gap over time. Worker representatives are positively selected in terms of earnings and person-fixed effects. They tend to have more extroverted, more open, and less neurotic personalities, show greater interest in politics, and lean left politically, compared to the populations they represent. Drawing on event study designs around scheduled works council elections, as well as an instrumental variables strategy building on representatives retiring, we study the effects of blue-collar representation on worker outcomes. We find that electing blue-collar representatives protects workers from involuntary layoffs and mildly compresses wages. Our results support the hypothesis that blue-collar representatives place greater emphasis on job security, in line with higher worries about layoffs and risk of unemployment faced by blue-collar workers.

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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), we know much less about the composition of worker representatives, including 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 by German works councils (*Betriebsräte*) — one of the most powerful codetermination institutions (Jäger et al., 2022b,c) — and study whether changes in the composition of white- and blue-collar representatives, who differ in terms of characteristics and attitudes, shape works council activity.

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). In the election, different unions or employee groups compete for votes (see Figure 1 for an example). 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.

To characterize worker representatives, we draw on and combine three distinct datasets. The first dataset 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). The second dataset is the Integrated Employment Biographies (IEB), 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 direct information on works council membership, we make use of detailed occupation and industry information to identify full-time works council members. We implement several validation checks to assess the accuracy of data on worker representatives in the IEB and also cross-validate our measures across datasets. The third dataset is the Betriebsrätebefragung (WSI survey), which is a yearly survey of works council membership in German establishments with at least 20 employees. By leveraging these complementary datasets, we are able to provide a comprehensive picture of worker representation in Germany and how it has changed over time.

We document a gradual convergence in characteristics of worker representatives compared to the workers they represent: whereas worker representatives tended to be more educated (in terms of vocational training), more likely to be men, and more likely to be German citizens in the 1970s, we see substantially smaller gaps in these dimensions by 2020. In contrast to theories of adverse selection (but mirroring results for politicians in Dal Bó et al., 2017), worker representatives are positively selected in terms of their earnings rank within their

firm or their AKM person effect (both measured prior to becoming a representative). Additionally, we find that worker representatives are more prosocial, politically left-leaning, open to experience, and extroverted compared to the workers they represent. Finally, we show that blue-collar workers have been close to equitably represented on their works councils in the last four decades with an initial, small gap closing over time.

To provide context for our analysis of blue-collar representation, we first document important differences in attitudes between white- and blue-collar workers based on representative survey data from the SOEP from 1999 to 2019.<sup>1</sup> We find that blue-collar workers have higher economic anxieties and perceive greater anticipated unemployment risk than their white-collar counterparts. Blue-collar workers are 20% (6.5ppt) more likely to have experienced unemployment in the past. Further, they are more likely to expect to lose their job in the next two years (5% or 3.5ppt), and are substantially more worried about their job security and economic situation. They also report greater stress levels associated with anticipated job loss, and are more likely to assess their current wage as well as their promotion prospects as unfair given their effort.

To gain insights into the effects of worker representatives, 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 around 1 percentage points (from a base of 14) 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 and find evidence of pay compression. 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, e.g., Malcomson, 1983)), we find some evidence of small positive effects on wages at the lower end of the wage distribution. We find smaller wage effects (and sometimes small negative effects) at higher

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<sup>1</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 manual occupations only or workers with a vocational training (compared to a university-level education).

percentiles of the wage distribution, consistent with blue-collar representation leading to pay compression.

To shed light on mechanisms underlying our results, we explore effect heterogeneity and find larger effects when the election shifts the majority from a white- to a blue-collar majority on the works council. We also find larger results for elections where the firm gets a blue-collar worker representative for the first time, when the elected representatives are older, and in manufacturing.

Our results lend support to the idea that blue-collar representatives place greater emphasis on employment protection, possibly reflecting the greater job security concerns expressed by blue-collar workers that we document. These results also lend support to 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, it adds 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., 2021; Corradini et al., 2021). Boudreau et al. (2021) 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. (2021) 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, in terms of occupation, education, and race, were overrepresented relative to the 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 (and the UK, France, and Italy) over time and find that blue-collar workers and less educated workers were overrepresented in the 1960s, though the gap has since shrunk (but has remained positive for blue-collar workers). While a large share of workers who are works councilors are members of a union, *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., 2022b,c, for summaries of the literature). Fourth, our paper contributes to the literature on structural changes leading 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., 2022). While our findings indicate stable blue-collar representation among works councils, 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 and political outcomes—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 characterizes worker representatives in Germany from 1976 to today. Section 4 presents causal effects of representation. 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 and Legal Basis** 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. 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 full-time councilors are elected by and from the overall works council and tend to take on more active and managing roles in the works council.

**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, 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.

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 wage levels or longer hours (Rehder, 2003; Jäger et al., 2022b). 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 decisions-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 for 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.

**Compensation** Workers are generally not compensated for serving on the works council. Part-time works council members continue to receive their regular salary. Full-time works council members also 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 full-time works council members 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). On average, works council membership appears associated with a salary premium of about 4.6% in manufacturing and a salary penalty of 3.7% in the service sector (Brébion, 2022).

**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., 2022b).

**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 utilize three 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 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 respondents’ current workplace in five distinct waves, namely in 2001, 2006, 2011, 2015, and 2019.<sup>2</sup> Our final sample (see below for details) includes 1,261 individuals, who had been member of a works council at some point during this time period, and 12,383 represented employees.

Second, we draw on the Integrated Employment Biographies (IEB), the universe of employer-employee data administered by the Institute for Employment Research (IAB).<sup>3</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

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<sup>2</sup>In these years, individual works council membership is elicited. The presence of a works council at the respondent’s workplace is assessed in all years except for 2015. For the year 2015, we use information from 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.

<sup>3</sup>We use version V15.00.00-201912 of the IEB for our analysis.

from their regular work to concentrate fully on their representational duties (henceforth: full-time members). These full-time works council members are assigned a unique occupational code and can be distinguished from other representatives, like union leaders and employer representatives, using industry information. In 2007, full-time works council members made up about 11% of total works council members in West Germany (calculations based on the WSI survey for 2007). They devote their entire working time to representational duties and are more common in larger establishments. In consequence, compared to regular council members these members are more specialized in their representational role and arguably play a more pivotal role in negotiations with the employer side. In addition, we can directly compare the works council information in the SOEP data and the IEB data for SOEP-respondents for whom we could link responses in the SOEP data with their records in the IEB data.<sup>4</sup>

Third, we use the *Betriebsrätebefragung* (henceforth WSI survey), a detailed and representative establishment-level survey of works council members. For a short summary of the 2007 wave methods and results see Schäfer (2008). The data for the survey years 2007-2011 are directly available from the The Institute of Economic and Social Research (WSI). This yearly survey is a stratified random sample of all establishments in Germany with at least 20 employees and asks detailed questions about the role of works councils at the establishment. However, due to its establishment-level survey mode, it only elicits a limited number of questions about the composition of the general workforce, which limits the dimensions for comparing works council members to the general workforce. Moreover, access to the survey is available only for a shorter period of time, from 2007 to 2011. However, the WSI allows to distinguish some characteristics between full-time and part-time members, such as gender, serving as a useful validation exercise (see below).

**Identifying Works Council Members** For the SOEP and the WSI-survey, 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 full-time works council members 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 full-time work council member 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. Typ-

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<sup>4</sup>This linkage is part of a larger data linkage project that resulted in the SOEP-ADIAB data (see Jäger et al., 2022a; Antoni et al., 2023).



ically, non-works council representatives are employed in specific industries (such as employed by 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 organisations, 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 full-time council members in other industries accurately. The resulting group of workers in relevant occupations across other industries is our measure of full-time council members in the IEB.

For the WSI survey, the existence of a works council is a prerequisite for participation. In each year a number of questions regarding the composition on the works council as well as the general work force is asked, which allows to compare the characteristics of works councils and non-works councils at the establishment level. In particular, the WSI questions allow to distinguish between characteristics of all works council members (observed in the SOEP) and those of full-time works council members (observed in the IEB), thus serving as a useful validation for our other identification approaches.

**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 the two individual datasets – SOEP and IEB – we select the sub-sample of individuals represented by the works council using the following criteria: age 20-64, full-time regular social security employment (IEB) or self-reported full-time employment (SOEP), and a works council in the current establishment. Further, we exclude individuals in management positions<sup>5</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 work 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. Lastly, we restrict our main analysis to establishments in West Germany. Because the WSI contains information only at the establishment level we cannot impose similar restrictions, but also only consider establishments in West Germany.

For the SOEP, this leaves a sample of 1,652 works council member individual-year observations (1,261 individuals) and 21,812 employee individual-year observations (12,838 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 the WSI survey, we observe a total of 6,378 establishment-year observations over the years 2007-2011 (excluding 2009 where no work council demographics are surveyed). In 2007, the survey includes 1,755 establishments with a total of 881,004 employees represented by 14,124 work council member (1,605 full-time). In the IEB draw, we observe a total of 228,855 establishment-year observations (23,173 establishments) where establishments have a works council with at least one full-time works councilor. In 2009, this implies a total of 1,808,429 employees meeting the sample criteria above represented by 6,580 full-time works council members in 3,851 establishments.

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<sup>5</sup>KldB 1988 Code 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.

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. The WSI survey is directly conducted at that level. For the SOEP data we skip this step, as we cannot observe multiple individuals at that level<sup>6</sup>.

### 3 Worker Representation over Time

#### 3.1 Measuring Worker Representation

We construct aggregate measures of worker representation at the yearly level to describe the trend in worker representation over time.

We first define employee representation at time  $t$  and establishment  $e$  by the mean difference of characteristic  $Y_{it}$  between work 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 over-representation 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 under-representation 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 get a measure of aggregate representation we then weight each establishment observation by its total share in employment ( $N_{et}^{emp}/N_t^{emp}$ ):

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

Both the IEB and WSI 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 work council member characteristics where the weights are the share of total employment represented by a given works council member. These weights can in principle be derived from the size of each establishment because work council size is determined by law based on the number of employees.

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<sup>6</sup>One advantage of the linked SOEP-ADIAB data is that we can study the establishment level as well which we plan to do in the future.

However, the SOEP does not survey establishment size at a sufficiently detailed level, thus we resort to computing unweighted means of work council member characteristics for now. Because the number of employees represented by each works councilor is increasing in establishment size, this will overweight observations from smaller establishments. We examine the extent of mismeasurement by comparing the resulting SOEP time series with establishment-weighted time series for the subset of SOEP-council members that are linkable to the IEB (the SOEP-ADIAB).

In the following descriptive graphs we then plot  $\Delta\bar{Y}_t$  as defined by equation (2) separately by survey for each year in the dataset. Positive values mean that characteristic  $Y$  is over-represented among work council members relative to the regular workforce, whereas negative values imply under-representation.

### **A Validation Exercise for Full-Time Works Council Membership in the Administrative Data**

We perform several validation exercises on our measure for full-time works council members using the administrative data. While the administrative data is generally considered to be of high quality, the occupational code used in this data is not necessary for calculating social security contributions and may, therefore, be somewhat less reliable. However, our sample consists of large establishments that typically have their own HR departments with high reporting standards.

To empirically investigate the validity of our full-time 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 size of full-time works councils based on the number of employees with the actual variation in the data. By law, the number of councils eligible for full-time slots varies with the number of employees and has remained constant since 2001. Panel (a) displays the actual and expected sizes of works councils for the period of 2001-2018. The expected and actual numbers closely track each other throughout the establishment-size distribution, with the actual number hovering around the expected size.

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), one basic prediction is that 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 into other occupations among those who remained 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 mean turnover in non-election years. Finally, we contrast the pattern we observe for our admin measure for females with the corresponding pattern in the WSI survey who has information for female full-time works councils as well as regular works councils. Finally, Panel (c) shows that the pattern in WSI and admin are similar with the WSI somewhat lower, with the 95% CIs of the two lines overlapping.

In sum, all three validation exercises support the reliability of our measure for full-time works council members in the admin data.

## **3.2 Describing Representation over Time**

Next, we will describe how the characteristics of worker representatives have evolved over time in relation to those of the employees they represent.

**Convergence in Occupational Background and Demographic Factors** Figure 3 illustrates the evolution of worker representation in terms of occupational background, education (both own and parental), and gender over time. Panel (a) reports representation for four different measures of occupational background. While these categorizations partly overlap, they are not identical (for details see Appendix Section C and Table A3 as well as Figure 3.2 for level specifications). We first consider our main blue-collar worker definition, drawing on simple manual occupations, simple service occupations, qualified manual occupations, technical occupations, and agricultural occupations in (Blossfeld, 1985). We see a moderate gap with blue-collar workers slightly underrepresented (around -10 ppt) in 1975 with a secular convergence and the gap closing over time. We also draw on an alternative blue-collar definition, omitting service occupations. For this definition, 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 find very similar results when we focus on workers in routine occupations. Finally, we also draw on workers in manual occupations for whom representation patterns are almost identical to those of blue-collar workers with a representation gap gradually closing over the last 45 years.

In Panel (b) of the same figure, we examine the representation of the same three occupational groups for all worker representatives in the SOEP.<sup>7</sup> This representation is proportional over the observation period 2001-2019. Notably, routine occupations are represented proportionally over the entire period. However, while there are no clear trends in representation, there has been a secular decline in all three occupations. Appendix Figure provides an example for 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.

Panel (c) in Figure 3 shows the evolution of representation of workers with a vocational or university degree over time. Initially, there was an over-representation of about 15 ppt at the beginning of the observation period. However, this difference converges to equal representation by the end of the observation period. When focusing on university-degree holder only in Panel (d), we observe a decline from about equal representation to under-representation of approximately 5 ppt. This is in spite of a substantial increase in the average education level over that period, as demonstrated in Appendix Figure 3.2. This pattern suggests a persistent over-representation of individuals with a medium-level education, particularly those with vocational degrees.

When considering representation for all representatives in the SOEP, we see a similar pattern, where vocational-degree holders are represented proportionally in the recent period, while university-degree holders are under-represented among works council members. The SOEP also allows us to examine not only own education, but also parental education. Panel (e) plots the representation of individuals with fathers who have a high school degree. The plotted difference is flat and close to zero, implying equal representation along parental education. Overall, worker representatives are similar or exhibited convergence among a variety of domains that capture dimensions of blue collar workers and educational background.

In Panel (f) of Figure 3, we examine gender representation and observe a striking convergence in the representation of female workers in full-time works councils over the observation period. Starting out from an under-representation of 15 ppt in 1976, this gap has reduced to less than 5 ppt (but still persists as of 2018). Thus, women still remain somewhat underrepresented among full-time works councils members. The convergence occurred despite an increase in the share of females in the workforce over this period and a 2001

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<sup>7</sup>We are updating the figure to also include the category of blue-collar workers omitting simple service occupations.

reform that mandated proportional representation of women (or men, if underrepresented).<sup>8</sup> Looking at all representatives in contrast, women are slightly overrepresented.

We also compare the evolution of representation for the unweighted SOEP series and an establishment size weighted series for the subset of individuals that we can link with the administrative IAB data in Appendix Figure A1. The establishment weighted series in the linked data is broadly consistent with the series based on the SOEP data alone, but has notably larger CIs and is more volatile due to the smaller number of observations in the linked sample. For females (Panel (a)), individuals with at least a vocational degree (Panel (b)), and at least a university degree (Panel (c)) both representation measures track each other closely. For blue-collar and manual worker (Panel (d) and (e)) both measures start from the same level but diverge somewhat over time, with the linked sample indicating an increase in representation along these measures. For routine measures (Panel (f)), both measures track each other closely. Overall, the linked establishment weighted representation measure paints a similar picture of representation to the unweighted SOEP series.

**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)) as workers who have lucrative regular careers may have higher opportunity costs of selecting into worker representation. However, higher-ability workers may also have a higher chance of electoral success, which could lead to positive selection of worker representatives.

To investigate this hypothesis, we compare the ability and labor market performance of worker representatives to those of the workforce they represent in Figure 4. Panel (a) shows the mean difference in a standardized short IQ test. The test consists of a word fluency test and a symbol correspondence test (see Appendix Section B for details), which we standardize for ease of interpretation. We find that the mean difference between the groups is slightly negative and statistically indistinguishable from zero over the whole observation period, indicating that cognitive ability is very similar between work councilors and the regular workforce.

Panel (b) then turns to differences in labor market outcomes and performance based on wages. For full-time councilors in the IEB, we use two outcomes: the log-wage difference between work-councilors and the median wage earner at the establishment, and the difference of individual fixed effects relative to the median from an AKM regression (Abowd et al., 1999). To measure earnings potential outside of councilor duty that is not confounded by potential wage-effects of being a councilor (see (Brébion, 2022; Goerke and Pannenberg, 2022) for a discussion), we measure these differences pre-membership. For residual log-wages we use the last year before becoming a full-time works council member, whereas for individual AKM fixed effects we use the last year of the previous AKM period.<sup>9</sup> For both measures, we use residualized versions that control for demographic factors such as gender, nationality, education and age, as well as labor market experience and a dummy for full-time status. We find that full-time councilors are positively selected, both in terms of log wages and AKM fixed effects. Compared to the median employee at their establishment, full-time councilors earn almost 10% higher wages throughout the observation period. The findings for individual fixed effects are very similar, with slightly larger differences to the median worker and again flat time trends.

As the SOEP does not allow us to compare within-establishment differences, we use the mean differences of

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<sup>8</sup>We do not detect a visible shift in representation of women on the works council after 2001.

<sup>9</sup>See Bellmann et al. (2020) for information on estimation periods and other construction details of the AKM fixed effects.

log-wages as a complementary measure for the earnings differences between all councilors and the regular workforce. The residual wages of council members are very similar to those of the regular workforce and we cannot reject equality at the 0.05 level. Our findings of similar ability are in contrast to theories of adverse selection, but mirror — together with positive selection in terms of wages — results for politicians (Dal Bó et al., 2017).

**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 attitudes measure, which are not included in any of the other two datasets. We start by describing the evolution of career preferences, shown in Panel (a) of Figure 5. The underlying question asks respondents to rate how important career success is to them on a scale from 1 to 4 (with higher values implying greater importance). The mean difference in standardized responses between council members and the general workforce is negligible throughout the observation period. Panel (b) presents the mean difference in the importance of being there for others, rated on the same scale and standardized. The results show that the difference is close to zero in most years, with perhaps a slight, but insignificant, increase in the latest years. This finding suggests that pure altruistic motives are not the primary driver of becoming a council member.

Next, we investigate several political preferences in Panel (c) – (e). In Panel (c), we compare the importance placed on social or political activism by worker representatives and regular employees using again a standardized measure based on a similar question as for the importance measures discussed above. In contrast to previous preference outcomes, we observe a clear difference: council members report a 0.25 standard deviation higher importance of social or political activism as a life goal. This difference is significant at the 0.05 significance level and remains relatively constant over time. Similarly, when asked about their level of political interest, work council members are about 0.20 to 0.25 of a standard deviation more interested in politics than regular employees, a pattern that remained constant over the past two decades. Additionally, we find that council members have political views different from the average worker. Panel (c) of Figure 5 shows that council members are about 0.15 standard deviations more left-leaning than the regular worker. While this difference is not significant in most years separately, the difference becomes significant when pooling years (see Appendix Table A2).

We now turn to an assessment of differences in personality traits between works councilors and the regular workforce. In Figure 6, 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>10</sup> Panel (a) illustrates that council members report higher levels of openness, with the difference being significant for most years. Specifically, the difference ranges between 0.15 to 0.2 of a standard deviation. Panel (b) displays differences in conscientiousness. Except for the first observation year, where councilors report a somewhat higher conscientiousness, differences are close

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<sup>10</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 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).

to zero and insignificant. Council members are more extrovert, as shown in Panel (c), with a statistically significant difference of 0.2 to 0.25 of a standard deviation over the whole observation period. In terms of agreeableness, council members appear somewhat less agreeable although the differences are small and not significant. Panels (d) and (e) depict neuroticism and locus of control, respectively, and show that council members are comparable to the regular workforce, with differences that are insignificant and close to zero.

In sum, works council members are similar to the regular work force in terms of life goals, locus of control and Big Five personality traits conscientiousness, agreeableness, and neuroticism, but are notably more politically interested, more left-leaning 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. (2021) 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 full-time 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 Effects of Worker Representation

### 4.1 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) – (2) of Table 1, along with the corresponding differences between the two groups (Column (3)). Panel (a) shows differences in demographic background and unemployment experience. Blue-collar workers are less likely to be female, hold a university degree, or have a father with a high-school degree. Notably, blue-collar workers have a 6.5 ppt higher likelihood of having experienced unemployment in the past. Panel (b) shows that blue-collar workers are also substantially (8.3 ppt) more worried about their economic situation in general and in particular their job-security (12.8 ppt). They are moderately more worried about the devaluation of skills (4 ppt) and are slightly (0.065 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 a 16% (3.1ppt) higher probability of losing their job within the next two years, are slightly more pessimistic about getting promoted (1.2 ppt), and view it substantially less likely to receive further training (12.8 ppt). 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" (3.8 ppt.), "wage not fair given effort" (3.2 ppt), and "insufficient recognition from superiors"

(3.2 ppt). However, they name significantly less often "interruptions at work" 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 but restricted to individuals that report being members of a 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 counterpart.

