

Minority Representation at Work*

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Abstract

Recent proposals for a more inclusive capitalism call for labor and minority representation in corporate governance. We examine the joint promise of labor and minority representation in the context of German works councils. The councils are a powerful form of labor representation which grants elected delegates of shop-floor workers co-determination rights (e.g., over work conditions). Since 2001, a quota ensures that elected delegates include delegates of the gender that is in the minority in the workforce. Using detailed survey and administrative data, we find that required minority representation helps the representation of the minority gender on works councils, elevates the effort of works councils, and boosts job satisfaction and well-being of workers, irrespective of their gender. At the establishment level, we find that required minority representation reduces worker turnover and increases investment and productivity. Our findings suggest that laws ensuring labor and minority representation in corporate governance can work (i.e., benefit workers without necessarily hurting employers). The seemingly beneficial impact of the laws suggests that frictions hamper the fair representation of minorities and efficient cooperation among workers and employers.

Keywords: Corporate Governance; Labor Representation; Gender Quota; Job Satisfaction

JEL Classification: J15; J16; J28; J53; J54; J63; J71; J81; J82; J83; K22; K31; M12; M14; M50; M54; P16

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1 Introduction

Shareholder primacy is the dominant form of capitalism around the world (e.g., [Friedman, 1970](#); [Bebchuk and Tallarita, 2020](#); [Zingales, 2020](#)). Amid rising wealth inequality, persistent gender and racial inequities, deteriorating climate conditions, and growing social tensions, however, calls for a more inclusive form of capitalism grow louder (e.g., [Piketty and Goldhammer, 2020](#); [Mazzucato, 2021](#)). A central pillar of inclusive capitalism is the shared governance of corporations. Prominent examples of shared governance include the representation of labor in corporate decision-making bodies and minority quotas for these bodies. These measures aim to ensure the inclusion of diverse perspectives in the governance of corporations. The effectiveness of these measures, however, remains controversially debated.¹ Skeptics of labor representation, for example, caution that abandoning shareholder primacy could lead to unclear responsibilities, hold-up issues, and less efficient decision making (e.g., [Kaplan, 2020](#)). Likewise, skeptics of quotas express concern that quotas could hamper the meritocratic selection of decision makers and, ultimately, worsen decision making (e.g., [Wiersema and Mors, 2016](#)).

We examine the joint impact of labor representation and minority quotas in the context of German works councils. The councils are a powerful form of shared governance at the establishment level. They convey substantial co-determination rights (e.g., regarding work conditions) to a small team of delegates of shop-floor workers. The delegates are elected by the workers of the establishment. Since 2001, this election has been subject to a gender quota. The quota aims to ensure that the gender that is in the minority in the workforce is also represented among the delegates (roughly in proportion to its share in the workforce). In this context, we explore how the *required* minority (gender) representation in works councils affects the gender composition and activities of works councils, the satisfaction and turnover of workers, and the investment and productivity of establishments.

¹The controversial debates about co-determination rights proposed in the Accountable Capitalism Act and affirmative action practiced in college admissions in the United States exemplify the stark ideological divide and limited empirical evidence on labor representation and minority quotas.

Works councils are a popular form of shared governance in Europe. In recent years, this form of shared governance has even gained attention in the U.S. (e.g., [Liebman, 2017](#); [Silvia, 2018](#); [Jäger et al., 2022c](#)). In Germany, works councils have a long tradition and ample rights, including information, consultation, and co-determination rights. Works councils, for example, have co-determination rights over work conditions and various social, environmental, and personnel matters. By contrast, works councils' powers with respect to worker wages are quite limited. Wage disputes are outsourced to sector-level unions that negotiate wages for all employees in a sector (collective bargaining agreements; [Jäger et al., 2022b](#)).

The Works Constitution Act governs the setup, size, and election procedure of works councils. According to the act, workers can vote to establish works councils in establishments with five or more workers. The size of the councils depends on the establishment's size. Establishments with 5-20 workers, for example, have a one-member works council, whereas establishments with 21-50 workers have a three-member works council and establishments with 51-100 workers have a five-member council (and so on). The council members hail from the shop-floor workers and are elected, every four years, by their fellow shop-floor workers.

In 2001, an amendment to the Works Constitution Act introduced a gender quota for works councils. The amendment aimed at combating the underrepresentation of women in the workforce and, especially, in positions of power. To avoid favoring one gender over another, the quota was designed to ensure a minimum representation (among the members of the works council) of the gender that is in the minority in the workforce.² Specifically, the quota reserves seats in the works council in proportion to the share of the *minority* gender in the workforce.³ Following the D'Hondt method ([Federal Ministry of Labour and Social Affairs, 2019](#)), for example, one seat is reserved for the minority gender in a three-member council when the minority gender makes up at least 25% of the workforce.

²In most establishments and sectors in Germany, women are the minority gender (e.g., in manufacturing) but not in every establishment and sector (e.g., in health services).

³In our context, minority status is defined by gender. We acknowledge that, while the gender quota makes a binary distinction between sexes, gender is not a binary construct. The inclusion / representation of the third ("diverse") gender remains unresolved (e.g., [Institut zur Fortbildung von Betriebsräten, 2022](#)).