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.

## 4.2 Two Complementary Identification Strategies

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

**Retirement IV** Our IV strategy uses the fact that in Germany a large share of individuals retires in their early 60s and at salient, statutory retirement ages (Seibold, 2021). This creates turnover in works council members around election years that also generate changes in the composition of the works council, depending on who exits. If a blue-collar member exits, 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 4 formalizes this intuition into an expected share of the works council of group  $g$  (blue-collar workers) at time  $t$  and establishment  $e$ , which we will use as our instrument. This share depends on past years share of blue-collar workers in the works council  $\frac{Nwc_{e,t-1}^g}{Nwc_{e,t-1}}$ , with  $Nwc_{e,t-1}^g$  referring to the number of works councilors in group  $g$  and  $Nwc_{e,t-1}$  to the overall number of employees in the works council. In addition, it depends on a term in which the number from out-groups ( $Nwc_{e,t-1,exit}^{g'}$ ) enters positively and that of in-groups ( $Nwc_{e,t-1,exit}^g$ ) negatively. The term  $s_{e,t-1}^g$  represents the share of the work-force of the in-group and captures that exits from out-groups are more likely to be replaced by an in-group worker, the higher its share among the total workforce.

$$E[swc_{e,t}^g] = \frac{Nwc_{e,t-1}^g}{Nwc_{e,t-1}} + \frac{Nwc_{e,t-1,exit}^{g'} \times s_{e,t-1}^g - Nwc_{e,t-1,exit}^g \times (1 - s_{e,t-1}^g)}{Nwc_{e,t-1}} \quad (4)$$

The exit-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 in-group share at the establishment. In all specifications, we cluster standard errors at the establishment level.

The first stage regresses the actual in-group share in year  $t$  on the predicted share displayed in Equation 4. Instead of using the yearly share, we use an imputed version, where we count every individual for the full election period as member. Thus, we effectively use only variation between election periods. Figure 7 visualizes the first stage as a binned scatter plot and shows how well the expected in-group share of works council members predicts the actual share after controlling for establishment and year effects. There is a strong linear relationship for all groups: In the case of blue-collar workers, the estimated coefficient is 0.305 and highly significant ( $se=.01$ ) with a  $t$ -stat of above 30 alleviating any potential weak-IV concerns.<sup>11</sup>

$$Y_{eg,t+4} = \alpha + \beta swc_{e,t}^g + \theta_{eg} + \eta_{tg} + \varepsilon_{egt} \quad (5)$$

Equation 5 shows our second stage equation. 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,  $\beta$  estimates the treatment effect, pooled for both blue- and white-collar workers.

**Event Study Specification** We complement our IV specification with an event-study design. We concentrate on the first large increase ( $\geq 33\%$ ) in an establishments' in-group share in the works council.

To get a comparable control establishment, we match a never-treated control establishment within the pre-treatment 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., forthcoming; Illing et al., 2021). Our set-up also avoids the concern of multiple periods or variation in treatment timing raised in the recent event-study literature (Johansen et al., 2022). We use 1:1 nearest-neighbor matching. As matching variables, we use the in-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. Appendix Table A4 compares the pre-event characteristics in the treatment group with a control group before and after matching. Before matching, establishments in the treatment group are notably larger and more likely located in West Germany. After the matching, establishments are comparable along these and other dimensions, including some not used for matching, like industry composition.

$$Y_{get} = \alpha_e + \beta_t + \sum_{\substack{h=-5, \\ h \neq -1}}^5 \tau_h I\{t = c_e + h\} \times I(treat_e = 1) + \sum_{\substack{h=-5, \\ h \neq -1}}^5 \delta_h I\{t = c_e + h\} + \sum_{\substack{h=-5, \\ h \neq -1}}^5 \theta_h I\{t = c_e + h\} \times I(g = 1) + \varepsilon_{et} \quad (6)$$

Equation 6 shows our event-study specification for outcomes of establishment  $e$  in year  $t$ . The specification also allows for separate effects by group  $g$  (blue- vs. white-collar workers). We use 5 leads and lags, with

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<sup>11</sup>A slope of below 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 and highlights the importance of using an instrument-based variation in the first place.

$c_e$  denoting the establishment-specific treatment year. To make these estimate representative for the represented work-force, we weight it with the number of regular employees, capped at the 95th percentile of the establishment-size distribution to reduce the influence of outliers.

Besides the establishment fixed effects  $\alpha_e$  we also include year-fixed effects  $\beta_t$  and relative time fixed effects  $\delta_h$ , which we allow also to vary by group ( $\theta_h$ ). Coefficient  $\tau_h$  shows the treatment effect in year  $h$  relative to treatment, with  $h - 1$  constituting the reference year. As our main specification, we estimate pooled version where we replace the post-period coefficients with one post-treatment indicator, as well as from a triple-diff specification that pools both groups and from which we extract the in-group-effect relative to the out-group. To examine potential pre-trend violations, we also test for joint significance of the pre-event  $\tau_h$  and report resulting p-values as an indication. Standard errors in all specifications are clustered at the match-pair level.

Panel (a) of Figure 8 shows the event-induced change in the group composition in the works council: In the event year, the share of in-group councils increases by 46 percentage points — from about 13% to 61% — compared to the pre-event year. The trend is sudden, with pre-trends flat and indistinguishable from zero in pre-event years. In the post-event years the share remains high and declines only slightly in the five years after treatment.

**Concordance Effects Specification** Besides the pooled specification, we are also interested in the effect of blue-collar workers (the in-group) in isolation, as well as how the effects for blue-collar workers differ from that for white-collar workers (the out-group). Equation 7 shows a modified second stage IV specification. Here  $\beta^g$  captures the effect for blue-collar workers, whereas  $\delta$  captures the effect of blue- relative to white-collar workers.

$$Y_{eg,t+4} = \alpha + \beta^g \hat{swc}_{e,t}^g + \delta \hat{swc}_{e,t}^g \times I(g = 0) + \theta_{eg} + \eta_{tg} + \varepsilon_{egt} \quad (7)$$

For the event-study specification, we estimate separate regressions for blue- and white-collar workers, as well as triple-diff specifications, allowing us to examine the relative effect of blue- to white-collar worker representation.

### 4.3 Main Results

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

**Separations** We report effects on separation outcomes in Figure 8 (and Table 2). Panel (b) of Figure 8 shows event-study results for the propensity of separating involuntarily from the current establishment, where we proxy for involuntary separations as separations involving at least a gap of three months of nonemployment before the next employment spell. Pre-trends are relatively flat and indistinguishable from zero. Separations decrease in the first two post-event years, after which they remain about 1 ppt lower relative to the pre-event year, with a pooled post-treatment effect of -.009 (se=0.0034). Relative to a pre-event mean of 0.11, this constitutes about a 10% decrease in involuntary separation.

We next investigate a revealed preference measure of job quality, voluntary separations in Panel (c), defined

as separations followed by another employment spell within the next month (see also Harju et al., 2021). In contrast to involuntary separations, they barely respond to the event and stay relatively flat, with at most a small downward dip in the year post-event and a pooled effect of  $-.002$  ( $se=.001$ ).<sup>12</sup> Our evidence thus does not point to blue-collar representation leading to workplaces becoming more 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). There, we find a decline of 0.3 ppt ( $se$  0.1 ppt). Blue-collar representatives thus appear effective at preventing job loss due to establishment closure.

As a complement to our event study approach, we implement the IV specification. 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. The IV strategy instead isolates variation driven by incumbent worker representatives reaching retirement age (Seibold, 2021).

We examine the same separation outcomes using our IV specification in Panel (A) of Table 2, Columns (2). We find similar effects in the IV specification compared to the event studies with a decline in involuntary separations of  $-0.8$  ( $se=0.003$ ) ppt. This implies an effect-size of about half of the event-study estimate, when scaling with the corresponding increase in the blue-collar council share ( $1/.459$  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. The point estimate for the effect on establishment closure is negative but very small and statistically not significant; the confidence interval includes the event study estimate. We also find no evidence for permanent exits.

We see similar, slightly larger effects when combining the event-study and IV approach, i.e. when restricting to the subset of events where the IV would predict an exit-induced increase in the workforce. Column (3) shows the resulting estimates for this specification. For involuntary separations the estimates are about twice as large as for the event-study only ( $-0.0226$ ,  $se=0.006$ ), and the estimates for the effects on involuntary separations are small and insignificant.

Results are also relatively similar when varying the post event window over which the treatment effects are calculated. Results in Column (4) and (5) examine outcomes over a 3-year window post event, whereas Column (6) and (7) look at a 7-year window post event. Both specifications deliver similar results that are –if anything somewhat larger for the longer period.

**Wages** We report effects on wages in Figure 8 and Table 3. In the event study specifications, we document small, positive wage effects of 0.56 log points ( $se$  0.3) at the 10th percentile in Panel (a) of Figure 8. Wage effects are essentially zero at the mean and median (Panels (b) and (c)). We find small negative wage effects at the 75th percentile (along with a small, increasing pre-trend). The event study specifications are overall in line with the election of blue-collar representatives inducing a small degree of wage compression.

We find a slightly different picture in the IV specifications (column (2) of Table 3). There, we find positive effects of about 1 to 1.5 log points at the 10th, 50th, and 75th percentile of the wage distribution. The IV

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<sup>12</sup>The effect is statistically significant but we also find some evidence for a small trend violation before the event and note that effects and pre-trends are very small.

specification also points to larger effects at the 10th percentile though we cannot reject that coefficients are equal across the three percentiles we consider.

## 4.4 Robustness

We implement a number of tests and alternative specifications to probe the robustness of our findings.

Our first set of robustness checks examines a variety of alternative turnover definitions in Appendix Table A5. Overall, these findings are consistent with our main result. Panel (A), examines what happens when we look at all (involuntary and voluntary) exits together. The findings are close to those for the involuntary separations and robust among several specifications. Restricting to non-permanent exits (i.e. individuals returning to the labor market eventually), we see an effect that is only slightly smaller for the event study and also robust to different specifications, though the IV specification is less conclusive. Finally, we split up our sample by extensive margin (establishment closure) exits in Panel (C) and report also the complementary intensive margin responses in Panel (D), where we also restrict to a balanced panel (i.e. only consider establishments that exist at least 5 years out of the event). We find responses on both margins with the intensive margin responses somewhat larger than the extensive margin ones, though both margins matter. Note that for the intensive margin response in Panel (C), we restrict to establishments in existence throughout the event study window, thus also alleviating concerns about differential attrition.

Our second set of checks examines the robustness to alternative occupation-based group definitions in Appendix Table A6, in particular manual workers (Columns (1) and (2)) and routine jobs (Columns (3) and (4)) for both event-study and IV-specifications. Panel (A) - (C) examine robustness for different turnover outcomes. In all cases, estimates for involuntary turnover are significantly negative, and in the same ballpark as the baseline result. For the event-study design, the effect size for manual jobs is slightly smaller than the baseline effect (-.007, se=.004), whereas for routine jobs the effects are slightly larger (-.012, se=.004). For the IV specification, effect sizes are close to the baseline estimate in both specifications. For voluntary turnover, estimates remain closer to zero in all cases, with all coefficients smaller than .0025 in absolute terms. Turning to wages in Panel (D)-(F), unlike in our baseline specs, we see no clear evidence for wage-responses, though the event-study estimates are close to our baseline findings.

## 4.5 Differences between Blue-and White-Collar Workers

We also investigate to what extent effects differ between blue- and white-collar workers and find broadly similar effects for both groups of workers. Appendix Figures A8 and A9 show group-specific event-study estimates for turnover and wages, respectively. For turnover, the effect sizes are very similar for both blue- and white-collar worker. While the effects are, if anything, slightly larger for blue-collar worker, the difference to white-collar workers is usually very small and insignificant. For wages, we also find broadly similar effects.

We also find broadly similar results across blue- and white-collar workers in our IV-specifications. Appendix Table A7 shows results for turnover, which shows no evidence for systematic differences between blue- and white-collar workers. For wages, Appendix Table A8 shows no evidence for a wage-increase at the bottom, although white-collar experience a significant wage gain especially at the bottom of the distribution.

Taken together, elections of blue-collar representatives lead to broadly similar effects on turnover and wages

of blue- and white-collar workers.

**Hires, Promotions and Layoff Composition** We also investigate how hires and promotions are affected by changes in the blue-collar council share. We find no evidence for a change in the number or the composition of hires along a variety of dimensions as documented in Appendix Table A11. We also find no evidence of a change in promotion-induced wage growth. We also investigate whether the composition of worker exits responds to the increased number of blue-collar workers. Appendix Table A12 documents that there are no significant changes in the composition of regular (social security reliable) jobs, trainees and the share of mini-jobs.

## 4.6 Heterogeneity

To shed light on mechanisms, we investigate heterogeneity across a number of event- and firm-specific characteristics. We find larger effects on involuntary separations when the election shifts the majority from a white- to a blue-collar majority on the works council. We also find larger results for elections where the firm gets a blue-collar worker representative for the first time, when representatives get elected to councils that had existed for a longer period, and for works councils in manufacturing.

We report detailed results based on our event study specifications in Tables 4 and 5 with results for turnover and wages, respectively.

A first set of heterogeneity examines whether events that induce a majority shift lead to stronger effects. Column (2) and (3) split the sample by whether the event induces a majority shift from a white- to a blue-collar majority. Effect sizes of majority shifts are stronger than those without such a shift. Column (4) and (5) examine cases where a first blue-collar worker enters the council (the majority of cases), vs. one that already had a blue-collar council before. We see larger effects for events where a blue-collar worker enters the works council full-time for the first time. We then examine heterogeneity by establishment size. Column (6) shows results for establishments below the (size-weighted) median size and column (7) shows the same for above-median-sized firms. We see a similar effects for small and large firms. We then turn to examine the role of works council age. Here, we split by below- (Column (8)) and above-median (Column (9)) age (since the time we first observe a works council member in the data). We see stronger effects for longer-established works councils. Finally, we examine differences by industry. Column (10) results for non-manufacturing sector and Column (11) looks at the manufacturing sector. Effects are predominantly concentrated in the manufacturing sector, with little evidence for results in other sectors.

Overall, we see evidence for stronger effects when there is a clear majority shift and in settings where the council is arguably more powerful, such as for longer-established councils and in the manufacturing sector with traditionally high union and works council coverage.

## 5 Conclusion

Our exploration of over four decades of data documents broadly proportional representation of blue-collar workers in German works councils. This finding, 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 workers' voices. We found that worker representatives 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.

Our analysis indicates that the election of blue-collar representatives has concrete implications for worker outcomes. Blue-collar representatives reduce involuntary layoffs and have a limited, compressing effect on the within-firm wage distribution. Our findings support the notion that blue-collar representatives emphasize employment protection, perhaps reflecting the greater job security concerns expressed by blue-collar workers.

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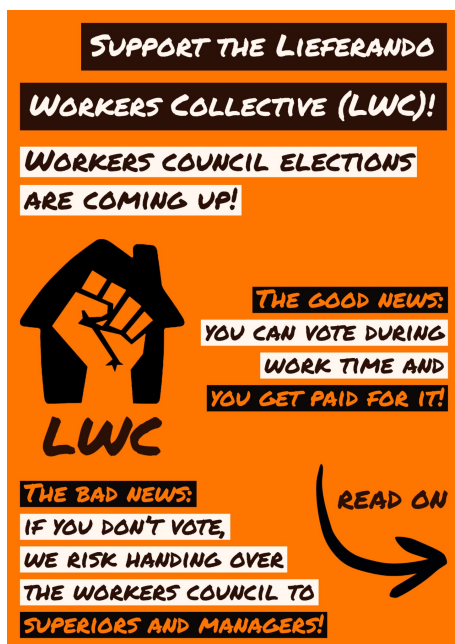
## Figures

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

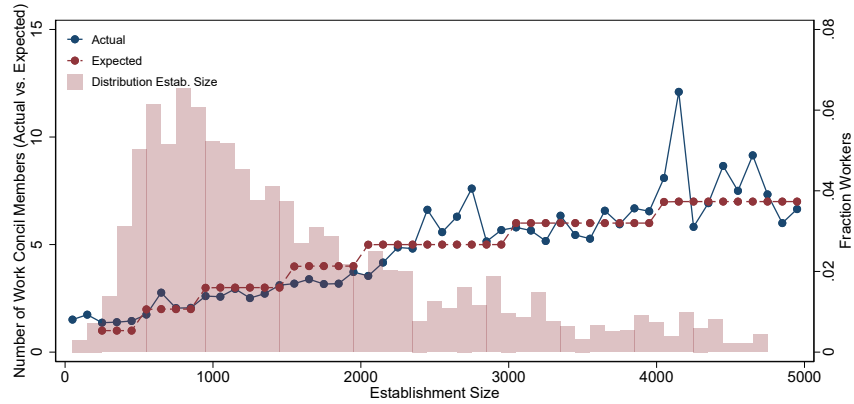


(c) Campaign Flyer By DGB Member Union

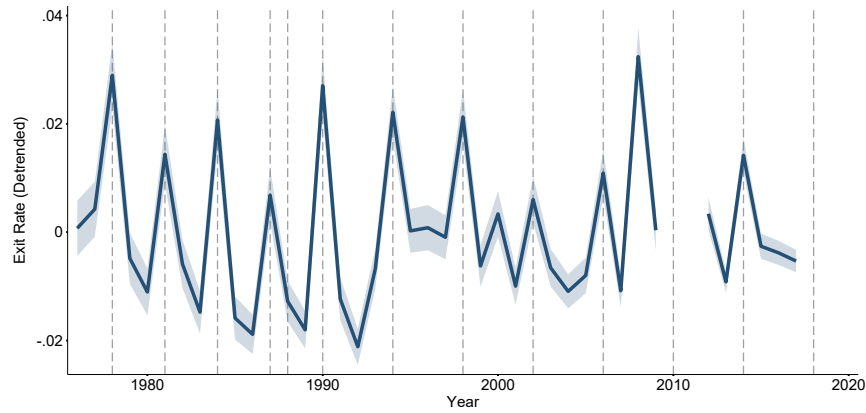


**Notes:** The figure provides examples of campaigns during the lead-up to the 2022 works council elections. Panel (a) shows a protest by drivers and riders for a food delivery firm and illustrates demands in response to the dismissal of a rider (Source: picture alliance/dpa/dpa-Zentralbild — Jan Woitas). 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).

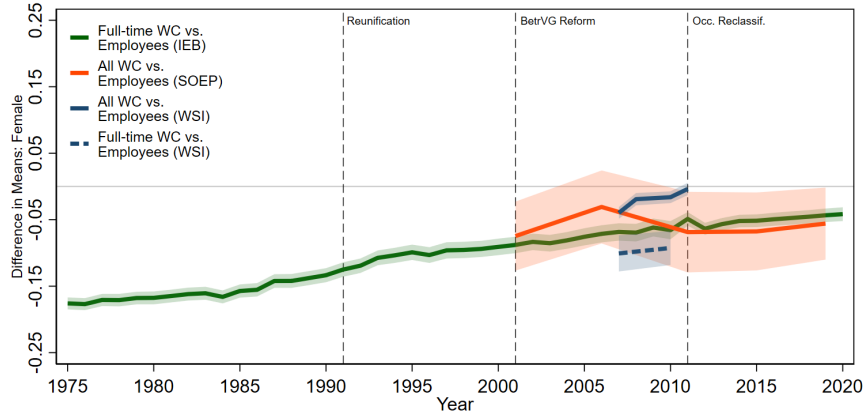
Figure 2: Validation Exercises for the Works Council Measure in the Administrative Data



(a) Expected vs. Actual Full-Time Works Council Size by Establishment Size



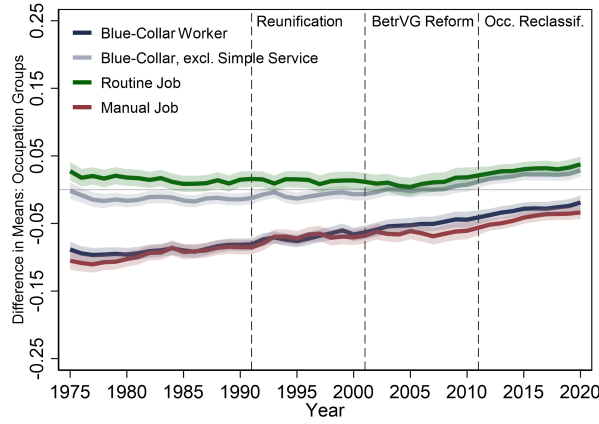
(b) Excess Works Council Exits in Election Years



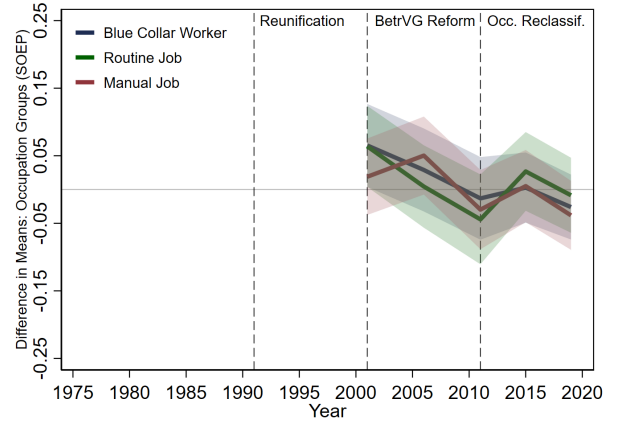
(c) Mean Difference Females in IEB, WSI and SOEP

**Notes:** This figure shows three different validation exercises for the full-time works council 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) in the baseline year. Panel (b) contains a measure for exits on the yearly level defined as individuals leaving works council member-status but remaining at the establishment. The year 2011 is excluded due to occupational re-coding in that year. Panel (c) compares the mean difference of full-time works council members to employees in the admin data as well as the difference for all works council members in the SOEP, with a third data source — the WSI survey — that contains the shares for both. Shaded areas/horizontal lines indicate the 95% CI.

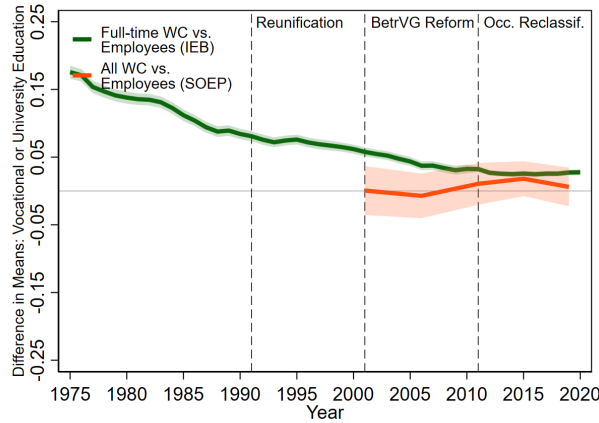
Figure 3: Work Council Representatives vs. Employees: Convergence in Demographic Factors and Parental Background



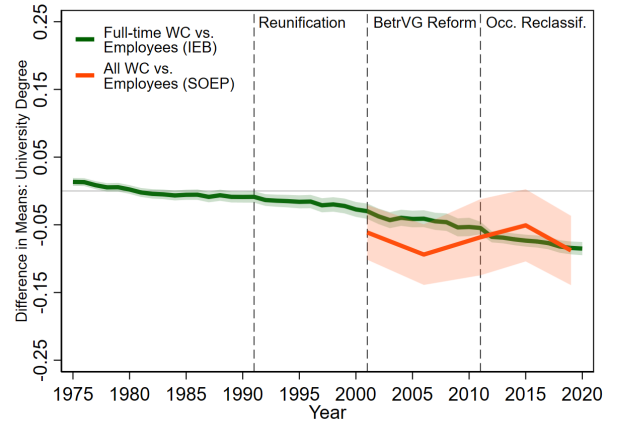
(a) Blue Collar, Manual, Routine (IEB)



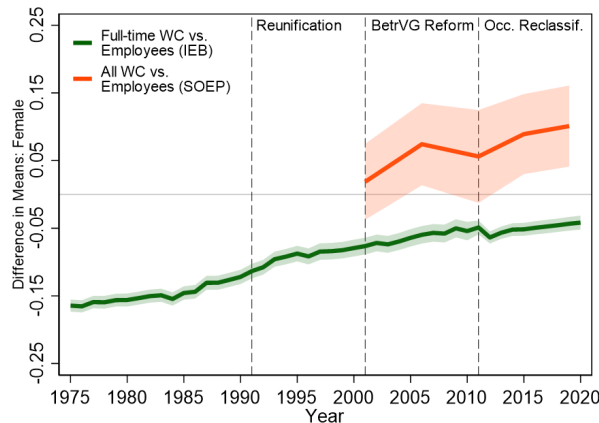
(b) Blue Collar, Manual, Routine (SOEP)



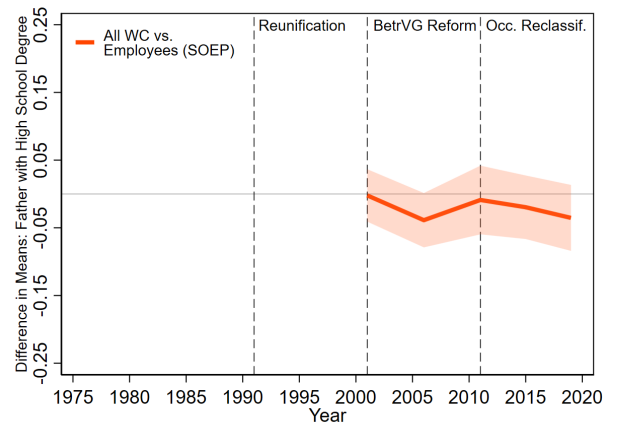
(c) Own Education: Vocational or University Degree



(d) Own Education: University Degree



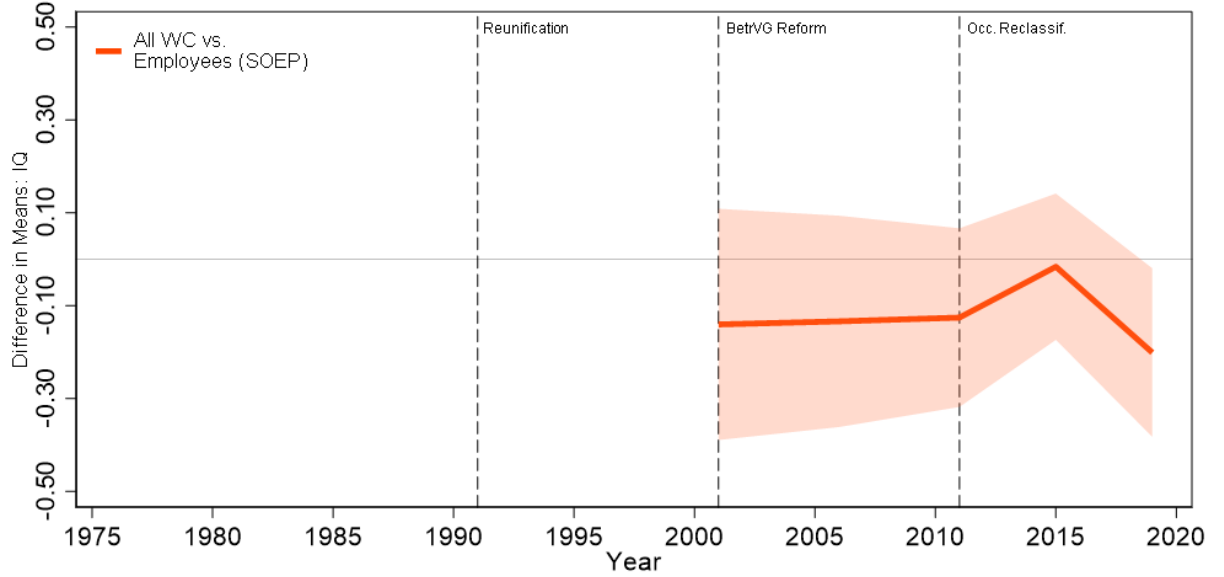
(e) Female



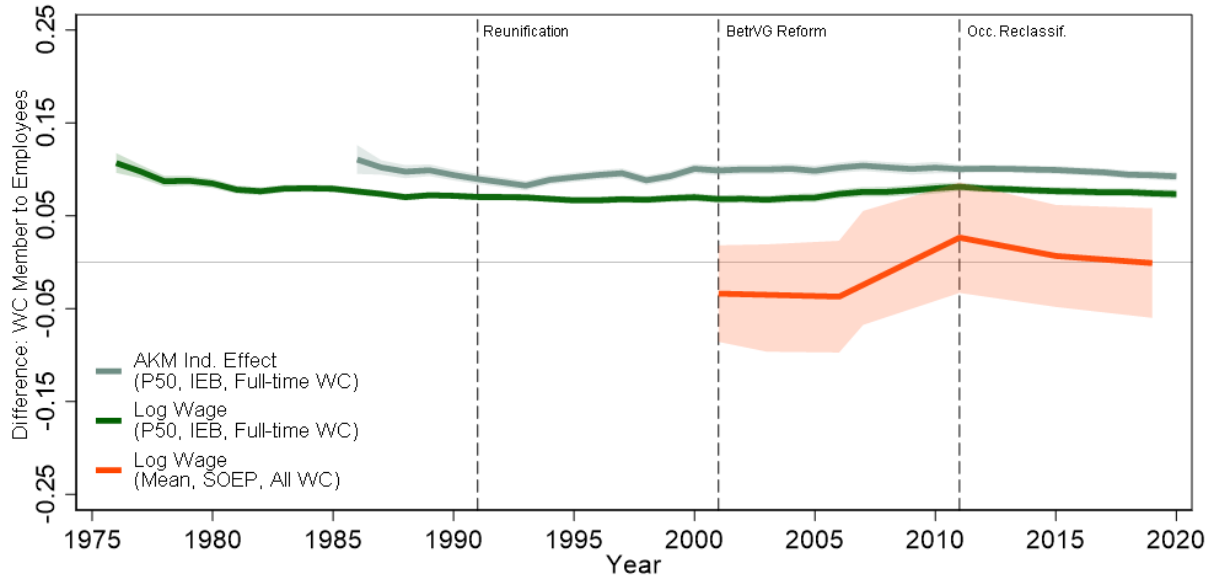
(f) Parental Education: Father with High School

**Notes:** This figure shows the evolution of the difference in demographic characteristics between work 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 full-time work council members uses administrative data from the IEB, the time series for all work council members (full-time and regular) is based on the SOEP household panel. Both time series restrict to West Germany, based on place of work in the IEB and residency in the SOEP. For details on the datasets see section 2. The time series are weighted to be representative of (regular) employees in 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 4: Work Council Representatives: Ability and Labor Market Performance



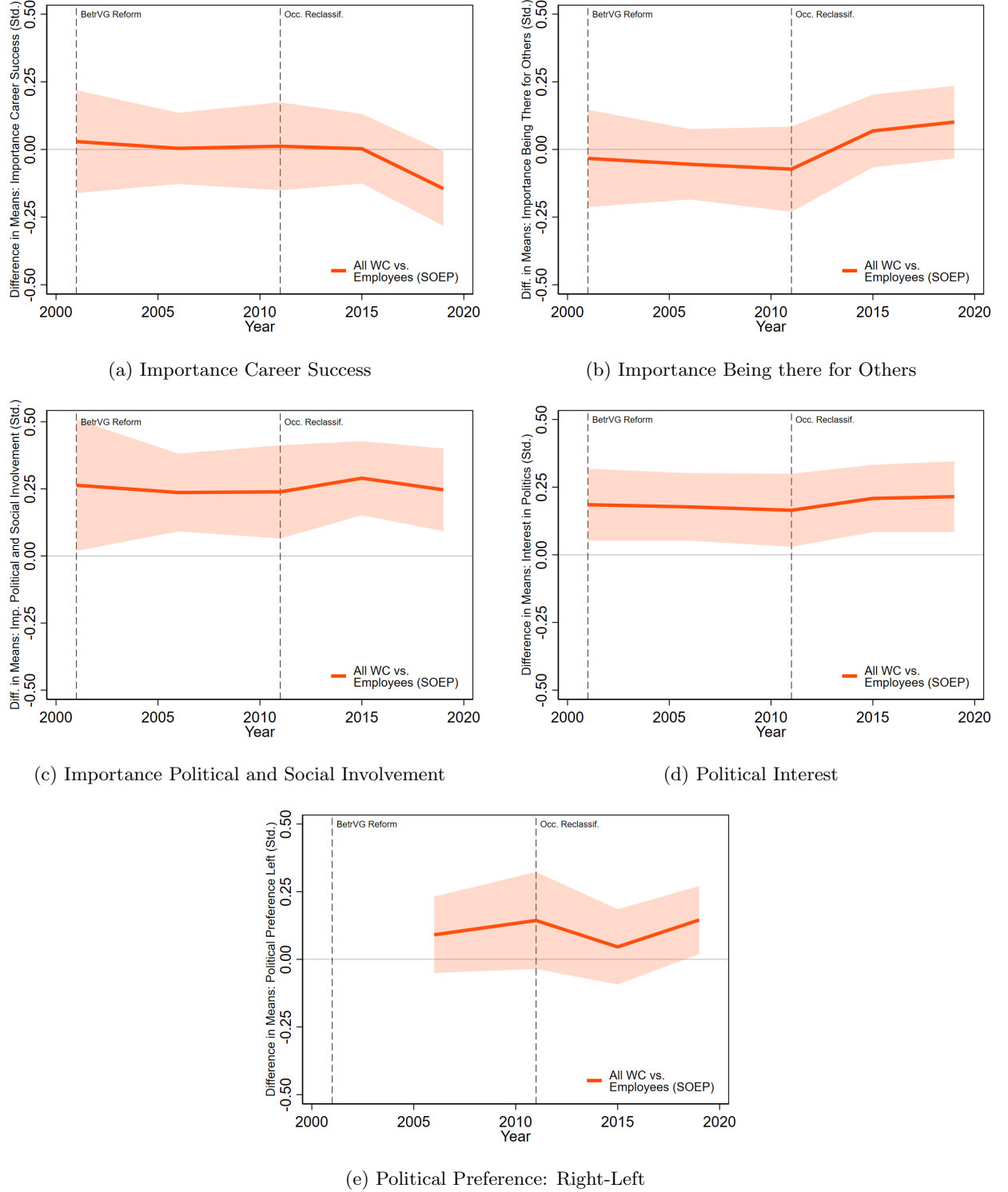
(a) IQ (Symbol Short-scale, Std.)



(b) Difference in Wages and AKM Fixed Effects

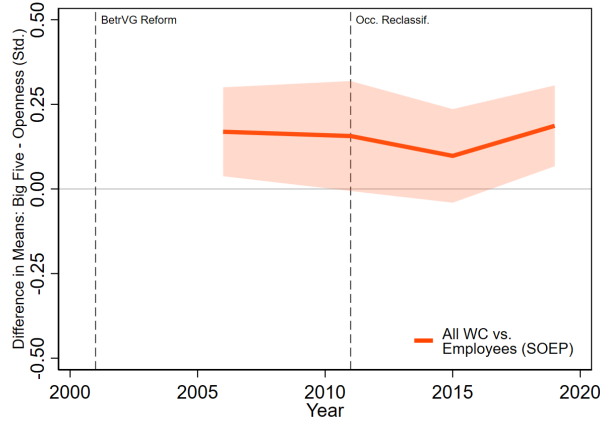
**Notes:** This figure shows the evolution of ability and labor market performance of individuals comparing work council members and the employees they represent in establishments with works councils. Wages in the IEB time series are from yearly employer notifications for the social-security system. SOEP wages are self-reported, for details see Appendix Section B. All wages are before taxes and deflated with base year 2010 using the CPI. For the AKM individual fixed effect and the log wage time series (IEB) we first take the difference between each works council member and their respective establishment median and then average over all works council members. Both measures are residuals from a regression on tenure, age, employment status, education, gender and nationality. For the log wage time series using SOEP data we don't observe establishment wage distributions and instead plot the mean wage difference between works council members and employees. 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 5: Work Council Representatives: Political Preferences

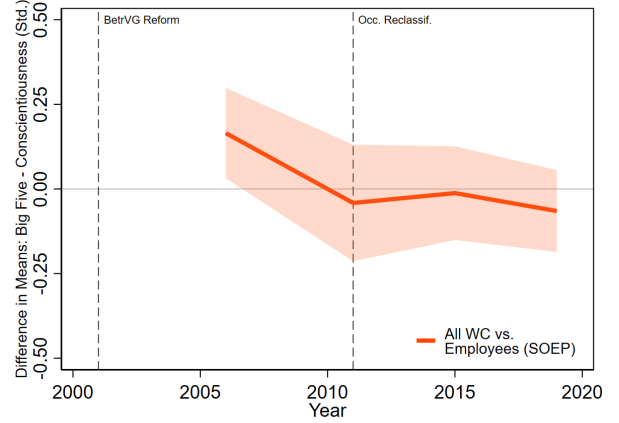


**Notes:** This figure shows political preferences surveyed in the SOEP for both work council member and non-member employees. Non-member employees are only included for workplaces with a work council. All survey outcomes are plotted in years in which work council membership is surveyed. For survey years in which a given outcome and work council membership are not surveyed simultaneously, we impute outcomes forward in time. For details see Appendix Section B. Shaded regions are 95% confidence intervals.

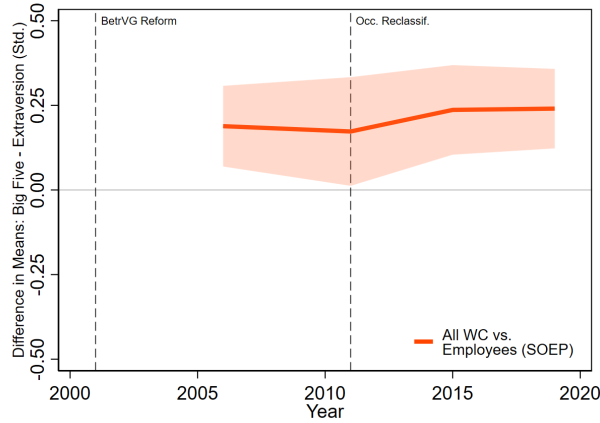
Figure 6: Work Council Representatives: Personality