We use institutional particularities of the works-council quota to learn about the impacts of required minority representation. In our main design, we take advantage of the fact that the required minority representation only applies to establishments with works councils, the minority seat assignment rule is discontinuous, *and* the underlying assignment variables—establishment size and minority share—are known. Accordingly, we can compare how (discontinuous) required minority representation affects worker outcomes in establishments with works councils relative to establishments without works councils, while controlling for establishment size and minority share. An important assumption underlying this design is that establishments with and without works councils exhibit similar mappings between worker outcomes, establishment size, and minority share. We probe the robustness of our findings to this assumption using variants of our main design; including a regression-discontinuity design, which narrowly compares establishments with works councils around the quota’s cutoffs, and a difference-in-differences design, which exploits changes around the quota introduction.

We measure the impact of required minority representation on works councils, workers, and establishments using rich survey and administrative data. We obtain data on works councils from the Institute of Economic and Social Research (WSI). The data include information on works council gender composition and works-council activities (e.g., issues worried about, agreements made with management, training obtained to better advocate for workers) collected through in-depth interviews with works-council members in years 2007, 2008, 2010, and 2011. We complement the works-council data with data on workers from the Linked Personnel Panel (LPP) and the Linked Employer-Employee Panel (LIAB) of the Institute for Employment Research (IAB). The data include information on job satisfaction, work conditions, wages, and job tenure collected through in-depth surveys in years 2012, 2014, 2016, and 2018, and administrative records for years 2002 to 2019. Finally, we obtain data on establishments from the Establishment Panel (BP) of the IAB. The data include information on worker turnover and productivity sourced from administrative records for

years 2000 to 2019.

We find that required minority representation appears to work. Required minority representation is effective in ensuring a minimum level of representation of the minority gender in the works councils. Works councils with minority representation, in turn, exhibit higher activity levels (e.g., are concerned with more worker issues) and obtain more training (e.g., on how to advocate for their workforce). The elevated works-council effort translates into significantly greater job satisfaction and subjective well-being among workers. At the establishment level, it even leads to lower worker turnover, more investment, and higher worker productivity.

Our findings are consistent with required minority representation solving an agency conflict that is aggravated by biased perceptions about the minority gender (e.g., due to stereotyping; [Bertrand, 2020](#)). The agency conflict arises between workers and their delegated advocates; i.e., works-council members. Works-council members can exert collective effort to advocate for workers, or collude and shirk (e.g., [Tirole, 1986](#)). The ability to collude and shirk can be hampered by minority representation (i.e., a diverse team), according to prior literature (e.g., [Phillips et al., 2006, 2009](#); [Hoogendoorn et al., 2013](#); [Levine et al., 2014](#); [Yang et al., 2022](#)). In the presence of such benefit of minority representation, workers should find it in their best interest to elect a diverse team of works-council members. If workers, however, have negatively biased perceptions about the ability of members from the minority gender, they may underestimate the benefits of minority representation (e.g., [Casas-Arce and Saiz, 2015](#)).⁴ In this case, required minority representation can ameliorate the agency conflict and improve worker outcomes through reduced collusion incentives and/or increased (true) ability of the elected works-council members.

Supplemental findings support the idea that required minority representation addresses an agency conflict. We, for example, find that the increased works-council effort is di-

⁴Voters may have biased perceptions of the ability of minority workers (e.g., [Booth and Leigh, 2010](#); [Bohren et al., 2019](#)). Alternatively (or additionally), minority candidates may have biased perceptions of their ability to serve as works-council members (e.g., [Coffman, 2014](#)). Both, voter and self-bias can lead to underrepresentation of the minority gender among works councils.

rected at general-interest causes instead of gender-specific causes (e.g., childcare amenities). Similarly, we find that workers of both genders appear to benefit from minority representation. These findings are consistent with minority representation creating diverse teams that work harder. They are inconsistent with minority representation simply redistributing effort from majority- toward minority-specific causes. We also show that required minority representation appears to matter most in smaller councils where zero minority representation frequently occurs absent a quota; that our results are strongest when required minority representation prevents underrepresentation; and that our results are specific to representation of the minority gender, not female representation. These findings are again consistent with the importance of diversity in teams for collective effort and decision making. Notably, they are inconsistent with the idea that our results simply capture that women are better or more inclusive leaders (e.g., [Paustian-Underdahl et al., 2014](#)).

Supplemental findings further suggest that better work conditions constitute a plausible mechanism for the improvements in both workers' satisfaction and establishments' productivity. We, for example, find that minority representation appears to improve communication with employers, reduce discrimination, and increase the flexibility and autonomy of workers. By contrast, we do not find any significant improvements in workers' wages and pay satisfaction. These findings document that improvements only occur in amenities under the purview of works councils. They support the idea that required minority representation leads to more effective advocacy of works councils for their workers. Importantly, the improvements in worker amenities do not appear to come at obvious/detectable costs to employers (e.g., lower productivity). Instead, they appear to primarily represent joint efficiency gains realized through the inclusion of diverse perspectives in managerial decisions. Consistent with this view, we find that improvements for workers are concentrated in establishments where employers view communication with employees and flexibility of work processes as pivotal for business success.