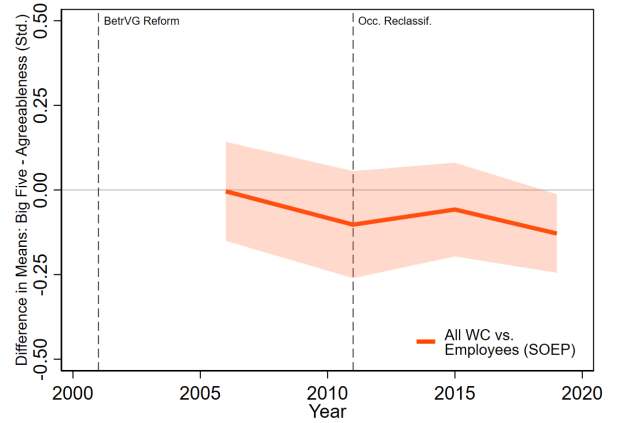
(a) Big 5: Openness



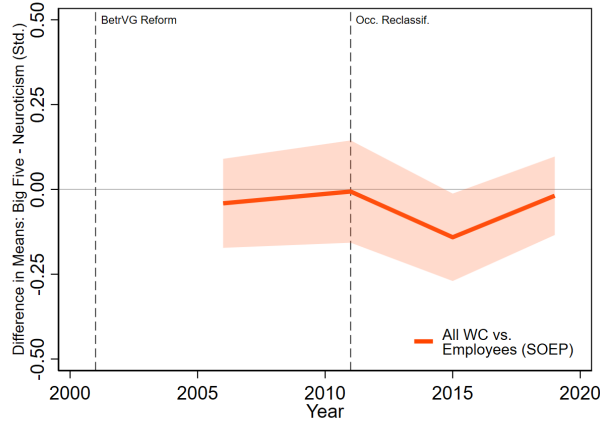
(b) Big 5: Conscientiousness



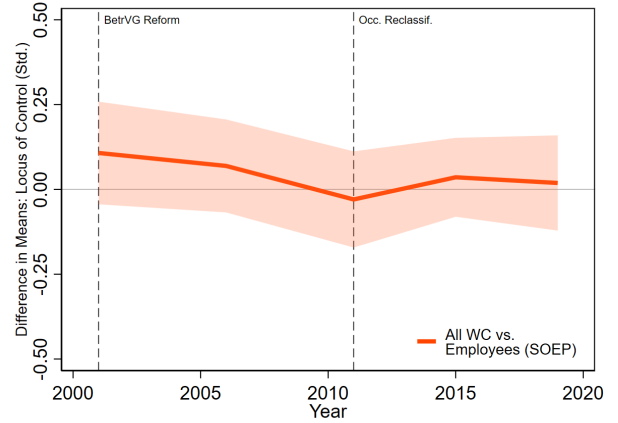
(c) Big 5: Extraversion



(d) Big 5: Agreeableness



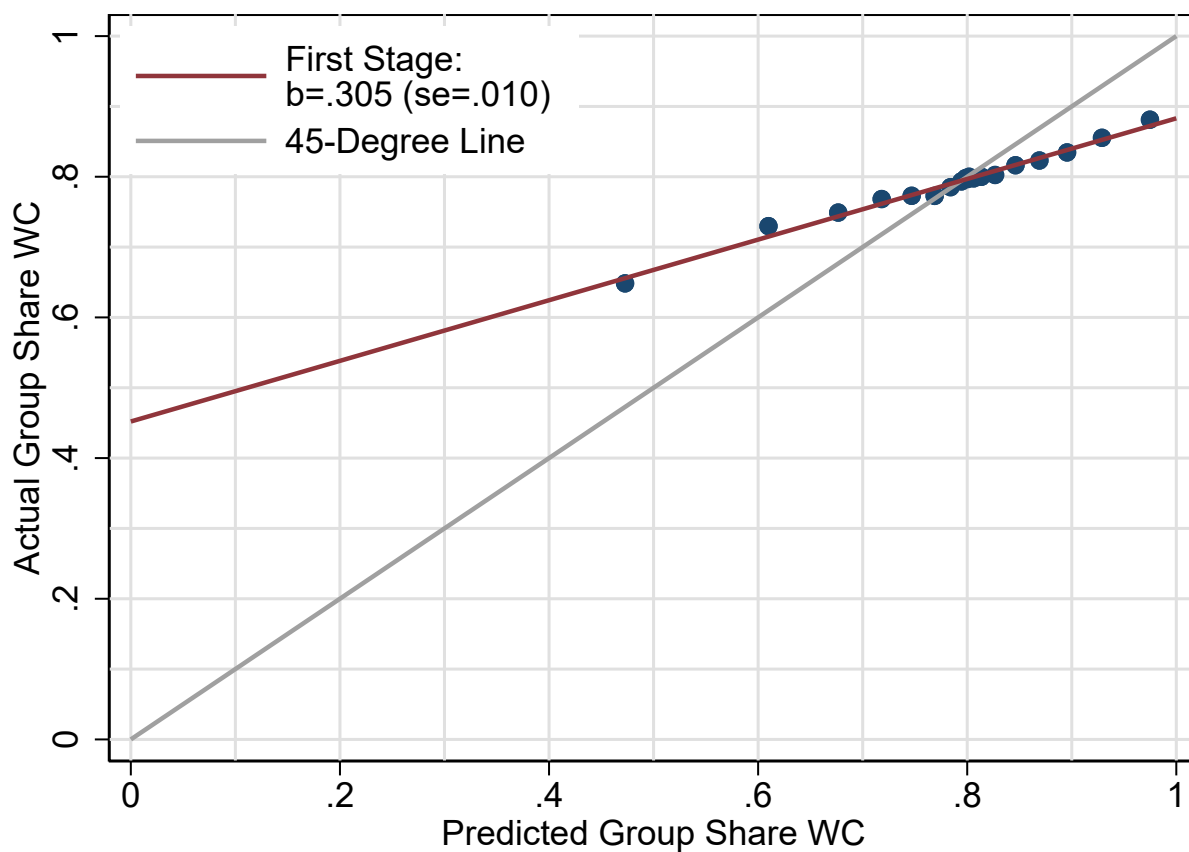
(e) Big 5: Neuroticism



(f) Locus of Control

**Notes:** This figure shows personality measures surveyed in the SOEP for both work council member and non-member employees. Non-member employees are only included for workplaces with a work council. All survey outcomes are plotted in years in which work council membership is surveyed. For survey years in which a given outcome and work council membership are not surveyed simultaneously, we impute outcomes forward in time. For details see Appendix Section B. Shaded regions are 95% confidence intervals.

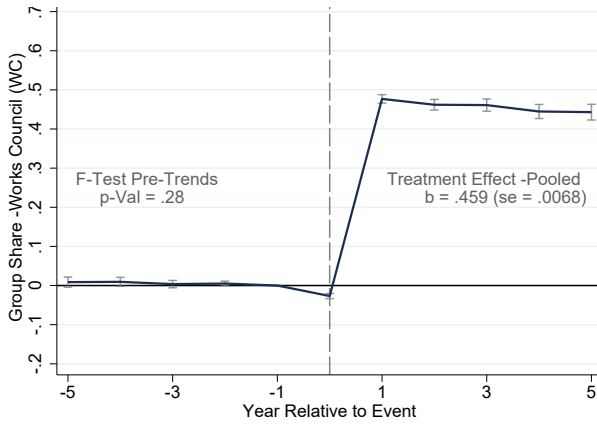
Figure 7: First Stage of Group Representation: Actual (Imputed) - and Predicted Works Council Share



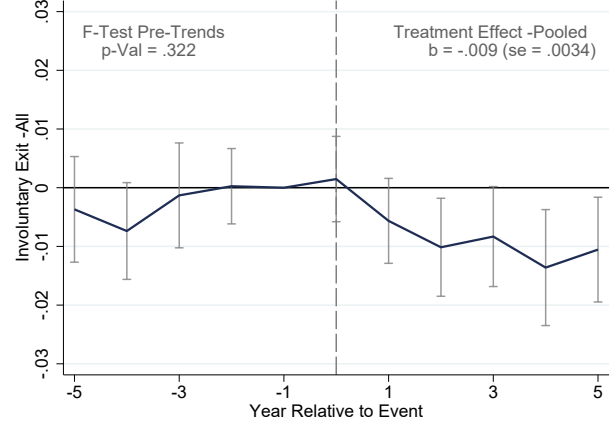
**Notes:** This figure shows the first stage binned scatter plots from regressing the actual group-share on the expected (exit-induced) group-share, controlling for establishment and year FE. First stage-coefficients and SE (clustered at the establishment level) are reported in the legend. Displayed figures are conditional on the IV being non-zero. The corresponding 2nd-Stage IV Estimates are displayed in Table 2 and 3.



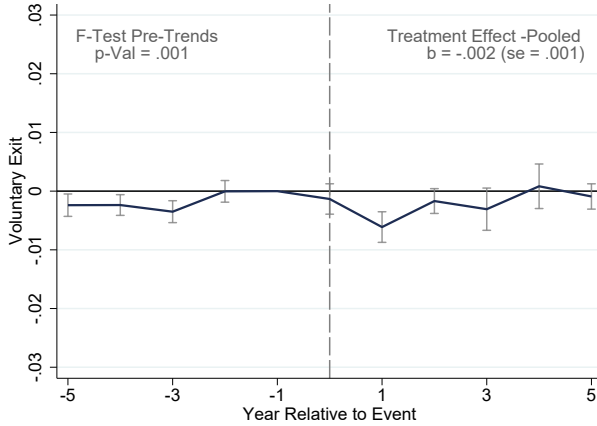
Figure 8: Event Study Estimates: Effect of Blue-Collar Works Councils on Worker Exit



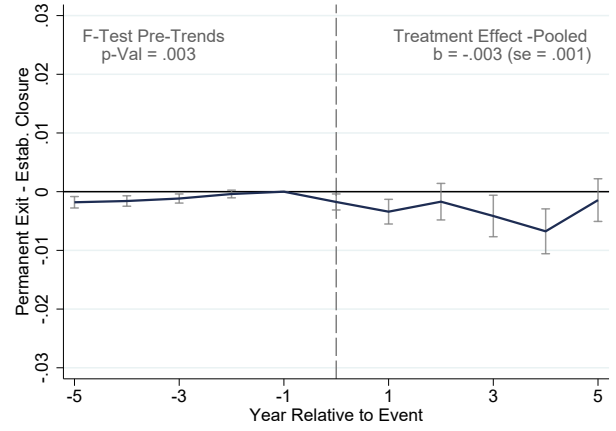
(a) Share of Blue Collar Works Council members



(b) Involuntary Turnover



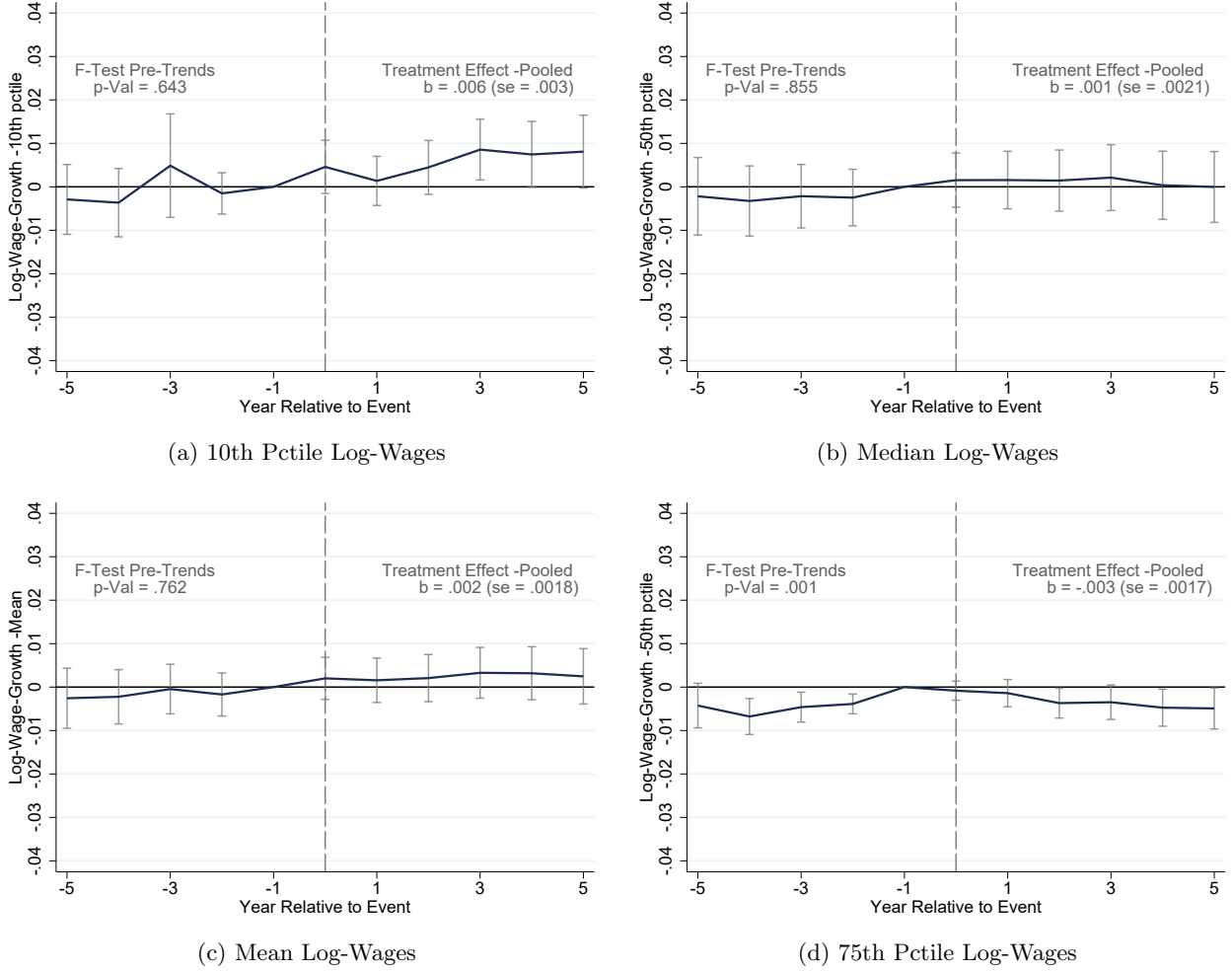
(c) Voluntary Turnover



(d) Exits on the Extensive Margin (Establishment Closures)

**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 a  $\geq 33\%$  relative to pre-event year) at treated establishments. Event-study specifications include matched control never treated establishment pre-event (1:1 p-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 pooled for both groups, include establishment, year-to-event, year-to-event-group and year FE and are weighted with the size of the workforce (excluding full-time Works council members). Corresponding event-study estimates separately by group are included in Appendix Figure A8. SE clustered at the establishment level.

Figure 9: Event Study Estimates: 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. Event-study specifications include matched control never treated establishment pre-event (1:1 p-score matching in year prior to event, matching variables include log-firm-size and firmsize dummies, blue-collar composition of the workforce and works council, and state-dummies). Event study specifications are estimated pooled for each group and include establishment, year-to-event, year-to-event-group and year FE and are weighted with the size of the workforce (excluding full-time Works Council members). Corresponding event-study estimates separately by group are included in Appendix Figure A9. 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.

# Tables

Table 1: Differences between Blue and White Collar Workers

	Full Sample			Works Council Member		
	(1)	(2)	(3)	(4)	(5)	(6)
	Blue Collar	White Collar	Difference	Blue Collar	White Collar	Difference
<b>Panel A: Demographics and Labor Market Experience</b>						
Female	0.317	0.651	-0.333***	0.158	0.566	-0.408***
Education: University	0.057	0.333	-0.276***	0.033	0.344	-0.310***
I: Father has Abitur	0.064	0.176	-0.112***	0.063	0.165	-0.102***
I: Has Unemployment Experience	0.436	0.316	0.120***	0.292	0.248	0.044*
<b>Panel B: Job Preferences</b>						
<i>How worried are you about ...</i>						
... own Economic Situation	0.783	0.678	0.104***	0.751	0.663	0.088***
... Job Security	0.575	0.456	0.119***	0.542	0.434	0.108***
... Devaluation of Skills	0.324	0.231	0.093***	0.273	0.201	0.072
Career Success: Important or Very Important	0.810	0.806	0.004	0.840	0.816	0.023
Job Satisfaction (Std.)	-0.064	0.048	-0.112***	-0.064	0.008	-0.071
<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	22.265	20.138	2.127***	19.738	16.704	3.033**
Promotion	15.374	18.820	-3.446***	16.880	18.968	-2.088
Quit	8.396	10.110	-1.714***	5.036	6.413	-1.377
Further Training	25.030	42.982	-17.952***	32.384	49.652	-17.268***
<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	0.560	0.602	-0.043***	0.651	0.673	-0.022
Interruptions at Work	0.380	0.595	-0.215***	0.540	0.680	-0.139**
Bad Promotion Prospects	0.638	0.616	0.022**	0.649	0.661	-0.011
Job at Risk	0.169	0.138	0.031***	0.176	0.147	0.029
Insufficient Recognition from Superiors	0.369	0.327	0.042***	0.510	0.386	0.124**
Wage not fair given Effort	0.556	0.498	0.057***	0.588	0.545	0.043

**Notes:** This 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, technicians, see Appendix Section C for details. *Panel B:* Questions about individual worries are asked on a three-step scale. We standardize satisfaction variables to have mean zero and standard deviation one in the sample. *Panel C:* For all items, individuals are asked to consider: "How likely is it that you will experience the following career changes within the next two years?". Answers 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, in civil service, in an apprenticeship or school. Note some variables are only surveyed in a subset of years.

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

	Baseline		IV-	Varying Post-Event Window			
	Specifications		Induced	short post (t+3)		long post (t+7)	
	Event (1)	IV (2)	Event (3)	Event (4)	IV (5)	Event (6)	IV (7)
<b>Panel A: Involuntary Exits</b>							
Blue-Collar Representation	-0.00938*** [0.003]	-0.00822** [0.003]	-0.0226*** [0.006]	-0.00842** [0.003]	-0.00557* [0.003]	-0.00969*** [0.003]	-0.00963** [0.004]
Mean Dep Var	0.11	0.16	0.11	0.11	0.16	0.11	0.16
N Obs.	89864	336458	14346	75348	355177	97084	279865
N Establishments	5414	17355	852	5414	17902	5414	14931
<b>Panel B: Voluntary Exits</b>							
Blue-Collar Representation	-0.00246** [0.001]	-0.000976 [0.001]	-0.000432 [0.002]	-0.00351*** [0.001]	-0.00133 [0.001]	-0.00250*** [0.001]	-0.00218 [0.001]
Mean Dep Var	0.01	0.01	0.01	0.01	0.01	0.01	0.01
N Obs.	89864	336458	14346	75348	355177	97084	279865
N Establishments	5414	17355	852	5414	17902	5414	14931
<b>Panel C: Exits on the Extensive Margin (Establishment Closures)</b>							
Blue-Collar Representation	-0.00345*** [0.001]	-0.000207 [0.002]	-0.00131 [0.002]	-0.00319*** [0.001]	0.000839 [0.002]	-0.00346*** [0.001]	-0.00234 [0.003]
Mean Dep Var	0.00	0.05	0.00	0.00	0.05	0.00	0.06
N Obs.	89864	336458	14346	75348	355177	97084	279865
N Establishments	5414	17355	852	5414	17902	5414	14931
Increase Council Share	.459	1	.459	.459	1	.459	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. Columns (4) — (7) show variations in the length of the post-event window, with Columns (4) and (5) having 3 post-event years and Columns (6) and (7) having 7 (instead of 5) years respectively.

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

	Baseline		IV-	Varying Post-Event Window			
	Specifications		Induced	short post (t+3)		long post (t+7)	
	Event (1)	IV (2)	Event (3)	Event (4)	IV (5)	Event (6)	IV (7)
<b>Panel A: Log-Wage 10th Percentile</b>							
Blue-Collar Representation	0.00564*	0.0147**	0.00401	0.00445	0.0153***	0.00562*	0.00559
	[0.003]	[0.006]	[0.006]	[0.003]	[0.006]	[0.003]	[0.007]
Mean Dep Var	4.12	4.19	4.11	4.12	4.19	4.12	4.20
N Obs.	89864	336458	14346	75348	355177	97084	279865
N Establishments	5414	17355	852	5414	17902	5414	14931
<b>Panel B: Median Log-Wage</b>							
Blue-Collar Representation	0.00116	0.0103***	0.00409	0.00169	0.0104***	0.00125	0.00564
	[0.002]	[0.004]	[0.004]	[.]	[0.003]	[0.002]	[0.004]
Mean Dep Var	4.50	4.58	4.48	4.50	4.58	4.50	4.59
N Obs.	89864	336458	14346	75348	355177	97084	279865
N Establishments	5414	17355	852	5414	17902	5414	14931
<b>Panel C: Log-Wage 75th Percentile</b>							
Blue-Collar Representation	-0.00348**	0.0122***	-0.00362	-0.00287*	0.0105***	-0.00329*	0.0144***
	[0.002]	[0.004]	[0.004]	[0.002]	[0.003]	[0.002]	[0.004]
Mean Dep Var	4.64	4.74	4.63	4.64	4.74	4.64	4.75
N Obs.	89864	336458	14346	75348	355177	97084	279865
N Establishments	5414	17355	852	5414	17902	5414	14931
Increase Council Share	.459	1	.459	.459	1	.459	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. Columns (4) — (7) show variations in the length of the post-event window, with Columns (4) and (5) having 3 post-event years and Columns (6) and (7) having 7 (instead of 5) years respectively.

Table 4: Heterogeneity: Effects of Blue-Collar Representation on Turnover of Blue- and White- Collar Worker

	Baseline	Majority Shift		First Blue-Collar WC		Firmsize		Age WC		Manufacturing	
	(1)	No ( $\leq .5$ ) (2)	Yes ( $> .5$ ) (3)	No (4)	Yes (5)	below med (6)	above med (7)	Young (8)	Old (9)	No (10)	Yes (11)
<b>Panel A: Involuntary Exits</b>											
Blue-Collar Representation	-0.00938*** [0.003]	-0.00765* [0.004]	-0.0129** [0.005]	-0.00478 [0.009]	-0.0112*** [0.003]	-0.00880*** [0.003]	-0.00845 [0.006]	-0.00366 [0.004]	-0.0202*** [0.006]	0.00581 [0.004]	-0.0175*** [0.005]
Mean Dep Var	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.12	0.10
N Obs.	89864	63232	25594	19434	69392	71878	17986	50388	39476	40470	49394
N Establishments	5414	3786	1544	1152	4178	5048	1840	3532	2296	3332	3598
<b>Panel B: Voluntary Exits</b>											
Blue-Collar Representation	-0.00246** [0.001]	-0.00177 [0.001]	-0.00396** [0.002]	-0.00294 [0.002]	-0.00220** [0.001]	-0.00302*** [0.001]	-0.00165 [0.002]	-0.00221** [0.001]	-0.00343* [0.002]	-0.00136 [0.002]	-0.00326*** [0.001]
Mean Dep Var	0.01	0.01	0.01	0.00	0.01	0.01	0.00	0.01	0.00	0.01	0.00
N Obs.	89864	63232	25594	19434	69392	71878	17986	50388	39476	40470	49394
N Establishments	5414	3786	1544	1152	4178	5048	1840	3532	2296	3332	3598
<b>Panel C: Exits on the Extensive Margin (Establishment Closures)</b>											
Blue-Collar Representation	-0.00345*** [0.001]	-0.00276** [0.001]	-0.00552*** [0.002]	-0.00295* [0.002]	-0.00369*** [0.001]	-0.00649*** [0.002]	-0.00108 [0.001]	-0.00249** [0.001]	-0.00598*** [0.002]	-0.00498*** [0.002]	-0.00250** [0.001]
Mean Dep Var	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N Obs.	89864	63232	25594	19434	69392	71878	17986	50388	39476	40470	49394
N Establishments	5414	3786	1544	1152	4178	5048	1840	3532	2296	3332	3598

**Notes:** This table presents heterogeneity results 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. Column (1) represent baseline results. Column (2) and (3) splits results by whether the event changes the majority in the council to a strict (above .5) majority; Column (4) and (5) shows result where already at least one blue collar worker was in the council before vs. cases where it is the first council. Column (6) and (7) report results for establishments below-, vs above median establishment-size. Column (8) and (9) compares councils whose age is (defined as time since first observation as council) is above vs below the median. Finally, Column (10) and (11) compares events in the non-manufacturing and the manufacturing sector respectively.