Our paper speaks to the controversial debate about the future of capitalism (e.g., [Collier,](#)

2018; [Case and Deaton, 2020](#)). While calls for a more inclusive capitalism are growing louder (e.g., [Piketty and Goldhammer, 2020](#); [Mazzucato, 2021](#)), it remains unclear how to design such capitalism and its institutions without sacrificing economic efficiency. Our paper provides evidence on one particular institutional arrangement—works councils with minority quotas—that appears to help workers without clearly hurting employers. Notably, this arrangement appears to deliver joint wins despite the fact that, if left to their own devices, employers would typically not grant workers additional rights (e.g., a works council; [Freeman and Lazear, 1995](#)) and workers would not elect minority representatives. This observation highlights that, in the presence of institutionalized bargaining power differences (e.g., shareholder primacy) and socialized biases (e.g., minority stereotypes), we may not achieve efficient outcomes, let alone desirable distributional outcomes, without corrective regulatory interventions.

Our paper contributes to the literature on gender quotas. In politics, gender quotas have been shown to help redistribute resources to otherwise neglected causes (e.g., [Pande, 2003](#); [Chattopadhyay and Duflo, 2004](#)), break gender stereotypes (e.g., [Beaman et al., 2009, 2012](#)), and select better candidates (e.g., [Casas-Arce and Saiz, 2015](#); [Besley et al., 2017](#)). In the corporate context, the evidence to date is less sanguine. While [Bertrand et al. \(2019\)](#) show that female board members are observably more qualified, mandatory female board representation appears to provide little benefits for rank-and-file employees. [Adams and Ferreira \(2009\)](#) and [Ahern and Dittmar \(2012\)](#) even show that mandatory female board representation hurts financial performance and market value. A plausible reason for those negative effects is the scarcity of women with the required experience and connections that are of value in corporate boards. In our setting, scarcity is not an issue. The minority quota requires only representation in proportion to the gender composition of the workforce, and the works-council membership does not require special skills. In the absence of any confounding scarcity effect, our paper shows positive effects of gender quotas at work.

Our paper also contributes to the literature on labor representation. Prior studies show

evidence that labor representation through unions increases workers’ wages, decreases wage dispersion, and fosters equality in the workplace (e.g., [Freeman and Medoff, 1985](#); [Card, 1996](#); [DiNardo et al., 1996](#); [Farber et al., 2021](#)). In contrast to the effects of unions, [Jäger et al. \(2020\)](#) show that labor representation in the form of board-level co-determination does not significantly affect workers’ wages. With respect to shop-floor-level co-determination in the form of works councils, prior studies provide theoretical and institutional arguments for why works councils could lead to greater job quality and productivity (e.g., [Freeman and Lazear, 1995](#); [Müller-Jentsch, 1995](#); [Jirjahn and Smith, 2018](#)). Extant empirical evidence is broadly consistent with those arguments.⁵ Due to the voluntary nature of the presence of works councils, however, the causal impact of works councils remains an open question, as [Jäger et al. \(2022b\)](#) highlight.⁶ Using novel, quota-induced variation in works-council effort, our paper provides evidence consistent with works councils improving both the well-being of workers and the productivity of establishments.

Our paper is subject to important limitations. First, our paper’s evidence is context specific. In Germany, works councils have a long tradition and are embedded in a set of complementary institutions (e.g., sector-level bargaining of unions). These institutional arrangements need to be considered in interpreting our evidence (e.g., [Rogers and Streeck, 1995](#)). Second, we cannot observe employers’ profitability and well-being. Accordingly, we cannot conclusively rule out that employers are worse off. It, for example, could be that required minority representation results in expensive investments in work conditions (e.g., ergonomic chairs). These investments may lead to higher productivity, but may not be worth the cost to employers. Similarly, required minority representation could result in greater struggles between the works council and employers, hurting employers’ well-being. We note though that most employers express a positive attitude toward worker representation ([Levin-](#)

⁵For recent surveys of the literature on co-determination, refer to [Jäger et al. \(2022b,c\)](#).

⁶Consistent with this view, [Blandhol et al. \(2020\)](#) document that the positive association between works councils and worker wages documented in prior literature appears to reflect selection rather than treatment effects. While works councils appear to have little impact on worker wages, [Jäger et al. \(2022b\)](#) conjecture that the councils could positively affect hard-to-measure outcomes such as workers’ subjective well-being. Our paper provides evidence in support of this conjecture.

son, 2000; Jäger et al., 2022a), which appears consistent with our interpretation that works councils create joint wins. Lastly, in our most stringent design variants, we often cannot rule out the possibility that required minority representation has no effect. These variants, like all other design variants, still produce coefficient estimates similar to those obtained using our main design. The estimates of the most stringent variants, however, are quite imprecise, resulting in a failure to reject the null of no effect. Still, our estimates, at a minimum, can widely rule out substantially negative effects of required minority representation. This finding is noteworthy given that co-determination and quotas, for all their potential benefits for select workers’ well-being, are often strongly opposed (in the U.S.) based on the opinion that they would create significant inefficiencies (e.g., Jensen and Meckling, 1979).