Table 5: Heterogeneity: Effects of Blue-Collar Representation on Wages of Blue- and White- Collar Worker

	Baseline	Majority Shift		First Blue-Collar WC		Firmsize		Age WC		Manufacturing	
	(1)	No ( $\leq .5$ ) (2)	Yes ( $> .5$ ) (3)	No (4)	Yes (5)	below med (6)	above med (7)	Young (8)	Old (9)	No (10)	Yes (11)
<b>Panel A: Log-Wage 10th Percentile</b>											
Blue-Collar Representation	0.00564* [0.003]	0.00739** [0.004]	0.000796 [0.005]	0.00575 [0.007]	0.00554* [0.003]	0.00613 [0.004]	0.00782* [0.004]	0.00873** [0.004]	0.00245 [0.005]	0.0130** [0.007]	0.00253 [0.003]
Mean Dep Var	4.12	4.12	4.11	4.15	4.11	4.10	4.18	4.11	4.13	4.05	4.18
N Obs.	89864	63232	25594	19434	69392	71878	17986	50388	39476	40470	49394
N Establishments	5414	3786	1544	1152	4178	5048	1840	3532	2296	3332	3598
<b>Panel B: Median Log-Wage</b>											
Blue-Collar Representation	0.00116 [0.004]	0.00473 [0.004]	-0.00818 [0.007]	0.00102 [0.009]	0.00137 [0.004]	0.000470 [0.003]	0.00468 [0.007]	0.00350 [0.004]	-0.00270 [0.006]	0.00636 [0.005]	-0.00133 [0.005]
Mean Dep Var	4.50	4.50	4.48	4.54	4.48	4.48	4.54	4.48	4.52	4.46	4.53
N Obs.	89864	63232	25594	19434	69392	71878	17986	50388	39476	40470	49394
N Establishments	5414	3786	1544	1152	4178	5048	1840	3532	2296	3332	3598
<b>Panel C: Log-Wage 75th Percentile</b>											
Blue-Collar Representation	-0.00348** [0.002]	-0.00186 [0.002]	-0.00865*** [0.003]	-0.00610* [0.003]	-0.00266 [0.002]	-0.00453*** [0.002]	-0.000973 [0.003]	-0.00337* [0.002]	-0.00441 [0.003]	0.00120 [0.003]	-0.00547** [0.002]
Mean Dep Var	4.64	4.65	4.62	4.70	4.62	4.64	4.66	4.62	4.68	4.66	4.63
N Obs.	89864	63232	25594	19434	69392	71878	17986	50388	39476	40470	49394
N Establishments	5414	3786	1544	1152	4178	5048	1840	3532	2296	3332	3598

**Notes:** This table presents heterogeneity results 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. Column (1) represent baseline results. Column (2) and (3) splits results by whether the event changes the majority in the council to a strict (above .5) majority, Column (4) and (5) shows result where already at least one blue collar worker was in the council before vs. cases where it is the first council. Column (6) and (7) report results for establishments below-, vs above median establishment-size. Column (8) and (9) compares councils whose age is (defined as time since first observation as council) is above vs below the median. Finally, Column (10) and (11) compares events in the non-manufacturing and the manufacturing sector respectively.

# Online Appendix of: Worker Representatives

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## Contents

<b>A Data and Sample Selection</b>	<b>41</b>
A.1 IEB . . . . .	41
<b>B SOEP Outcomes</b>	<b>41</b>
B.1 Timing of SOEP Outcomes . . . . .	44
<b>C Occupation Coding</b>	<b>44</b>
C.1 Task Classification . . . . .	44
C.2 Blue Collar Definition . . . . .	45

## 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. The final sample includes the full history of all individuals working as a representative in some function ("Verbandsleiter, Funktionär", KldB 1988 = 763). For these histories, the final dataset also includes detailed information on their *co-worker* histories, including education, occupational classifications, relative wage positions and (un-)employment histories.

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-worker* using the full history of representatives. This allows us to also generate co-worker information for the full biography of representatives, for example for different establishments or years prior to work council membership.

In a second step we then 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.

Lastly, we collapse the co-worker information on the establishment-year level and only keep observations of individuals ever observed as one of the three relevant groups. 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.

## B SOEP Outcomes

**Female:** A dummy for reporting to be female, with male and female being the only options. Based on the variable *sex* in *ppathl*. We exclude individuals without a valid or no answer (less than 0.01% of observations).

**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 *pgisced97* in the SOEP-generated dataset *pgen*) as follows: *No vocational degree*: includes inadequate and general elementary education following the ISCED97 classification. *Vocational degree*: includes middle vocational, Abitur and vocational, as well as higher vocational education (again based on ISCED97). *University degree*: includes all higher education according to ISCED97.

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

**IQ:** We use IQ short-scale tests conducted in 2006, 2012, and 2016. The module consists of two tests, a *fluency test* and a *symbol correspondence test* (Dohmen et al., 2010). In the fluency test, individuals have to name as many animals as possible in a 90 second intervals with measurements taken at 30, 60, and 90 seconds. In the symbol correspondence test individuals have to match as many numbers to symbols as possible in 90 seconds according to a known correspondence list. This short-scales have previously been found to be valid predictors of more comprehensive intelligence tests (see Dohmen et al. (2010) who briefly describe the relation to other tests). We follow prior practice in the literature and only use the symbol correspondence test as the IQ measure, because the fluency test might be subject to measurement error (duplicate mentions), depend on language ability and might confound different concepts of intelligence (Heineck and Anger, 2010). For the measure we use the correct answers in the symbol-correspondence test (90 seconds). We drop observations with likely invalid answers (the first wave in 2006 exhibits a lot of "0"s likely due to incorrect understanding of the exercise), standardize scores within waves and take averages for the few individuals with multiple test scores.

**Wages:** Wages are self-reported gross monthly wages of 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 using either longitudinal individual information or a wage regression. For details see the SOEP-Core PGEN survey paper. Throughout the analysis we consider real wages indexed to 2010 using the CPI.

**Goals in Life (Importance Career Success, Being there for Others, Political and Social Involvement):** 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. Note that the goal in life questions are surveyed in years other than council membership is surveyed (namely 1990, 1992, 1995, 2004, 2008, 2010, 2012, 2016). We impute the measures forward in time and implying that the goal outcomes will be lagged relative to council membership<sup>1</sup>. All three variables are measured on a 4-point scale from (1) very important to (4) not important at all.

**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”.*

- 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.

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<sup>1</sup>The implied assignment is 1995 to 2001/03, 2004 to 2006/07, 2008 to 2011, 2012 to 2015 and 2016 to 2019.

- 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 following seven survey items:

*The following statements describe different attitudes towards life and the future. To which degree do you personally agree with the individual statements?* (each answered on a 1 "Do not agree at all" to 7 "Completely agree" scale)

- "How my life goes depends on me."
- "Compared to other people, I have not achieved what I deserve."
- "What a person achieves in life is above all a question of fate or luck."
- "I frequently have the experience that other people have a controlling influence over my life."
- "One has to work hard in order to succeed"
- "If I run up against difficulties in life, I often doubt my own abilities."
- "The opportunities that I have in life are determined by the social conditions."
- "Inborn I have little control over the things that happen in my life."

I 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 *pgerwzeit* 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:** The SOEP asks individuals about different worries they might have for most survey years. We focus on five of those 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, and (3) no worries)).

**Life and Job Satisfaction:** Life satisfaction has been continuously surveyed in the SOEP and asks: "In conclusion, we would like to ask you about your satisfaction with your life in general. How satisfied are you with your life, all things considered?". The scale is 0 (low) to 10 (high). Job satisfaction has also been surveyed continuously (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 the same 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>2</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,

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<sup>2</sup>Expectations have also been surveyed before but using a four-category scale instead of percentages. Because work council membership is only surveyed from 2001 onward we do not make use of this data.

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 are

- Promotion prospects: "The chances of promotion in my company are bad."
- Worsening of job: "I am undergoing - or I expect to undergo - a worsening in my working situation."
- Job at risk: "My job is in jeopardy."
- 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."
- Increasing work load: "Because of the high volume of work, there is often high time pressure."
- Recognition from superiors: "I receive the recognition I deserve from my superiors."
- Recognition fair: "When I consider all my accomplishments and efforts, the recognition I've received seems fitting."
- Prospects of promotion fair: "When I consider all my accomplishments and efforts, my chances of personal advancement seem fitting."
- 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. This is relevant for the following variables: political orientation (left-right), Big Five, Locus of Control, occupational expectations, and job situation.

Works council membership: 2001, 2006, 2011, 2015, 2019

Political orientation: 2005, 2009, 2014, 2019

Big Five: 2005, 2009, 2012, 2013, 2017, 2019

Locus of Control: 1999, 2005, 2010, 2015

Occupational expectations: 1999, 2001, 2003, 2005, 2007, 2009 2013, 2015, 2018

Job situation: 2006, 2011, 2012, 2016

## C Occupation Coding

### C.1 Task Classification

Throughout the analysis we use task classifications based on Dengler et al. (2014), who propose task measures based on 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 as 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.

## C.2 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.

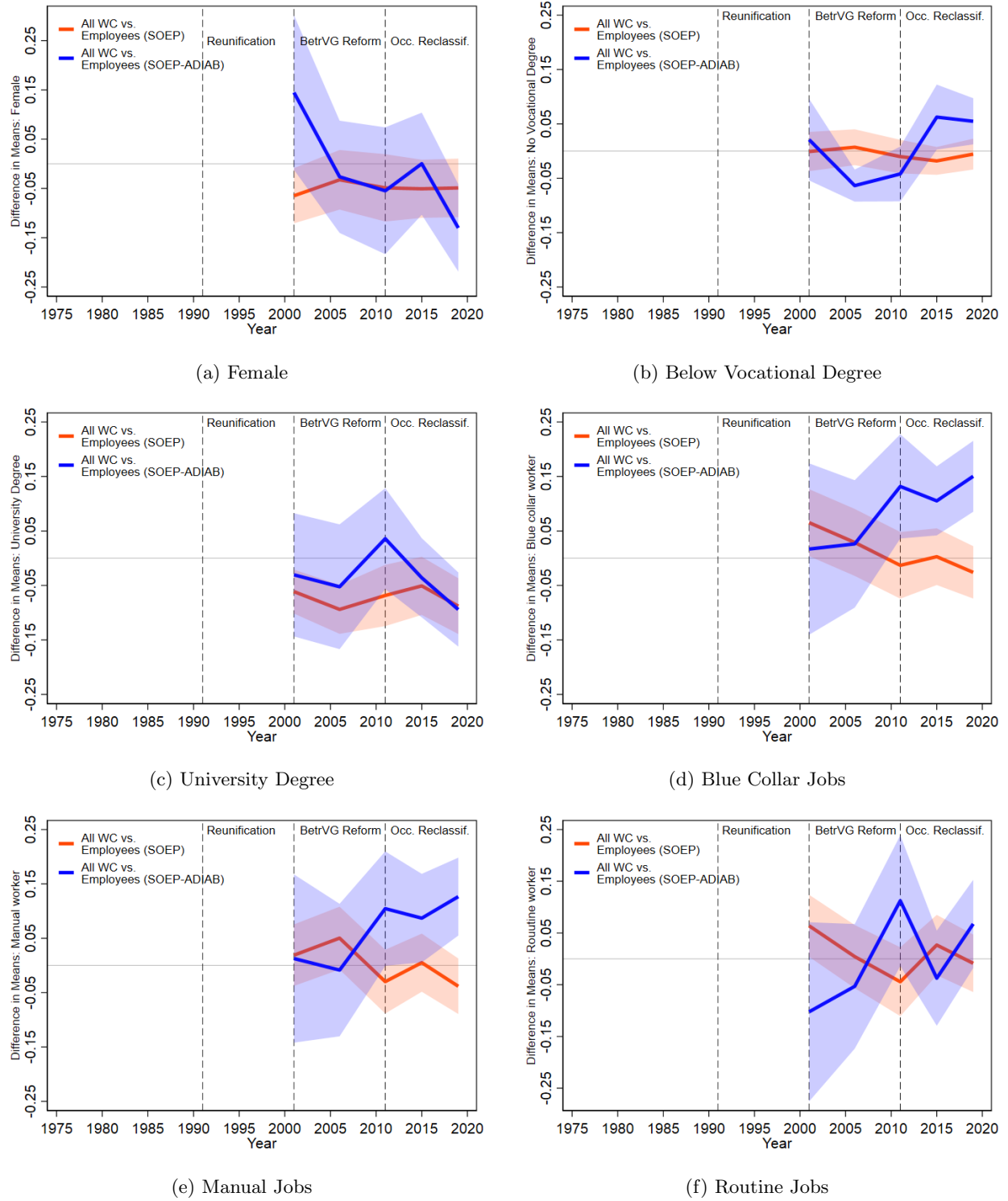
We define the following groups as *blue collar*: Occupations with mainly agricultural tasks; simple manual occupations (share of unqualified individuals  $\geq 60\%$ ); qualified manual occupations (share of unqualified individuals at most 40%); simple service occupations; and technicians.

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.

## References

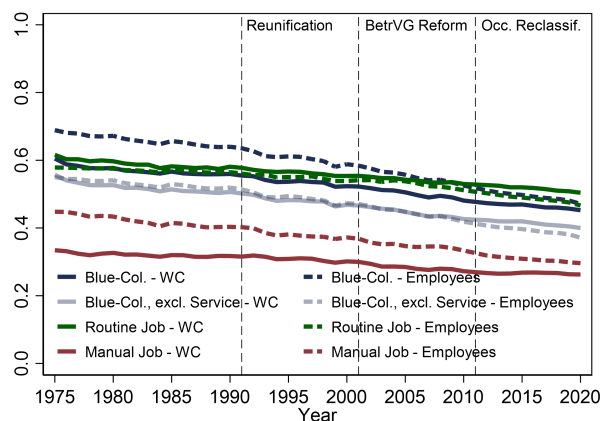
- Blossfeld, Hans-Peter**, "Bildungsexpansion und Berufschancen: Empirische Analysen zur Lage der Berufsanfänger in der Bundesrepublik." PhD dissertation, Otto-Friedrich-Universität Bamberg 1985.
- Dengler, Katharina, Britta Matthes, and Wiebke Paulus**, "Occupational tasks in the German labour market," *FDZ Methodenreport*, 2014, 12.
- Dohmen, Thomas, Armin Falk, David Huffman, and Uwe Sunde**, "Are risk aversion and impatience related to cognitive ability?," *American Economic Review*, 2010, 100 (3), 1238–60.
- Heineck, Guido and Silke Anger**, "The Returns To Cognitive Abilities and Personality Traits in Germany," *Labour Economics*, 2010, 17 (3), 535–546.

Figure A1: Work Council Representatives vs. Employees: Comparing population-level and establishment-level measures using the SOEP linked to the Administrative data

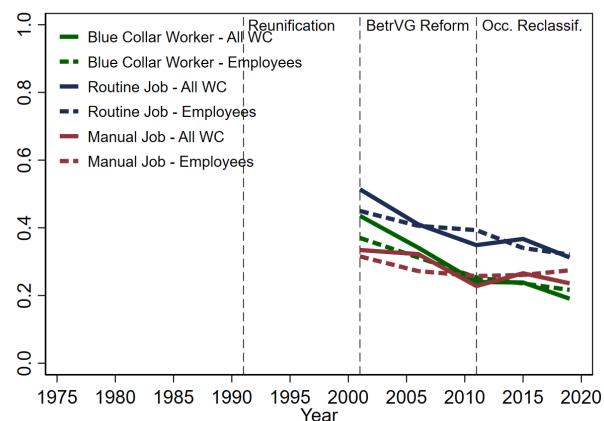


**Notes:** This figure shows the evolution of the difference in demographic and occupational characteristics between work council members and non-members. The orange line compares council and non-council members in the SOEP-data, whereas the purple line uses the subset of SOEP-individuals that can be linked to the administrative IAB data (SOEP-ADIAB), and shows — analogously to the full-time works council — the (size weighted) difference in characteristics (measured in the administrative data) between council and non-council members.

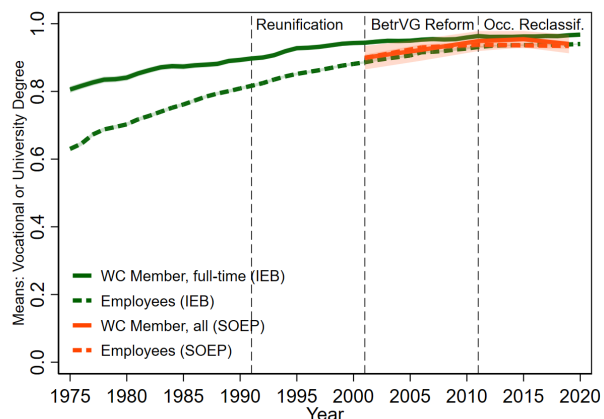
Figure A2: Work Council Representatives vs. Employees: Levels in Demographic Factors and Parental Background



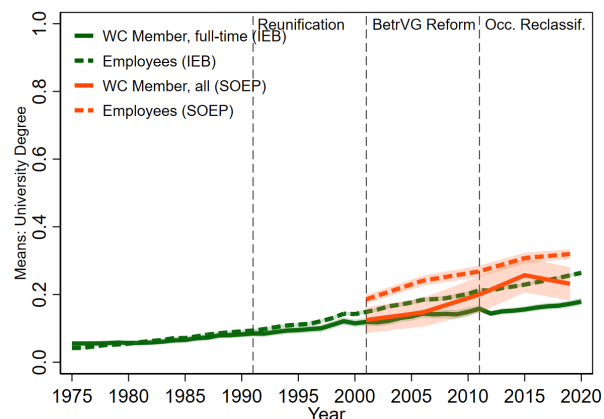
(a) Blue Collar, Manual, Routine (IEB)



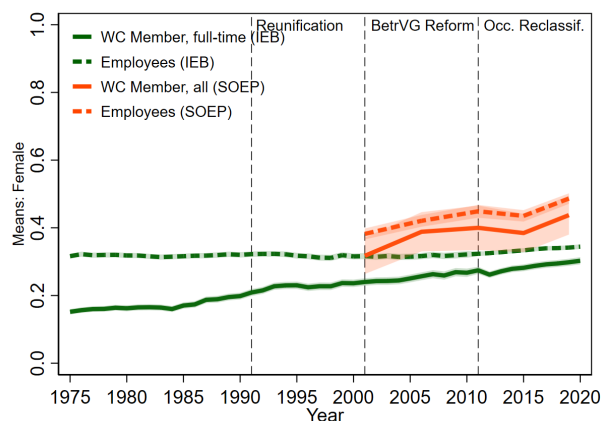
(b) Blue Collar, Manual, Routine (SOEP)



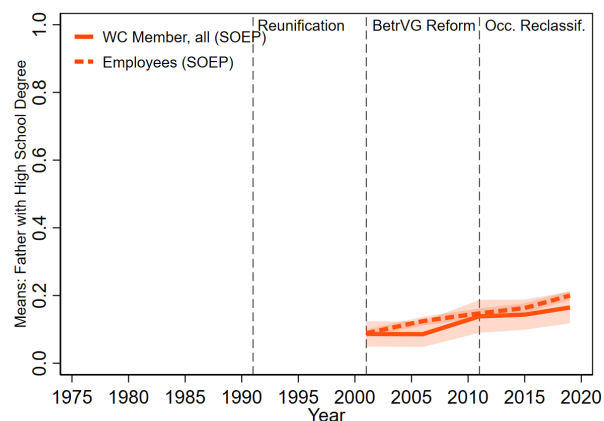
(c) Own Education: Vocational or University Degree



(d) Own Education: University Degree



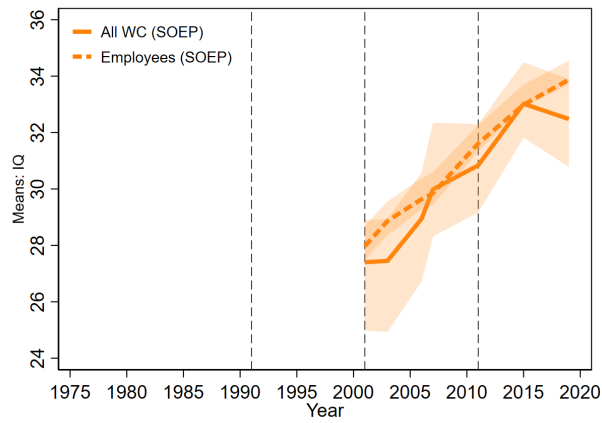
(e) Female



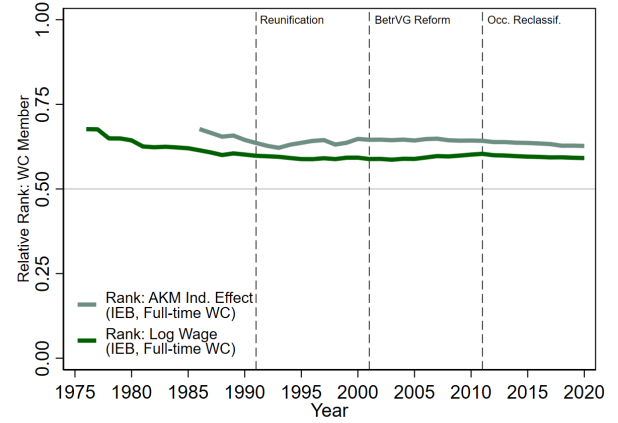
(f) Parental Education: Father with High School

This figure shows the evolution of demographic characteristics comparing work 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 full-time work councillors) and the SOEP household panel (including all work council member). IEB time series are restricted to establishments with a work place in (former) West Germany, while SOEP time series are restricted to individuals living in (former) West Germany. For details on the datasets see section [add section reference]. The IEB time series is weighted by the current establishment size, while the SOEP time series gives equal weight to each surveyed individual. We correct the IEB time series for 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 *past* time series.