2 Theory

2.1 Shared Governance

Shareholder primacy in corporate governance is commonly justified on the basis that, as residual claimants of firms’ returns, shareholders have the “right” incentives to maximize firm value (e.g., Hansmann and Kraakman, 2001). Sharing governance and returns with other stakeholders, such as worker representatives, can thus only weaken shareholders incentives, resulting in “a significant reduction in the country’s capital stock, increased unemployment, reduced labor income, and an overall reduction in output and welfare” (Jensen and Meckling, 1979, p. 504). Following this line of argument, exclusive shareholder control is not only best for shareholders but, ultimately, even workers.

Still, there are also important arguments in favor of shared governance (for a review, see Jäger et al., 2022c). Shared governance can reduce power imbalances between employers and workers, increase workers’ commitment to employers, and encourage information exchange between employers and workers. As a result, shared governance can limit the exploitation of workers (e.g., Frege and Godard, 2014; Anderson, 2017), increase workers’ effort and

investment (e.g., [Malcomson, 1983](#); [Furubotn, 1988](#); [Smith, 1991](#); [Freeman and Lazear, 1995](#)), and improve job satisfaction and firm performance (e.g., [Hirschman, 1970](#); [Freeman and Lazear, 1995](#)). Despite these benefits, shared governance may not be voluntarily adopted by employers (e.g., [Levine and Tyson, 1989](#); [Hayden and Bodie, 2021](#)) due to shareholders' private benefits of control (e.g. [Freeman and Lazear, 1995](#)), bargaining frictions (e.g., [Jirjahn and Smith, 2018](#)), or outright legal restrictions (e.g., [Jäger et al., 2022c](#)).

2.2 Minority Representation

The representation of minorities in decision-making bodies can affect the bodies and their decisions in various ways. The literature suggests that diverse teams exert more effort (e.g., [Adams and Ferreira, 2009](#)), employ a wider set of (complimentary) skills and information sources (e.g., [Lu et al., 2023](#)), are less susceptible to groupthink and behavioral biases (e.g., [Coles et al., 2020](#); [Kang et al., 2022](#)), and complicate coordination and collusion (e.g., [Phillips et al., 2006, 2009](#); [den Steen, 2010](#); [Lee et al., 2014](#); [Van Peteghem et al., 2018](#); [Donaldson et al., 2020](#); [Glover and Kim, 2023](#)). Depending on the decision-making context, these altered team dynamics and decision-making processes can help or hurt firm productivity (e.g., [Hamilton et al., 2003](#); [Hoogendoorn et al., 2013](#); [Bernile et al., 2018](#)).

Quotas can ensure minority representation in decision-making bodies (e.g., corporate boards or political bodies). They are often opposed on the grounds that they weaken the meritocratic selection of candidates and risk devaluing the achievements of the minority candidates who were successful even without the quota (e.g., [Wiersema and Mors, 2016](#)). However, in the presence of biases against minorities, quotas may lead to a better selection process, not a worse one (e.g., [Casas-Arce and Saiz, 2015](#); [Besley et al., 2017](#); [Bertrand et al., 2019](#)). In this case, quotas can potentially improve outcomes for all constituents of the decision-making bodies (e.g., [Casas-Arce and Saiz, 2015](#)) or, at least, shift the focus toward neglected causes relevant to the (otherwise underrepresented) minority (e.g., [Pande, 2003](#); [Chattopadhyay and Duflo, 2004](#)).

3 Institutions

3.1 Works Councils

Works councils are a prominent form of shared governance. In Germany, works councils are the legacy of revolutionary struggles between supporters of distinct political orders (e.g., monarchy, parliamentary democracy, or council republic) and economic systems (e.g., capitalism or socialism) in the aftermath of World War I (e.g., [Frankel, 1923](#); [Müller-Jentsch, 1995](#); [McGaughey, 2016](#); [Jäger et al., 2022a](#)). The Works Constitution Act sets forth the rights of works councils. The name of the act reflects the view that democracy should not be limited to the political sphere but extend to the economic sphere (e.g., [Naphtali, 1928](#)). The councils are seen as a way to ensure “democracy at work” (e.g., [De Spiegelaere et al., 2019](#); [Dukes and Streeck, 2023](#)). The democratic ideal underlying the Works Constitution Act is also evident in that it is not justified solely based on the economic benefits it would produce but also and primarily based on the idea that democratic rights do not stop at the workplace (e.g., [Müller-Jentsch and Levis, 1995](#); [Müller-Jentsch, 2008](#); [Jirjahn and Le, 2023](#)).