Figure A3: Work Council Representatives: Ability and Labor Market Performance



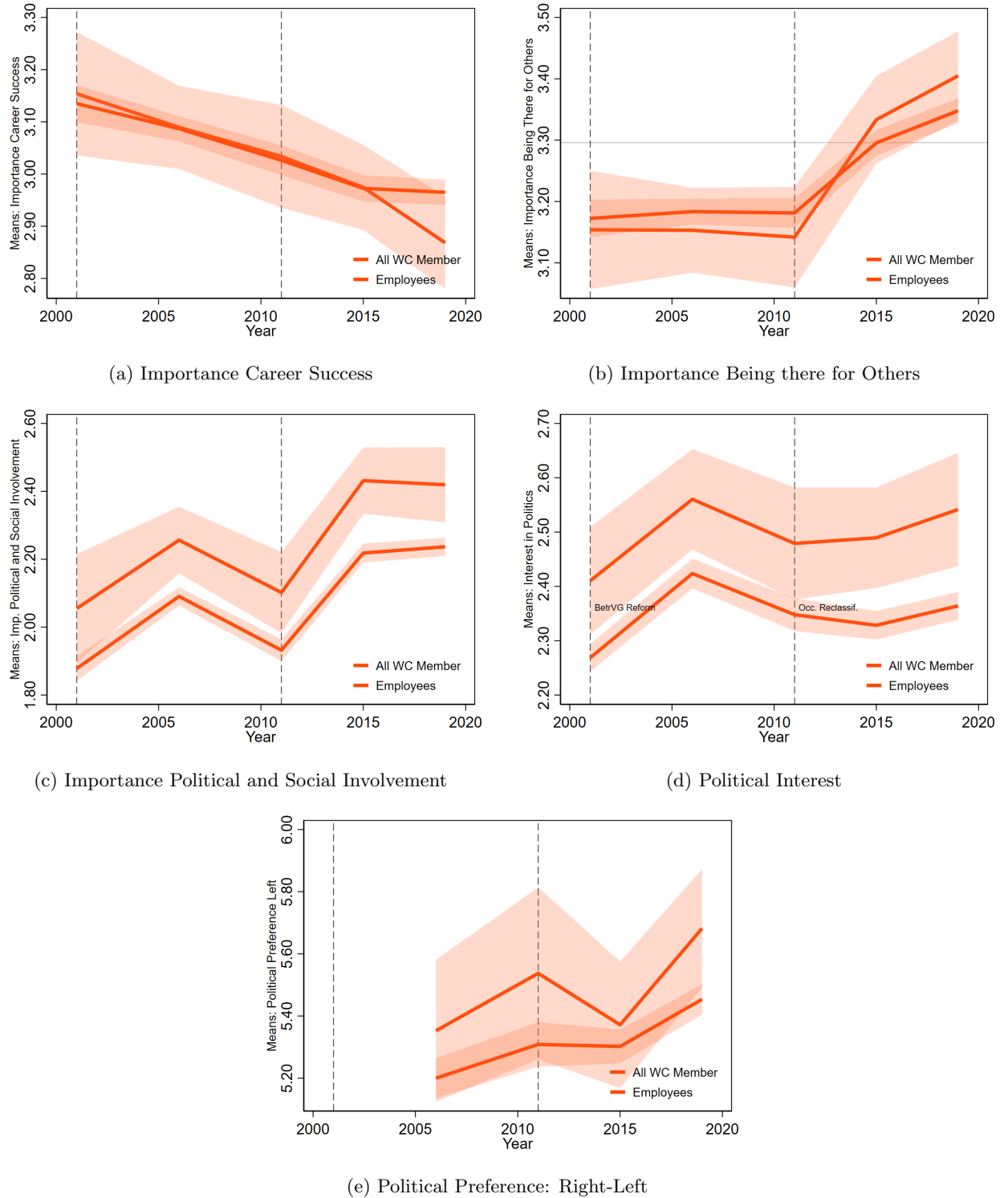
(a) IQ (Symbol Short-scale)



(b) Relative Rank: AKM Ind FE and Log Wages

**Notes:** This figure shows the evolution of ability and labor market performance of individuals comparing work council members and the employees they represented in establishments with works councils.

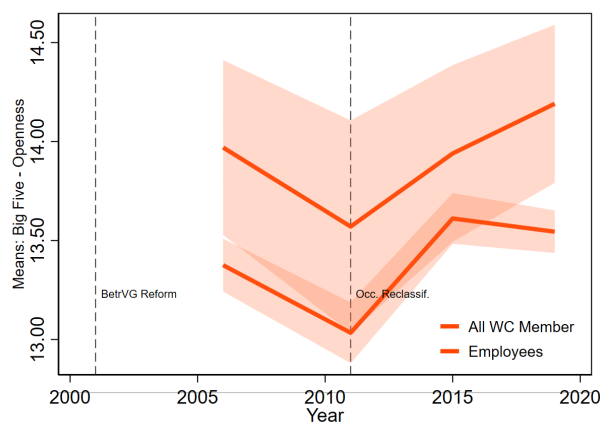
Figure A4: Work Council Representatives: Political Preferences



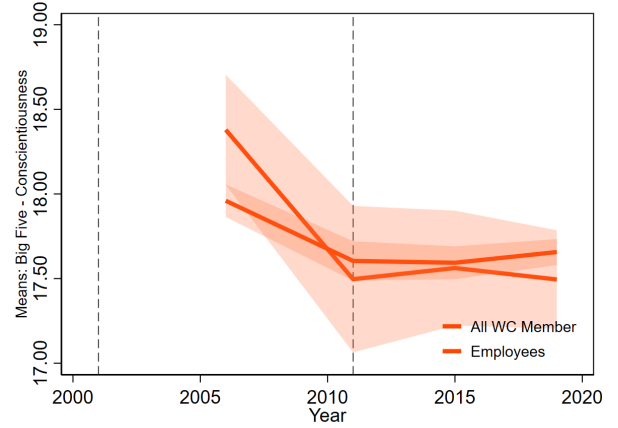
**Notes:** This figure shows political preferences surveyed in the SOEP for both work council member and non-member employees. Non-member employees are only included for workplaces with a work council. All survey outcomes are plotted in years in which work council membership is surveyed. For survey years in which a given outcome and work council membership are not surveyed simultaneously, we impute outcomes forward in time. Shaded regions are 95% confidence intervals.



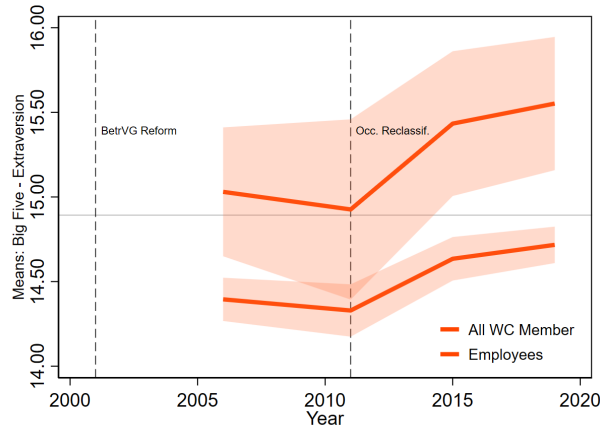
Figure A5: Work Council Representatives: Personality



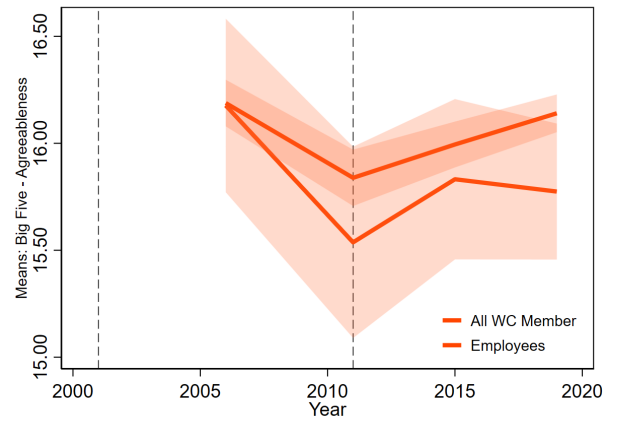
(a) Big 5: Openness



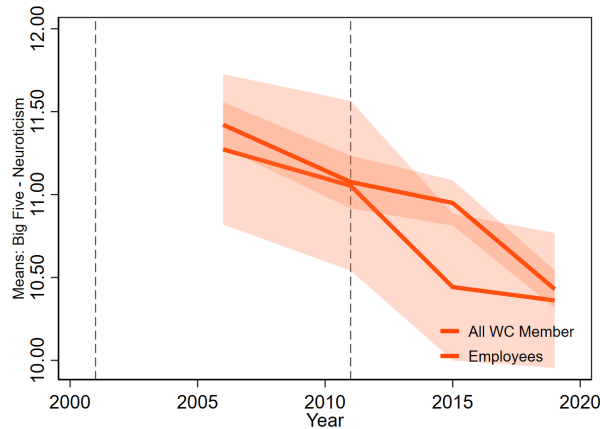
(b) Big 5: Conscientiousness



(c) Big 5: Extraversion



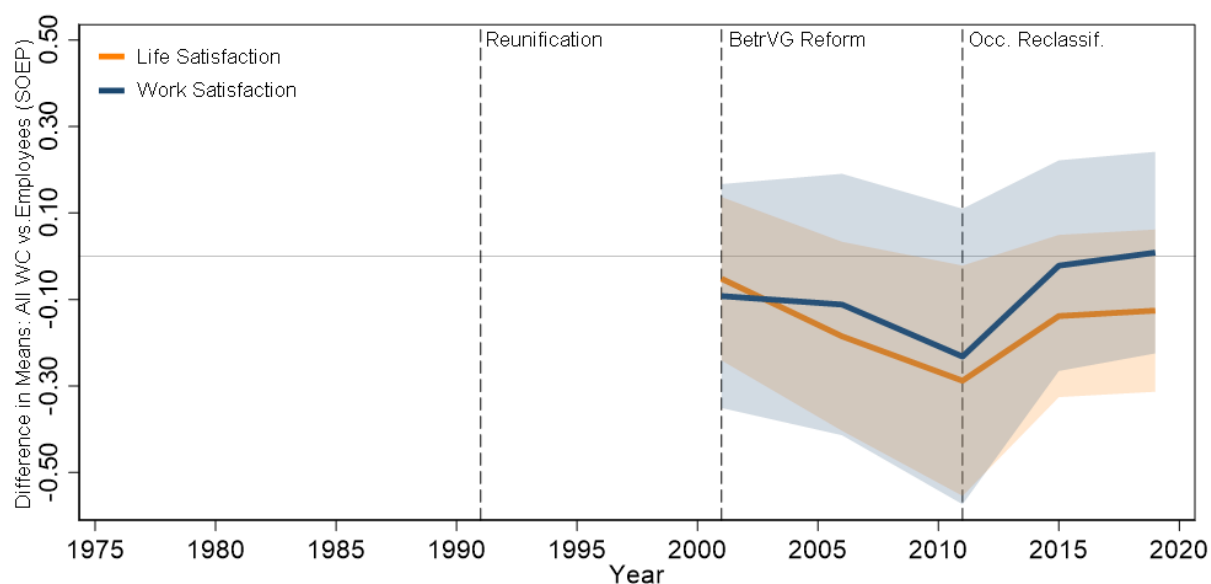
(d) Big 5: Agreeableness



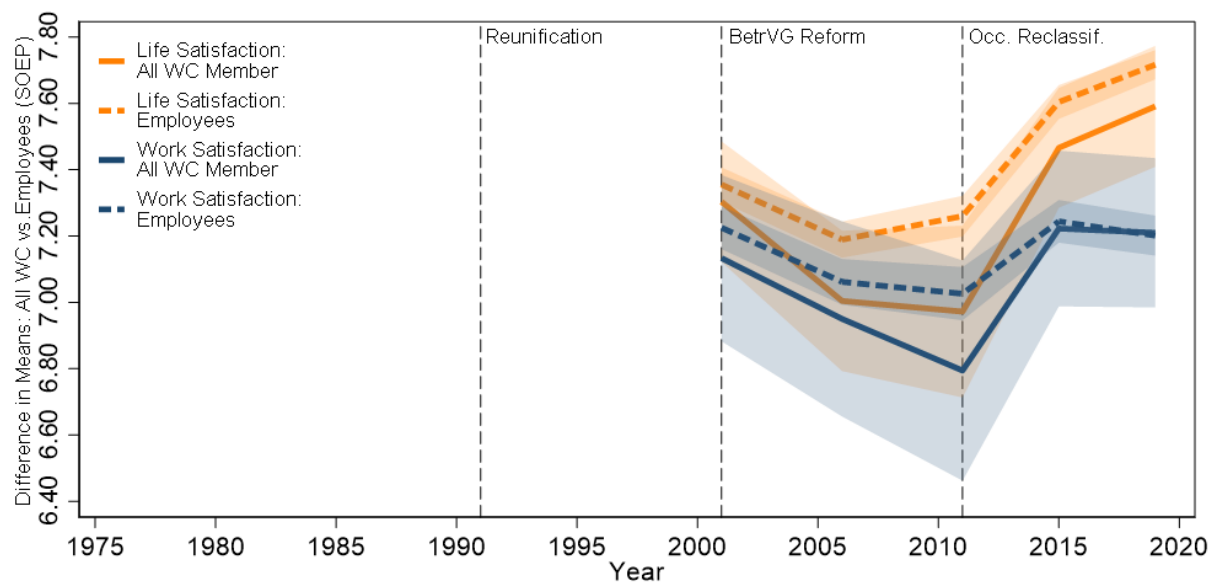
(e) Big 5: Neuroticism

**Notes:** This figure shows personality measures surveyed in the SOEP for both work council member and non-member employees. Non-member employees are only included for workplaces with a work council. All survey outcomes are plotted in years in which work council membership is surveyed. For survey years in which a given outcome and work council membership are not surveyed simultaneously, we impute outcomes forward in time. Shaded regions are 95% confidence intervals.

Figure A6: Work Council Representatives: Life and Work Satisfaction



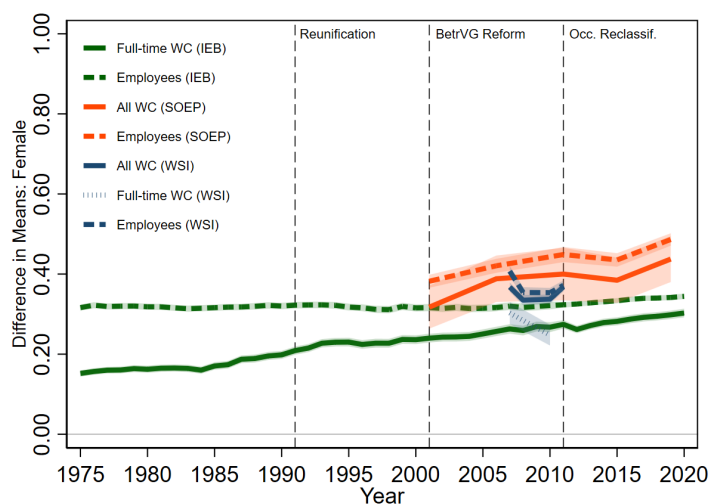
(a) Life Satisfaction: Difference



(b) Life Satisfaction: Levels

This figure shows satisfaction with life in general as well as work surveyed in the SOEP for both work council member and non-member employees. For work council member we use the last observation before they are first observed as a member.