Works councils represent the shop-floor workers. Workers in establishments with five or more workers can vote to institute a works council. The size of the council depends on the establishments’ size, following a legal schedule ([Federal Ministry of Labour and Social Affairs, 2019](#)). In establishments with up to 20 workers, for example, the works council has one member, whereas the works council of establishments with 21 to 50 workers has three members, and the council of establishments with 51 to 100 workers has five members (and so on). The works-council members hail from the shop-floor workers and are elected every four years (similar to the parliamentary elections in Germany) by the workers in each establishment.⁷

Works councils have wide-ranging information, consultation, and even co-determination rights (e.g., [Müller-Jentsch, 1995](#)). For example, they can obtain information on financial

⁷Employees with managerial functions are excluded from the elections.

matters, personnel decisions, and work conditions from management. With respect to personnel decisions and work conditions, works councils even have a right to be consulted by the employer before any major changes occur. In addition, they have co-determination rights regarding select social, environmental, personnel, and work condition matters. Works councils can, for example, co-determine the allocation of working hours, the regulation of overtime and reduced working hours, the introduction of teamwork, leave and vacation arrangements, and the introduction of technical devices to monitor worker performance. They can also co-determine methods and guidelines for recruiting, worker transfers, promotions, and dismissals. They can even veto individual worker movements (e.g., dismissals). Works councils also exhibit some co-determination rights regarding the principles of remuneration, which include the payment method and the determination of pay structure (base vs. bonus pay). These rights, however, are mostly limited to adapting and implementing collective bargaining agreements negotiated by sector-level unions and employer associations (e.g., [Jäger et al., 2022b](#)).

Works councils have important obligations that come along with their rights. They should represent workers' interests and relay worker suggestions to employers (e.g., through direct communication and negotiation with employers). They should also monitor the employers' compliance with laws (e.g., labor and minimum wage laws), standards (e.g., environmental standards), accident prevention regulations, collective bargaining agreements, and works council agreements. Lastly, works councils are responsible for promoting good and fair work conditions. This obligation includes the promotion of gender equality (including work-life balance), employment security, health and safety (including environmental protection), the integration and protection of vulnerable groups (disabled, elderly, foreign workers), and a non-discriminatory work climate. Importantly, in pursuing these obligations and advocating for the workforce, works councils are subject to a "peace obligation." This obligation requires that works councils focus on joint wins and cooperate in good faith with employers. Distributive struggles (e.g., over wage levels) are outsourced to sector-level unions. This

institutional arrangement is commonly highlighted as an important reason for why works councils in Germany are not only powerful but also popular (e.g., [Jirjahn and Smith, 2018](#); [Jäger et al., 2022b](#)), even among employers (e.g., [Jäger et al., 2022a](#)).

3.2 Quota

Works council elections in Germany are subject to a gender quota. The quota was introduced in 2001 and applied in the 2002 works council elections for the first time. The quota aims to ensure proportional representation in works councils of the gender that is in the minority in the workforce. While the quota was introduced to combat the underrepresentation of women in the workforce and, in particular, positions of power, it was set up as a minority quota, not a female quota.⁸ The quota was designed this way to avoid concerns about the constitutionality of explicitly favoring one gender over another (e.g., [Klenner and Lindecke, 2003](#)). In most establishments, the quota ensures the representation of women in the works councils. In some establishments (e.g., the health service sector), by contrast, the quota ensures the representation of men in the works councils.

The quota requires that seats on works councils be reserved for the minority gender following the D'Hondt method ([Federal Ministry of Labour and Social Affairs, 2019](#)). In a three-member works council, for example, one seat is reserved for a representative of the minority gender when the minority makes up 25% or more of the workforce in the establishment. The rule attempts to approximate proportional representation. Due to the discrete seat assignment, however, it can lead to overrepresentation (e.g., making up 33% of the works-council members while the minority share is only 25%) and also allows for some degree of underrepresentation (e.g., the required minority representation on a three-member works council is still just 33% even when the underlying share is 45%).

The introduction of the quota was met with skepticism. The 2002 works-council survey of the WSI shows that some works-council members expressed concerns about “too much focus

⁸In 2000, the average share of women in the workforce was 35% and in works councils was 25%.

on gender equality” and a “lack of qualification” of potential, new female council members (Schmidt, 2002). These remarks appear consistent with the high levels of stereotyping and chauvinism in Germany at the time (e.g., Bertrand, 2020).

The quota introduction was part of a broader reform of the Works Constitution Act in 2001. The reform sought to strengthen labor representation through works councils amid declining unionization levels and emerging social and environmental challenges. Besides lowering barriers to works council formation (e.g., lowering the worker thresholds), the reform simplified the election process for smaller works councils and granted more rights and obligations to works councils, including rights to ensure environmental protection, combat discrimination, and promote gender equality (e.g., Addison et al., 2004).

4 Empirical Strategy

4.1 Design

We exploit institutional particularities of the works-council quota to identify the impact of required minority representation. We define required minority representation (*Required Representation*) as the share of seats on an establishment’s works council reserved for the minority gender. We construct this measure for all establishments, irrespective of whether they do or do not have a works council, following the rules governing the size of works councils and the minority seat assignment. The resulting measure is a discontinuous function of the number of workers (which determines the size of the works council) and the share of the minority gender in the workforce (which determines the number of reserved seats).

The institutional rules create useful variation in how strongly the quota affects the representation of minorities at a given establishment. For an establishment where the minority gender makes up 18% of the workforce, for example, the quota requires 0% minority representation for three-member works councils, 20% for five-member councils, and 14% for seven-member councils (and so on) (Figure 2). The same underlying minority share, hence,

translates into substantially different levels of minority representation. Notably, those different levels do not uniformly increase with establishment (or council) size. They also do not apply to all establishments. Establishments without a works council, for example, are unaffected by the quota. This additional variation across establishments helps separate the underlying determinants of required minority representation (i.e., number of workers and minority share) from the impact of the quota-induced minority representation.

We use the following cross-sectional design to estimate the impact of required minority representation on outcomes of establishments with works councils:

$$\begin{aligned}
Y = & \beta_1 \textit{Works Council} \times \textit{Required Representation} \\
& + \beta_2 \textit{Works Council} + \beta_3 \textit{Required Representation} \\
& + \beta_4 \textit{Minority Share} + \beta_5 \textit{Workers} + \alpha + \epsilon
\end{aligned} \tag{1}$$

where Y is an outcome at the worker or establishment level; *Works Council* is an indicator for establishments with works councils; *Required Representation* is the share of required minority seats; *Minority Share* is the share of the minority gender in the workforce; *Workers* is the number of workers; α is a constant or fixed effect (e.g., for each industry, state, and year); and ϵ is the error term. We are interested in the coefficient (β_1) on the interaction between *Works Council* and *Required Representation*.

This design compares how required minority representation relates to worker and establishment outcomes in establishments with works councils vis-à-vis those without works councils, while controlling for the underlying determinants of required minority representation (i.e., the number of workers and minority share). It has two noteworthy features. First, it controls for the key determinants of the discontinuous share of required minority representation, the number of workers and the minority share. The controls are powerful, accounting for more than 82% of our treatment variation ([Table A1](#)). They implicitly focus our (residual) treatment variation on discontinuities in the share of required minority

representation. Second, the design uses establishments without works councils as a counterfactual. This counterfactual helps separate the impact of required minority representation from other determinants, including the minority share. By construction, the required minority representation and the underlying minority share are strongly correlated. This issue is alleviated by using establishments without works councils to learn about how the minority share, absent required representation, maps into worker and establishment outcomes.

The design relies on the identifying assumption that establishments without works councils provide a useful counterfactual for how workforce composition affects worker and establishment outcomes absent a works council and quota. We probe the validity of this assumption using alternative control groups (e.g., establishments with one-member works councils) and more stringent design variants in [Section 6](#). Most notably, we use a regression-discontinuity design that narrowly compares works-council establishments with minority shares just above the cutoffs prescribed by the D'Hondt rule with otherwise similar establishments with minority shares just below the cutoffs. For the subset of outcomes with sufficient historical information, we also employ a difference-in-differences design that compares the impact of required minority representation around the quota introduction. These designs relax the reliance on establishments without works councils as a useful counterfactual.

4.2 Data

We compile data from several sources. We obtain data on the composition and activities of German works councils from the WSI's works-council surveys. The WSI surveyed works-council members in 2007, 2008, 2010, and 2011 through in-depth telephone interviews. The surveys contain an array of questions about council members' workplace (e.g., the number of total and female workers), works-council composition (e.g., the size of the works council and number of female council members), and activities the works council engaged in during the past year (e.g., company agreements, issues dealt with, and training sessions attended).

We supplement the WSI data with rich worker and establishment data from the IAB.

We obtain data on workers’ wages, tenure, and demographic characteristics, and data on establishments’ characteristics such as the number of workers, turnover rates, investments, value added, and whether the establishment has a works council from the IAB’s Linked Employer-Employee Data (LIAB). The LIAB combines administrative employment records with employer data at the establishment level (i.e., the Establishment Panel) for years 2000 to 2019.⁹ It is constructed via a stratified random sample drawn from the Integrated Employment Biographies (IEB), which contains employment biographies for all German employees.

We obtain data on workers’ subjective job satisfaction and work conditions as well as establishments’ human resource and management practices from the IAB’s Linked Personnel Panel (LPP). The LPP is based on surveys administered to a subset of the workers and establishments in the Establishment Panel. It samples establishments with 50 or more workers. The LPP surveys are conducted every two years, starting in 2012 and continuing through 2018, providing us with four survey waves in total.

The WSI and IAB data provide rich cross-sectional information on works councils, workers, and establishments. Crucially, all datasets allow calculating the required minority representation and its main determinants, the number of workers and the minority share in the workforce. All datasets also allow identifying establishments with works councils. These features enable our main design, which compares the impact of required minority representation across establishments with and without works councils. The datasets are less well suited for more stringent designs for two reasons. First, the data do not contain the exact number of workers and minority share that were used to determine the actual works-council size and seat assignment in a given election year. Accordingly, our required minority representation measure includes noise, which limits the extent to which we can leverage sharp discontinuities (e.g., using a regression-discontinuity design among works-council establishments only). Second, the data are available only in the post-quota period, for most outcomes (e.g., the WSI and LPP surveys). Accordingly, we cannot exploit time-series variation around the

⁹We start the sample period in 2000, after the LIAB expanded its sample to all relevant German states.

quota introduction (e.g., using a difference-in-differences design), except for select outcomes (e.g., productivity).