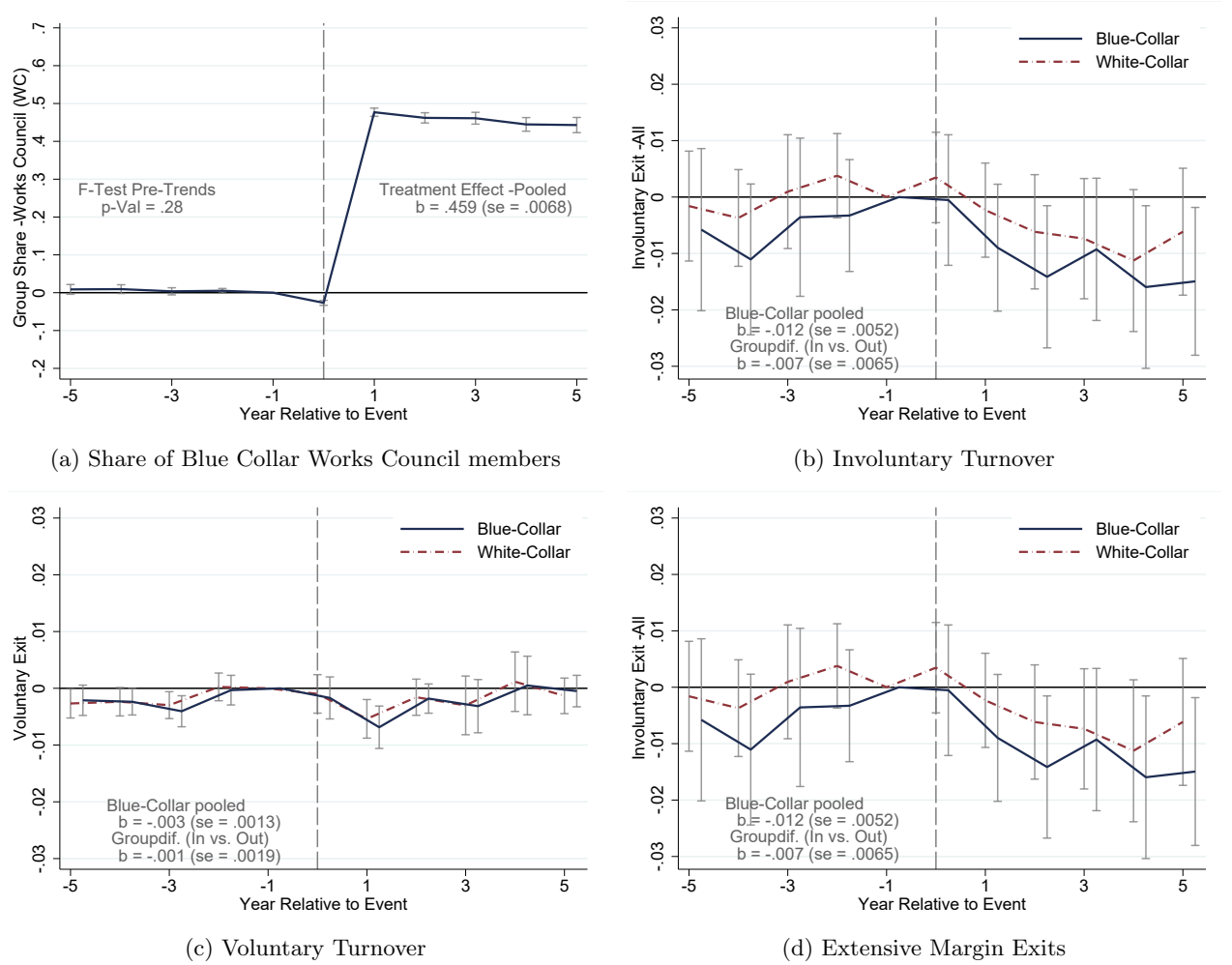
Figure A7: Validation Exercises for the WC Measure in the Admin Data



(a) Mean Share Female with WSI Survey (West and East, un-weighted, no break correction)

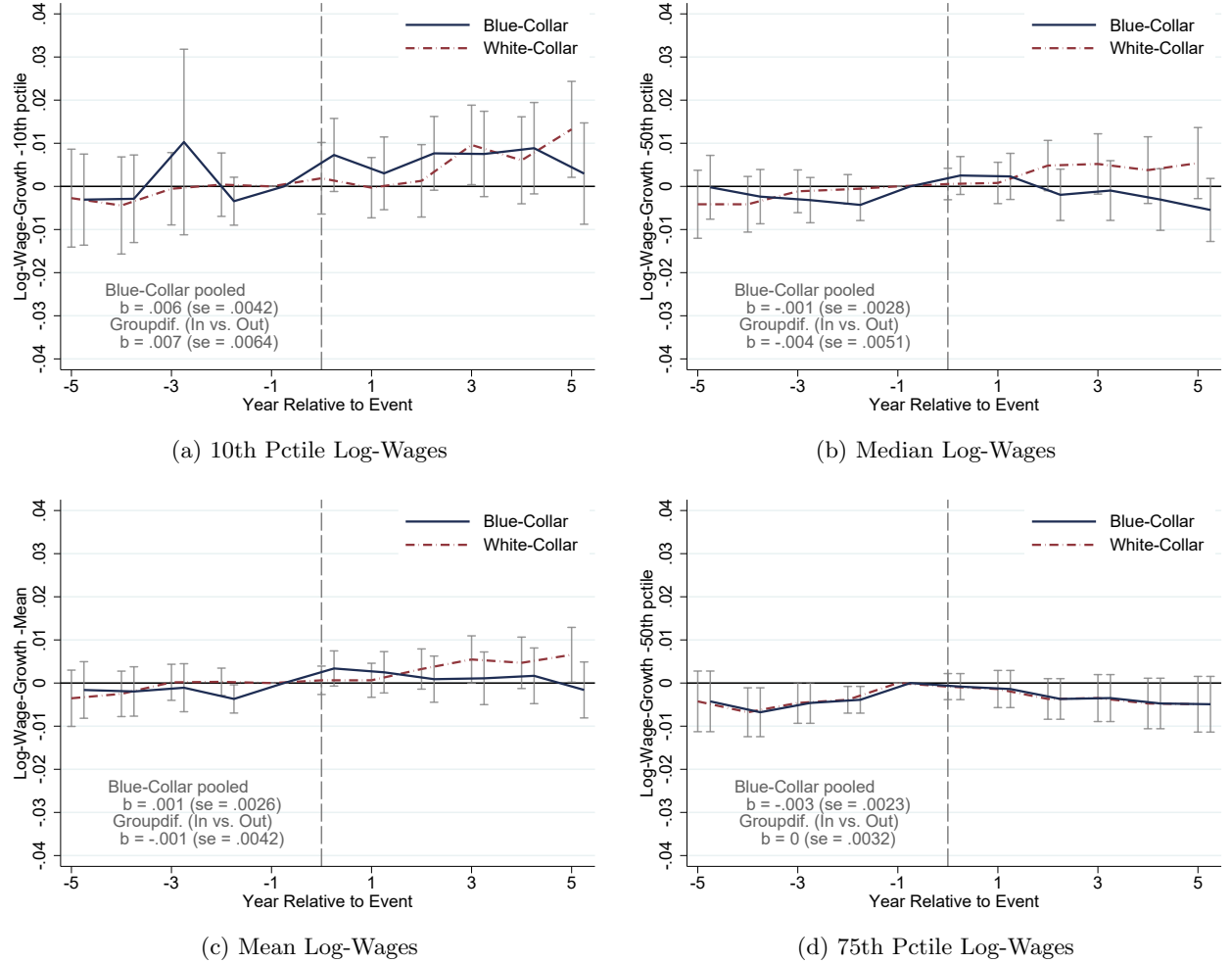
**Notes:** This figure shows three different validation exercises for the full time WC measure in the admin data. Panel (a) shows the alignment of the expected WC size by number of employees and the actually observed WC members for that period. Panel (b) contains a measure for exits on the yearly level defined as individuals leaving WC member-status but remaining at the establishment. The year 2011 due to occupational re-coding in that year. Panel (c) compares the mean difference of the full time WC in the admin data and for the all WC members in the SOEP with a third data source — the WSI survey — that contains the shares for both. Shaded areas/horizontal lines indicate the 95% CI.

Figure A8: 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 pscore 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 A9: 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 p-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.

## Appendix Tables

Table A1: Sample Size: IEB, SOEP, WSI

	(1) IEB	(2) SOEP	(3) WSI
<b>Panel A: Full Sample</b>			
N Establishment-Year	228,855	-	6,378
N Establishment	23,173	-	2,682
N Full-time WC Member	-	-	-
N All WC Member	-	1,261	-
<b>Panel B: 2009 (IEB), 2011 (SOEP), 2007 (WSI)</b>			
N Establishment	3,851	-	1,755
N Full-time WC Member	6,580	-	1,605
N All WC Member	-	268	14,124
N Employees	1,808,429	4,271	881,004

**Notes:** This table describes the sample sizes of the final samples for the IEB, SOEP, and WSI data used throughout the analysis. IEB data is at the individual level collapsed to establishments; SOEP data is at the individual level without establishment identifiers/information; WSI data is at the establishment level. Samples consist of both work council member and employees. Selected employees (excluding work council member) for the IEB and SOEP sample: age 20-65, full-time, regular employment, not in civil service or self-employed, not currently in managerial position, and never observed as a works council member.

Table A2: Summary SOEP: Works Council Member and Employees

	(1) Works Council Member	(2) Employees	(3) Difference
<b>Panel A: Demographics and Parental Background</b>			
Female	0.400	0.479	-0.079***
I: Father has Abitur	0.129	0.147	-0.017
Education: No Vocational	0.054	0.067	-0.012*
Education: Vocational	0.721	0.657	0.064***
Education: University	0.221	0.272	-0.050***
Blue-Collar Occupation	0.281	0.260	0.020
Blue-Collar Occupation (incl. Services)	0.381	0.360	0.021
Manual Occupation	0.275	0.293	-0.018
Routine Occupation	0.385	0.365	0.020
<b>Panel B: Ability, Wages and Labor Market Experience</b>			
IQ Short-scale (Std.)	-0.082	0.006	-0.088*
Monthly Gross Real Wage (EUR)	3036.926	2937.110	99.817**
Tenure (Years)	15.872	12.597	3.275***
I: Has Unemployment Experience	0.264	0.304	-0.040***
Unemployment Exp. (Months)	4.395	6.014	-1.619***
Life Satisfaction (Std.)	-0.033	0.002	-0.035
Job Satisfaction (Std.)	-0.049	0.004	-0.053
<b>Panel C: Political Preferences</b>			
Career Success: (Very) Important	0.831	0.822	0.009
Being there for Others: (Very) Important	0.946	0.942	0.004
Political and Social Involvement: (Very) Important	0.368	0.262	0.106***
Political Interest: Strong or very strong	0.471	0.381	0.089***
Political Orientation: Left (Std.)	0.095	-0.007	0.102**
<b>Panel D: Personality</b>			
Big Five: Openness (Std.)	0.128	-0.009	0.137***
Big Five: Conscientiousness (Std.)	0.023	-0.002	0.025
Big Five: Extraversion (Std.)	0.174	-0.013	0.186***
Big Five: Agreeableness (Std.)	-0.027	0.002	-0.029
Big Five: Neuroticism (Std.)	-0.090	0.007	-0.097**
Locus of Control (Std.)	0.033	-0.002	0.035
Risk Preferences (Std.)	0.072	-0.005	0.077**

**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.

Table A3: Occupation Groups: Blue Collar, Manual, Routine (SOEP)

(1) Occupation KldB 1988-3	(2) N Ind-Year	(3) Blossfeld	(4) Share	(5) Cumulative Share
<b>Panel A: Blue Collar</b>				
Electrician	3690	Qualified Manual	0.06	0.06
Motor Vehicle Maintenance	2682	Qualified Manual	0.05	0.11
Cook	2149	Qualified Manual	0.04	0.15
Pipe Fitter	2132	Qualified Manual	0.04	0.18
Machinist	1930	Qualified Manual	0.03	0.21
Bricklayer	1681	Qualified Manual	0.03	0.24
Carpenter	1530	Qualified Manual	0.03	0.27
Foreman	1502	Technicians	0.03	0.30
Smith (Steel)	1434	Qualified Manual	0.02	0.32
Chemical Plant Worker	1366	Simple Manual	0.02	0.34
Metal Worker	1341	Simple Manual	0.02	0.37
Laborer	1211	Simple Manual	0.02	0.39
Other Machinist	1201	Simple Manual	0.02	0.41
Inspector (Consumer Goods)	1185	Simple Manual	0.02	0.43
Mechanical Technician	1154	Technicians	0.02	0.45
<b>Panel B: Manual</b>				
Nurses, midwives	5663	Semiprofessions	0.09	0.09
Motor vehicle drivers	5420	Simple Services	0.09	0.18
Social workers, care workers	4838	Semiprofessions	0.08	0.26
Cooks	2149	Qualified Manual	0.03	0.29
Plumbers	2132	Qualified Manual	0.03	0.33
Stores, transport workers	2089	Simple Services	0.03	0.36
Bricklayers	1681	Qualified Manual	0.03	0.39
Carpenters	1530	Qualified Manual	0.02	0.41
Steel smiths	1434	Qualified Manual	0.02	0.44
Metal workers (no further specification)	1341	Simple Manual	0.02	0.46
Other machinists	1201	Simple Manual	0.02	0.48
Glass, buildings cleaners	1175	Simple Services	0.02	0.50
Nursing assistants	955	Qualified Services	0.02	0.51
Painters, lacquerers (construction)	953	Qualified Manual	0.02	0.53
Packagers, goods receivers, despatchers	904	Simple Manual	0.01	0.54
<b>Panel C: Routine</b>				
Office specialists	18103	Qualif. Business/Admin	0.25	0.25
Electrical fitters, mechanics	3690	Qualified Manual	0.05	0.30
Medical receptionists	3169	Qualified Services	0.04	0.34
Accountants	3157	Qualif. Business/Admin	0.04	0.39
Motor vehicle repairers	2682	Qualified Manual	0.04	0.42
Engine fitters	1930	Qualified Manual	0.03	0.45
Electrical engineers	1572	Engineers	0.02	0.47
Chemical plant operatives	1366	Simple Manual	0.02	0.49
Metal workers (no further specification)	1341	Simple Manual	0.02	0.51
Health insurance specialists (not social security)	1339	Qualif. Business/Admin	0.02	0.53
Chartered accountants, tax adviser	1215	Manager	0.02	0.54
Other machinists	1201	Simple Manual	0.02	0.56
Goods examiners, sorters, n.e.c.	1185	Simple Manual	0.02	0.58
Mechanical engineering technicians	1154	Technicians	0.02	0.59
Medical laboratory assistants	1101	Technicians	0.02	0.61

**Notes:** This table tabulates the 20 largest occupation groups (KldB 1988 3-digit) using the SOEP survey for each occupation classification we use (blue collar, manual, and routine). We employ the usual sample restrictions (age 20-65, full-time employment, 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 Section C. Column (1) 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 Event-Study Specification

	(1) Treated	(2) Control - All	(3) Control - Matched
<b>Panel A: Firm Composition</b>			
N WC	1.86 [1.41]	1.53 [3.41]	2.08 [4.36]
N all Emp.	964.2 [1491.8]	541.5 [1343.5]	1071.1 [2189.6]
N emp. $\leq 250$	0.120	0.433	0.125
N emp. $> 250 \& \leq 500$	0.242	0.277	0.241
N emp. $> 500 \& \leq 1000$	0.341	0.180	0.351
N emp. $> 1000$	0.297	0.110	0.283
log(all emp)	6.40 [1.08]	5.47 [1.39]	6.38 [1.16]
Share emp. in bluecblo	0.539	0.427	0.525
Share WC in bluecblo	0.133	0.365	0.098
Share WC in bluecblo	0.612	0.503	0.280
West Germany	0.903	0.792	0.891
<b>Panel B: Outcomes</b>			
Daily log wage -mean	4.52 [0.233]	4.51 [0.303]	4.50 [0.233]
Daily log wage -10th pcentile	4.21 [0.270]	4.21 [0.334]	4.19 [0.265]
Daily log wage -median	4.53 [0.259]	4.52 [0.328]	4.51 [0.261]
Turnover	0.122 [0.110]	0.198 [0.250]	0.121 [0.105]
Turnover - narrow	0.049 [0.082]	0.107 [0.198]	0.049 [0.075]
(mean) tentgelt	48.8 [30.1]	60.1 [36.9]	47.8 [27.7]
Promotion-Induced Log Wage-Growth 2-digit	0.153 [1.80]	0.151 [3.90]	0.116 [1.53]
Promotion-Induced Log Wage-Growth 5-digit	0.178 [1.68]	0.207 [4.12]	0.146 [1.40]
<b>Panel D: Industry</b>			
Agriculture	0.00085	0.0023	0.00042
Mining, Energy	0.033	0.032	0.036
Food	0.028	0.031	0.034
Consumption Goods	0.085	0.080	0.106
Production Goods	0.167	0.105	0.143
Investment Goods	0.328	0.206	0.288
Construction	0.0064	0.016	0.012
Retail, KFZ Retail	0.049	0.086	0.065
Traffic, Telecommunication	0.084	0.073	0.043
Credit, Insurance	0.0098	0.019	0.025
Restaurants	0.0038	0.0095	0.0028
Education	0.010	0.020	0.0098
Health	0.037	0.096	0.060
Commercial Services	0.086	0.115	0.081
Other Services	0.018	0.029	0.016
Non-Profit	0	0.0013	0.0025
Public Administration	0.054	0.079	0.074
Number of Individuals	4709	21073	4714

**Notes:** This table summarizes characteristics 2 years before the event. Column (2) shows the results if we select all nontreated as controls, Column (3) shows results for matched control firms only, Column (4) and (5) restrict to observations where establishment is balanced +/- 5 years around event. Standard deviations in brackets.

Table A5: Effects of Blue-Collar Representation on Additional Turnover Outcomes of Blue- and White- Collar Worker

	Baseline		IV-	Different Occupation-Groups				Varying Post-Event Window			
	Specifications		Induced	Manual Occ.		Routine		short post (t+3)		long post (t+7)	
	Event (1)	IV (2)	Event (3)	Event (4)	IV (5)	Event (6)	IV (7)	Event (8)	IV (9)	Event (10)	IV (11)
<b>Panel A: All Exits</b>											
Blue-Collar Representation	-0.0115*** [0.004]	-0.0105** [0.004]	-0.0215*** [0.008]	-0.00843** [0.004]	-0.0121*** [0.004]	-0.0127*** [0.004]	-0.0116*** [0.004]	-0.0120*** [0.004]	-0.00868** [0.004]	-0.0119*** [0.004]	-0.0138*** [0.005]
Mean Dep Var	0.14	0.19	0.13	0.13	0.19	0.13	0.19	0.14	0.19	0.14	0.19
N Obs.	89864	336458	14346	90114	335834	99940	347484	75348	355177	97084	279865
N Establishments	5414	17355	852	5320	17356	6034	17326	5414	17902	5414	14931
<b>Panel B: Non-Permanent Exits</b>											
Blue-Collar Representation	-0.00761*** [0.002]	-0.00157 [0.003]	-0.00901** [0.005]	-0.00194 [0.002]	-0.00247 [0.003]	-0.00792*** [0.003]	-0.00442* [0.003]	-0.00698*** [0.002]	-0.00120 [0.003]	-0.00778*** [0.002]	-0.00617* [0.003]
Mean Dep Var	0.02	0.03	0.02	0.01	0.03	0.01	0.03	0.02	0.03	0.02	0.03
N Obs.	89864	336458	14346	90114	335834	99940	347484	75348	355177	97084	279865
N Establishments	5414	17355	852	5320	17356	6034	17326	5414	17902	5414	14931
<b>Panel C: Exits on the Extensive Margin (Establishment Closures)</b>											
Blue-Collar Representation	-0.00345*** [0.001]	-0.000207 [0.002]	-0.00131 [.]	-0.00288* [0.002]	-0.00664*** [0.002]	-0.00273*** [0.001]	-0.000786 [0.002]	-0.00319*** [0.001]	0.000839 [0.002]	-0.00346*** [0.001]	-0.00234 [0.003]
Mean Dep Var	0.00	0.05	0.00	0.00	0.05	0.00	0.05	0.00	0.05	0.00	0.06
N Obs.	89864	336458	14346	90114	335834	99940	347484	75348	355177	97084	279865
N Establishments	5414	17355	852	5320	17356	6034	17326	5414	17902	5414	14931
<b>Panel D: Exits on the Intensive- Margin Balanced</b>											
Blue-Collar Representation	-0.00548** [0.002]	-0.00398 [0.002]	-0.00882* [0.005]	-0.000910 [0.002]	-0.000939 [0.002]	-0.00664** [0.003]	-0.00596*** [0.002]	-0.00486** [0.002]	-0.00477** [0.002]	-0.00561** [0.002]	-0.00881*** [0.003]
Mean Dep Var	0.02	0.02	0.02	0.01	0.02	0.01	0.02	0.02	0.02	0.02	0.02
N Obs.	89395	318305	14303	89633	318001	99404	328895	75041	337154	96558	258693
N Establishments	5414	16724	852	5320	16721	6034	16692	5414	17358	5414	11835

**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) restricts to retirement-induced events for the event study specification. Column (4) — (7) shows event study and IV estimates for alternative groupings of occupations. Column (4) and (5) selects occupations that are based on their task content mainly manual work, whereas Column (6) and (7) represents occupations with repetitive/routine tasks. Columns (8) — (11) show variations in the length of the post-event window, with Columns (8) and (9) having 3 post-event years and Columns (10) and (11) having 7 (instead of 5) years respectively.

Table A6: Effects of Blue-Collar Representation of Blue- and White- Collar Worker: Robustness to different Occupation Definitions

	Different Occupation-Groups			
	Manual Occ.		Routine	
	Event (1)	IV (2)	Event (3)	IV (4)
<b>Panel A: Involuntary Exits</b>				
Blue- Collar Representation	-0.00659* [0.004]	-0.00864*** [0.003]	-0.0120*** [0.004]	-0.00678** [0.003]
Mean Dep Var	0.11	0.16	0.11	0.16
N Obs.	90114	335834	99940	347484
N Establishments	5320	17356	6034	17326
<b>Panel B: Voluntary Exits</b>				
Blue- Collar Representation	-0.000870 [0.001]	-0.00161 [0.001]	-0.000778 [0.001]	-0.00223** [0.001]
Mean Dep Var	0.00	0.01	0.01	0.01
N Obs.	90114	335834	99940	347484
N Establishments	17356	6034	17326	5414
<b>Panel C: Exits on the Extensive Margin (Establishment Closures)</b>				
Blue- Collar Representation	-0.00288* [0.002]	-0.00664*** [0.002]	-0.00273*** [0.001]	-0.000786 [0.002]
Mean Dep Var	0.00	0.05	0.00	0.05
N Obs.	90114	335834	99940	347484
N Establishments	5320	17356	6034	17326
<b>Panel D: Log Wage 10th Percentile</b>				
Blue- Collar Representation	-0.00421 [0.004]	-0.0101** [0.005]	0.00340 [.]	0.0183*** [0.005]
Mean Dep Var	4.14	4.18	4.10	4.21
N Obs.	90114	335834	99940	347484
N Establishments	5320	17356	6034	17326
<b>Panel E: Log Wage Median</b>				
Blue- Collar Representation	-0.00272 [.]	-0.00687** [0.003]	-0.00114 [.]	0.0180*** [0.004]
Mean Dep Var	4.49	4.54	4.47	4.59
N Obs.	90114	335834	99940	347484
N Establishments	5320	17356	6034	17326
<b>Panel F: Log Wage 75th Percentile</b>				
Blue- Collar Representation	-0.00245 [0.002]	-0.00142 [0.004]	-0.00204 [0.002]	0.0137*** [0.004]
Mean Dep Var	4.67	4.73	4.63	4.74
N Obs.	90114	335834	99940	347484
N Establishments	5320	17356	6034	17326
Increase Council Share	.459	1	.459	1

**Notes:** This table presents robustness estimates of the effect of blue-collar representation on outcomes. All estimates are based on event-study and 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) use instead of blue-collar representation a shift in representation to works councils from occupations with a predominantly manual task content. Columns (3) and (4) use a routine-job occupations (again based on their task content).