Table 1 presents summary statistics for our different datasets and variables. It shows that the average minority share in the workforce is about 23%, while the average female share is about 27% (see also Figure 1).¹⁰ This pattern suggests that, in most establishments (about 80% of the time), women are in the minority. Table A3, for example, documents that women are in the minority in the manufacturing and construction industries but are in the majority in the healthcare industry. With a view to works-council representation, we observe that around 58% of establishments in the LIAB are represented by a works council (Panel B), which is higher than the 40% coverage documented in Ellguth and Kohaut (2020) among all establishments. The difference arises because we focus on LIAB establishments with more than 20 workers (i.e., establishments for which works councils work in teams of 3 or more members). The larger establishments are more likely to adopt works councils (Table A4). Among the workers surveyed by the LPP, the works-council coverage (80%) is even higher than in the LIAB. The elevated coverage in the LPP reflects two notable sampling differences compared to the LIAB. First, the LPP only surveys workers at establishments with 50 or more workers. Second, the LPP sample shows worker-level statistics, whereas the LIAB sample reports establishment-level statistics. The worker-level statistics skew the LPP toward larger establishments (i.e., those with more workers). Consistent with these size differences, the typical works council in the LPP comprises 9 members (which represent establishments with 201-400 workers) while it only comprises 7 members (which represent establishments with 101-200 workers) in the broader LIAB.

¹⁰Our sample is skewed toward manufacturing establishments, explaining why the average female share is still quite low even during our sample period (i.e., the late 2000s and early 2010s). According to Baumann et al. (2017), the average female share in the workforce was 42% in establishments with works councils in 2015, up 7 percentage points from 2000 (35%).

5 Results

5.1 Representation in Works Council

We first examine the impact of required minority representation on the gender composition of works councils. Within the sample of establishments with works councils surveyed by the WSI, we observe that establishments with a higher minority share in the workforce also exhibit a higher minority share on the works council (Column 1 of [Table 2](#)). The workforce-minority share exhibits a large coefficient, close to (but below) 1, and explains as much as 33% of the variation in the works-council minority share ([Table A5](#)). This strong explanatory power, observed in the period *after* the quota introduction, could reflect that the quota is successful in achieving an almost proportional representation. It, however, could also reflect that establishments with higher minority shares just naturally exhibit a higher share of minorities on the works council, irrespective of the quota.

In Column 1 of [Table 2](#), we observe that the required minority representation is also positively, albeit weakly, associated with the the works-council minority share. After controlling for the (continuous) minority share, the variation in the required representation is limited to the discontinuities dictated by the institutional rules. This discontinuous variation appears to shape at least part of the works-council minority share, indicating that the quota does play a role. [Figure 3](#) illustrates the discontinuous variation and its relation to the works-council minority share. It shows that, even after controlling for the underlying minority share (i.e., the two straight lines), the share of minorities on the works council appears to move with the discontinuous variation of the required representation. For example, when the required representation lies below the line depicting the workforce-minority share, the works-council minority share also often lies below the line depicting the workforce-minority share. Likewise, when the required representation lies above the line depicting the workforce-minority share, the works-council minority share often lies above the respective line, too.

In columns 2 and 3 of [Table 2](#), we examine the impact of minority share and required mi-

nority representation separately for establishments with female and male minorities. Among establishments with a female minority (column 2), we observe that the coefficient on the workforce-minority share is lower, whereas the coefficient on the required representation is higher than in the full sample. The reverse is observed for establishments with a male minority (column 3). These patterns indicate that the (discontinuous) quota appears to most clearly shape the representation of women on the works council. In line with this interpretation, we observe that the required minority representation appears to ensure a minimum level of representation, especially in female-minority establishments (Figure 4). In a similar vein, we also observe that the impact of the required minority representation on works-council minority representation is strongest at the lower tail of the works-council minority share (Table A6); that is, it appears to avert zero representation.

In Figure 5, we show further, descriptive evidence consistent with the required minority representation playing a significant role in ensuring minority representation on works councils. In Panel A, we observe that the share of women on the works council is roughly proportional to the share of women in the workforce, for establishments with a female minority (i.e., below 50% female workforce). By contrast, for establishments with a female majority (i.e., above 50% female workforce), the share of women on the works council is lower than the share of women in the workforce. This underrepresentation only occurs when women are not protected by the quota (i.e., when they are in the majority in the workforce). A similar pattern emerges in Panel B, where we examine the relation between the share of women in the workforce and the share of works councils with a female chair. We observe that women are underrepresented in the works-council chair position. This underrepresentation is observed irrespective of whether women are in the minority or the majority in the workforce. This pattern is consistent with the idea that, when women are not protected by the quota (which does not apply to the chair position), they are underrepresented in positions of power.

The evidence in Figure 5 suggests that, absent the quota, women may be underrep-

resented by as much as 20%.¹¹ This estimate, which is based on comparing female (under)representation in protected female-minority establishments and unprotected female majority establishments, is strikingly consistent with evidence on female underrepresentation just before the quota. According to [Baumann et al. \(2017\)](#), for example, women were about 28% underrepresented in works councils in 2001 (relative to their workforce share), just before the quota, but only slightly underrepresented after the reform (e.g., 7% in 2015), implying a reduction of underrepresentation by about 21% (i.e., 28%-7%).