Table A7: IV Estimates of Blue-Collar Representation on Turnover of Blue- and White-Collar Workers (By Group)

	Baseline	Different Occupation-Groups		Varying Post-Event Window	
	Specification (1)	Manual Occ. (2)	Routine (3)	short post (t+3) (4)	long post (t+7) (5)
<b>Panel A: All Exits</b>					
Blue-Collar	-0.0116** [0.004]	-0.0120** [0.004]	-0.0114** [0.004]	-0.00871* [0.004]	-0.0140** [0.005]
Groupdif. (Blue- vs. White-Collar)	-0.00219 [0.003]	0.000368 [0.002]	0.000455 [0.002]	-0.0000477 [0.002]	-0.000414 [0.003]
Mean Dep Var	0.19	0.19	0.19	0.19	0.19
N Obs.	336458	335834	347484	355177	279865
N Establishments	17355	17356	17326	17902	14931
<b>Panel B: Voluntary Exits</b>					
Blue-Collar	-0.00133 [0.001]	-0.00178 [0.001]	-0.00241* [0.001]	-0.00160 [0.001]	-0.00355 [0.002]
Groupdif. (Blue- vs. White-Collar)	-0.000708 [0.001]	-0.000325 [0.001]	-0.000366 [0.001]	-0.000528 [0.001]	-0.00272 [0.001]
Mean Dep Var	0.01	0.01	0.01	0.01	0.01
N Obs.	336458	335834	347484	355177	279865
N Establishments	17355	17356	17326	17902	14931
<b>Panel C: Involuntary Exits</b>					
Blue-Collar	-0.00934* [0.004]	-0.00816* [0.003]	-0.00660* [0.003]	-0.00603 [0.004]	-0.00880* [0.004]
Groupdif. (Blue- vs. White-Collar)	-0.00222 [0.002]	0.000942 [0.002]	0.000367 [0.002]	-0.000922 [0.002]	0.00166 [0.003]
Mean Dep Var	0.16	0.16	0.16	0.16	0.16
N Obs.	336458	335834	347484	355177	279865
N Establishments	17355	17356	17326	17902	14931
<b>Panel D: Exits on the Extensive Margin (Establishment Closures)</b>					
Blue-Collar	-0.00197 [0.002]	-0.00841*** [0.002]	-0.00131 [0.002]	-0.00136 [0.002]	-0.00529 [0.003]
Groupdif. (Blue- vs. White-Collar)	-0.00350* [0.002]	-0.00351* [0.002]	-0.00105 [0.001]	-0.00439*** [0.001]	-0.00587* [0.002]
Mean Dep Var	0.05	0.05	0.05	0.05	0.06
N Obs.	336458	335834	347484	355177	279865
N Establishments	17355	17356	17326	17902	14931

**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) represent baseline results. Column (2) — (3) shows estimates for alternative groupings of occupations. Columns (4) — (5) show variations in the length of the post-event window with 3 and 7 post-event years respectively.

Table A8: IV Estimates of Blue-Collar Representation on Wages of Blue- and White-Collar Workers (By Group)

	Baseline Specification (1)	Different Occupation-Groups		Varying Post-Event Window	
		Manual Occ. (2)	Routine (3)	short post (t+3) (4)	long post (t+7) (5)
<b>Panel A: Log Wage 10th Percentile</b>					
Blue-Collar	-0.0103 [0.008]	-0.0213** [0.007]	0.0131* [0.006]	-0.00926 [0.008]	-0.0190* [0.009]
Groupdif. (Blue- vs. White-Collar)	-0.0496*** [0.009]	-0.0221** [0.008]	-0.0105 [0.008]	-0.0490*** [0.009]	-0.0488*** [0.010]
Mean Dep Var	4.19	4.18	4.21	4.19	4.20
N Obs.	336458	335834	347484	355177	279865
N Establishments	17355	17356	17326	17902	14931
<b>Panel B: Log Wage Median</b>					
Blue-Collar	-0.000149 [0.005]	-0.0124** [0.004]	0.00753* [0.004]	-0.00137 [0.005]	-0.00319 [0.005]
Groupdif. (Blue- vs. White-Collar)	-0.0208*** [0.005]	-0.0109* [0.004]	-0.0209*** [0.005]	-0.0235*** [0.005]	-0.0175** [0.005]
Mean Dep Var	4.58	4.54	4.59	4.58	4.59
N Obs.	336458	335834	347484	355177	279865
N Establishments	17355	17356	17326	17902	14931
<b>Panel C: P75 Log Wage</b>					
Blue-Collar	0.0109** [0.004]	-0.00226 [0.004]	0.0138*** [0.004]	0.00978** [0.003]	0.0121** [0.004]
Groupdif. (Blue- vs. White-Collar)	-0.00262* [0.001]	-0.00167 [0.001]	0.0000723 [0.001]	-0.00144 [0.001]	-0.00467* [0.002]
Mean Dep Var	4.74	4.73	4.74	4.74	4.75
N Obs.	336458	335834	347484	355177	279865
N Establishments	17355	17356	17326	17902	14931

**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) represent baseline results. Column (2) — (3) shows estimates for alternative groupings of occupations. Columns (4) — (5) show variations in the length of the post-event window with 3 and 7 post-event years respectively.

Table A9: Event-Study Estimates of Effects of Blue-Collar Representation on Turnover Outcomes for Blue Collar Worker

	(1) Baseline	(2) IV-Induced Event	(3) Different Manual Occ.	(4) Occupation-Groups Routine	(5) Event window short (+3)	(6) Event window long (+7)
<b>Panel A: All Exits</b>						
Blue- and White -Collar	-0.0152*** [0.006]	-0.0243*** [0.009]	-0.00856 [0.006]	-0.0141*** [0.005]	-0.0158*** [0.006]	-0.0155*** [0.006]
Mean Dep Var	0.13	0.13	0.13	0.13	0.13	0.13
N Obs.	44901	7172	45026	49912	37640	48511
N Establishments	2721	431	2659	3028	2721	2721
<b>Panel B: Voluntary Exits</b>						
Blue- and White -Collar	-0.00267** [0.001]	-0.00218 [.]	-0.000908 [0.001]	-0.000707 [0.001]	-0.00389*** [0.001]	-0.00270** [0.001]
Mean Dep Var	0.00	0.01	0.00	0.00	0.00	0.00
N Obs.	44901	7172	45026	49912	37640	48511
N Establishments	2721	431	2659	3028	2721	2721
<b>Panel C: Involuntary Exits</b>						
Blue- and White -Collar	-0.0124** [0.005]	-0.0225*** [0.007]	-0.00686 [0.006]	-0.0139*** [0.005]	-0.0114** [0.005]	-0.0127** [0.005]
Mean Dep Var	0.11	0.11	0.11	0.10	0.11	0.11
N Obs.	44901	7172	45026	49912	37640	48511
N Establishments	2721	431	2659	3028	2721	2721
<b>Panel D: Exits on the Extensive Margin (Establishment Closures)</b>						
Blue- and White -Collar	-0.00316** [0.001]	-0.00217 [0.002]	-0.00393* [0.002]	-0.00273** [0.001]	-0.00279** [0.001]	-0.00322** [0.001]
Mean Dep Var	0.00	0.00	0.00	0.00	0.00	0.00
N Obs.	44901	7172	45026	49912	37640	48511
N Establishments	2721	431	2659	3028	2721	2721

**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. Column (1) represents the baseline results. Column (2) restricts to a balanced specification, only including establishments that have non-missing observations in the +/- 5 years of the event. Column (3) restricts to retirement-induced events. Column (4) — (6) shows events for alternative groupings of occupations. Column (4) employs a more narrow definition of blue collar, where routine service jobs are excluded. Column (5) selects occupations that are based on their task content mainly manual work, whereas Column (6) represents occupations with repetitive/routine tasks. Column (7) and (8) show variations in the length of the post-event window, with 3 and 7 (instead of 5) years respectively.

Table A10: Event-Study Estimates of Effects of Blue-Collar Representation on Wage Outcomes for Blue Collar Worker

	(1) Baseline	(2) IV-Induced Event	(3) Different Occupation-Groups Manual Occ.	(4) Routine	(5) Event window short (+3)	(6) long (+7)
<b>Panel A: Log-Wage 10th Percentile</b>						
Blue- and White -Collar	0.00595 [0.004]	0.00612 [0.007]	-0.00685 [0.007]	0.00356 [0.003]	0.00599 [0.004]	0.00589 [0.004]
Mean Dep Var	4.11	4.10	4.09	4.10	4.11	4.11
N Obs.	44901	7172	45026	49912	37640	48511
N Establishments	2721	431	2659	3028	2721	2721
<b>Panel B: Log-Wage Median</b>						
Blue- and White -Collar	-0.00267** [0.001]	-0.00218 [.]	-0.000908 [0.001]	-0.000707 [0.001]	-0.00389*** [0.001]	-0.00270** [0.001]
Mean Dep Var	0.00	0.01	0.00	0.00	0.00	0.00
N Obs.	44901	7172	45026	49912	37640	48511
N Establishments	2721	431	2659	3028	2721	2721
<b>Panel B: Log Wage 75th Percentile</b>						
Blue- and White -Collar	-0.00348 [0.002]	-0.00362 [0.005]	-0.00245 [0.002]	-0.00204 [0.002]	-0.00287 [0.002]	-0.00329 [0.002]
Mean Dep Var	4.64	4.63	4.67	4.63	4.64	4.64
N Obs.	44901	7172	45026	49912	37640	48511
N Establishments	2721	431	2659	3028	2721	2721

**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. Column (1) represents the baseline results. Column (2) restricts to a balanced specification, only including establishments that have non-missing observations in the +/- 5 years of the event. Column (3) restricts to retirement-induced events. Column (4) — (6) shows events for alternative groupings of occupations. Column (4) employs a more narrow definition of blue collar, where routine service jobs are excluded. Column (5) selects occupations that are based on their task content mainly manual work, whereas Column (6) represents occupations with repetitive/routine tasks. Column (7) and (8) show variations in the length of the post-event window, with 3 and 7 (instead of 5) years respectively.

Table A11: Effects of Blue-Collar Representation on Hires Compositions and Promotions

	Baseline		IV-	Different Occupation-Groups				Varying Post-Event Window			
	Specifications		Induced	Manual Occ.		Routine		short post (t+3)		long post (t+7)	
	Event (1)	IV (2)	Event (3)	Event (4)	IV (5)	Event (6)	IV (7)	Event (8)	IV (9)	Event (10)	IV (11)
<b>Panel A: Log-Hires</b>											
Blue- and White -Collar	-0.00493 [0.025]	0.0514* [0.028]	0.0162 [.]	0.0165 [0.033]	0.0114 [0.028]	0.00773 [.]	0.00389 [0.027]	-0.0102 [.]	0.0276 [0.027]	-0.00461 [.]	0.119*** [0.034]
Mean Dep Var	3.11	2.56	3.23	3.07	2.57	2.97	2.53	3.11	2.58	3.11	2.51
N Obs.	83305	272275	13633	82298	268187	90203	278669	69934	289735	90001	216684
N Establishments	5405	15451	852	5307	15452	6017	15329	5402	16115	5405	10626
<b>Panel B: Share Hires Share Regular Worker</b>											
Blue- and White -Collar	-0.00964 [0.007]	0.0196*** [0.006]	0.0231 [.]	-0.00652 [0.007]	0.00110 [0.006]	-0.00945 [0.007]	0.0123** [0.006]	-0.00902 [0.007]	0.0177*** [0.006]	-0.00921 [0.007]	0.0166** [0.007]
Mean Dep Var	0.74	0.71	0.75	0.74	0.72	0.78	0.74	0.74	0.71	0.74	0.71
N Obs.	83305	272275	13633	82298	268187	90203	278669	69934	289735	90001	216684
N Establishments	5405	15451	852	5307	15452	6017	15329	5402	16115	5405	10626
<b>Panel C: Share Hires Trainees</b>											
Blue- and White -Collar	0.00521 [0.007]	-0.00938 [0.006]	-0.0267 [.]	0.00319 [0.007]	0.0105* [0.006]	0.00864 [0.006]	-0.00688 [0.005]	0.00371 [0.007]	-0.00783 [0.005]	0.00469 [0.007]	-0.00496 [0.006]
Mean Dep Var	0.22	0.21	0.22	0.21	0.20	0.18	0.18	0.22	0.21	0.22	0.21
N Obs.	83305	272275	13633	82298	268187	90203	278669	69934	289735	90001	216684
N Establishments	5405	15451	852	5307	15452	6017	15329	5402	16115	5405	10626
<b>Panel D: Share Hires Mini-Jobs</b>											
Blue- and White -Collar	0.00149 [0.001]	-0.0131*** [0.002]	0.00280 [0.003]	0.000973 [0.001]	-0.00736*** [0.002]	0.00205** [0.001]	-0.00714*** [0.002]	0.00206 [0.001]	-0.0121*** [0.002]	0.00148 [0.001]	-0.0149*** [0.003]
Mean Dep Var	0.03	0.05	0.02	0.03	0.05	0.03	0.05	0.03	0.05	0.03	0.06
N Obs.	83305	272275	13633	82298	268187	90203	278669	69934	289735	90001	216684
N Establishments	5405	15451	852	5307	15452	6017	15329	5402	16115	5405	10626
<b>Panel E: Promotion-Induced Wage-Growth</b>											
Blue- and White -Collar	-0.0399 [0.118]	0.0128 [0.082]	0.194 [.]	0.00292 [0.105]	-0.302*** [0.100]	0.0256 [0.085]	-0.135 [0.087]	-0.0850 [0.129]	-0.0859 [0.083]	-0.0348 [0.118]	0.258** [0.101]
Mean Dep Var	0.33	0.76	0.33	0.84	0.99	0.34	0.54	0.33	0.75	0.33	0.79
N Obs.	83824	265483	13725	83646	267158	93115	274798	70706	276590	90241	232701
N Establishments	5395	12358	850	5312	12358	6020	12323	5395	12778	5397	11134

**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) restricts to retirement-induced events for the event study specification. Column (4) — (7) shows event study and IV estimates for alternative groupings of occupations. Column (4) and (5) selects occupations that are based on their task content mainly manual work, whereas Column (6) and (7) represents occupations with repetitive/routine tasks. Columns (8) — (11) show variations in the length of the post-event window, with Columns (8) and (9) having 3 post-event years and Columns (10) and (11) having 7 (instead of 5) years respectively.



Table A12: Effects of Blue-Collar Representation on Layoff Composition

	Baseline		IV-	Different Occupation-Groups				Varying Post-Event Window			
	Specifications		Induced	Manual Occ.		Routine		short post (t+3)		long post (t+7)	
	Event (1)	IV (2)	Event (3)	Event (4)	IV (5)	Event (6)	IV (7)	Event (8)	IV (9)	Event (10)	IV (11)
<b>Panel A: Share Exits Regular Worker</b>											
Blue-Collar Representation	-0.00456	0.0224**	0.0124	0.0175*	0.0261***	-0.0102	0.0132	-0.00180	0.0204**	-0.00415	0.0356***
	[0.009]	[0.009]	[.]	[0.009]	[0.008]	[0.010]	[0.009]	[0.009]	[0.008]	[0.009]	[0.010]
Mean Dep Var	0.82	0.77	0.82	0.84	0.79	0.84	0.78	0.82	0.77	0.82	0.76
N Obs.	61680	168188	10285	60151	167144	65526	172758	51834	179437	66703	133184
N Establishments	5261	12617	834	5172	12628	5761	12558	5230	13205	5274	8747
<b>Panel C: Share Exits Trainees</b>											
Blue-Collar Representation	-0.000133	-0.0309***	-0.0165	-0.0133*	-0.0111*	0.00892	-0.0217***	-0.00299	-0.0286***	-0.000529	-0.0502***
	[0.008]	[0.008]	[.]	[0.008]	[0.006]	[0.009]	[0.007]	[.]	[0.007]	[.]	[0.009]
Mean Dep Var	0.11	0.09	0.14	0.09	0.08	0.10	0.09	0.11	0.09	0.11	0.09
N Obs.	61680	168188	10285	60151	167144	65526	172758	51834	179437	66703	133184
N Establishments	5261	12617	834	5172	12628	5761	12558	5230	13205	5274	8747
<b>Panel D: Share Exits Mini-Jobs</b>											
Blue-Collar Representation	-0.000948	-0.0160***	0.00335	-0.00139	-0.0113***	0.00615***	-0.0111***	-0.000285	-0.0146***	-0.00125	-0.0170***
	[0.002]	[0.004]	[0.003]	[0.003]	[0.004]	[0.002]	[0.004]	[0.002]	[0.004]	[0.002]	[0.005]
Mean Dep Var	0.04	0.07	0.02	0.04	0.06	0.04	0.06	0.04	0.06	0.04	0.07
N Obs.	61680	168188	10285	60151	167144	65526	172758	51834	179437	66703	133184
N Establishments	5261	12617	834	5172	12628	5761	12558	5230	13205	5274	8747

**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) restricts to retirement-induced events for the event study specification. Column (4) — (7) shows event study and IV estimates for alternative groupings of occupations. Column (4) and (5) selects occupations that are based on their task content mainly manual work, whereas Column (6) and (7) represents occupations with repetitive/routine tasks. Columns (8) — (11) show variations in the length of the post-event window, with Columns (8) and (9) having 3 post-event years and Columns (10) and (11) having 7 (instead of 5) years respectively.

Table A13: Relationship between Blue-Collar Works Council Share and Subjective Outcomes in the SOEP for the linked SOEP-ADIAB Data

	Between Variation			Within Variation		
	No Controls (1)	Ind. Controls (2)	Ind. + Firm., Year FE (3)	No Controls (4)	Ind. Controls (5)	Ind. + Firm., Year FE (6)
<b>Panel A: Job Satisfaction (Std.)</b>						
Out-Group Effect (White Collar)	-0.0560 [0.070]	-0.0902 [0.071]	-0.146 [0.075]	-0.0664 [0.107]	-0.0637 [0.103]	-0.0678 [0.106]
Own-Group Effect (Blue Collar)	0.173 [0.113]	0.113 [0.108]	0.0508 [0.114]	0.0268 [0.133]	0.132 [0.128]	0.138 [0.126]
Individual $\times$ Estab FE				x	x	x
Year FE			x			x
N	5795	5732	5732	5492	5432	5432
<b>Panel B: Worries - Own Economic Situation (0, 1)</b>						
Out-Group Effect (White Collar)	-0.121*** [0.036]	-0.0826* [0.035]	-0.0740 [0.039]	-0.0133 [0.050]	-0.0369 [0.052]	-0.0533 [0.053]
Own-Group Effect (Blue Collar)	-0.116* [0.045]	-0.0429 [0.047]	-0.0584 [0.047]	-0.0362 [0.061]	-0.0419 [0.059]	-0.0620 [0.062]
Individual $\times$ Estab FE				x	x	x
Year FE			x			x
N	5845	5781	5781	5533	5472	5472
<b>Panel C: Worries - Job Security (0, 1)</b>						
Out-Group Effect (White Collar)	-0.0196 [0.035]	-0.00739 [0.036]	-0.00550 [0.037]	0.0842 [0.061]	0.0641 [0.063]	0.0351 [0.062]
Own-Group Effect (Blue Collar)	-0.00787 [0.057]	0.0238 [0.056]	0.0120 [0.054]	-0.0280 [0.080]	-0.0476 [0.071]	-0.0765 [0.062]
Individual $\times$ Estab FE				x	x	x
Year FE			x			x
N	5791	5727	5727	5479	5418	5418

**Notes:** This table shows the relationship between the blue collar (full-time) works council share (between 0 and 1) and worker-level outcomes using the linked SOEP-ADIAB dataset. The specification reports separate coefficients for blue- and white collar workers. Individual $\times$ establishment and year fixed effects are included as indicated. Standard errors clustered by individual $\times$ establishment are reported in brackets. Sample: age 20-65, full-time or part-time employment, not in school, not self-employed, not civil servant, not in non-employment or apprenticeship, not in management position, never observed as (SOEP) works council member.