Collectively, our evidence is consistent with required minority representation ensuring almost proportional representation of minorities on works councils. The required representation seems to help avert female underrepresentation in works councils of establishments with a female-minority workforce. In establishments with a male-minority workforce, the required representation may have been unnecessary to establish proportional representation. It even looks like the required representation may have led to an overrepresentation of male in female majority establishments. Our evidence is highly consistent with in-depth reports on works-council composition by the WSI. The reports indicate a high compliance with the quota, female protection due to the quota, and male overrepresentation when protected by the quota (e.g., [Klenner and Lindecke, 2003](#); [Baumann et al., 2017](#); [Hobler et al., 2020](#)). The reports and our evidence suggest that, to a large part, the strong relation between the minority share in the workforce and the share in the works council observed *after* the introduction of the quota is attributable to the required representation; not just to an unbiased election of works-council members irrespective of their gender and the quota.

5.2 Activities of Works Council

We next examine the impact of required minority representation on the activities of works councils. In [Table 3](#), within the sample of establishments with works councils surveyed by

¹¹Among establishments with a female majority, the average female share in the workforce is 70% but the average female share on the works council is only 46%, implying 14 percentage points gap or a 20% underrepresentation relative to the workforce share.

the WSI, we observe that required minority representation is negatively associated with the number of agreements made with management (column 1). This association is small in magnitude and statistically insignificant. By contrast, we observe that required representation is positively associated with the number of issues that the works council is concerned with (column 3). This association is weakly statistically significant and suggests that, a one standard-deviation increase in required representation (i.e., 15 percentage points), leads to a 4% increase in the issues the works council deals with. In column 5, we also observe that required representation is positively associated with the number of training sessions that the works-council members attend, to learn how to effectively advocate for their fellow shop-floor workers.¹² This association is large in magnitude but statistically insignificant.

We find very similar results when splitting the required representation into whether it requires overrepresentation (i.e., required representation exceeds the minority share) or averts underrepresentation (i.e., required representation falls short of the minority share). In column 2, we again observe that there is no significant association between required representation and the number of agreements. Interestingly, the insignificant association is now only negative for when overrepresentation is required, not when underrepresentation is averted. Even more interestingly, in columns 4 and 6, we observe that required minority representation is strongly positively associated with more issues dealt with by the council and more training sessions attended by council members. Three of the four associations are statistically significant at the 5% level. Consistently, we observe that the largest and statistically significant associations are observed for when required representation averts underrepresentation. Weaker results are observed for when it requires overrepresentation.

We also observe an interesting pattern as to how the minority share in the workforce relates to works-council activities. Across all columns, we observe that the workforce-minority share is negatively associated with the number of agreements, issues dealt with, and training sessions attended. The negative association with works-council activity is noteworthy be-

¹²Labor associations and unions offer training sessions for works-council members. These sessions cover various aspects, including works councils' legal rights, obligations, and best practices.

cause the minority share is strongly positively associated with required representation. As a result, it is difficult but important to disentangle the separate associations of the underlying minority share and the required representation on works councils. Disentangling the two forces is particularly difficult whenever we only focus on establishments with works councils, like we do in the WSI data. In this case, the minority share and required representation are very highly correlated. The residual variation of required representation, after accounting for the minority share, is only due to the discontinuities in the requirement. In the IAB data, we can better disentangle these two forces by also examining establishments *without* works councils. These establishments help estimate how the minority share maps into worker and establishment outcomes absent a works-council quota.

The negative relation of minority share with works-council activities potentially biases our estimates of the impact of required representation downward. This issue may contribute to the weakly negative association between required representation and the number of agreements, for example. Notably, in column 1, the coefficient on minority share is less negative than in other columns (i.e., for other works-council activities) and statistically insignificant. This pattern may reflect that part of the negative minority-share association is captured in the negative coefficient on required representation. Notably, a similar pattern is observed across all specifications. Whenever the minority-share coefficient is less negative and insignificant, the required representation coefficient is less positive and exhibits a lower statistical significance, if any (see, e.g., columns 3 and 5 vs. 4 and 6).

The potential bias notwithstanding, we descriptively explore how required representation relates to the individual agreements, issues, and training underlying the aggregated outcomes presented in [Table 3](#). In [Figure 6](#), we observe that health & safety and work-time account issues appear to be among the issues that works councils focus more of their time on. These issues relate to work conditions, which are an area where works councils have particularly strong rights. Interestingly, issues related to equality and family-friendly practices do not seem to receive significantly more attention. We caution, however, that the rankings among

the individual issues are only exploratory in nature. The relative importance of the distinct issues can, for the most part, not be statistically distinguished (especially when considering adjustments for multiple hypothesis testing).

Collectively, our evidence appears most consistent with the idea that required representation increases works-council effort (in terms of issues dealt with and training sessions attended). Whether this effort translates into benefits for workers and/or establishments remains unclear though. It is particularly unclear because the greater number of issues dealt with and trainings obtained may simply reflect more contentious works-council meetings and/or less well-prepared and less efficient works-council members. This alternative view could also explain why agreements with management, which are often viewed as particularly beneficial for workers, seem to remain unaffected or even be hurt by required minority representation. As noted before, the insignificant agreement result, however, may also simply reflect the confounding influence of the (negative) minority share “effect” on works-council activities.

5.3 Satisfaction of Workforce

We now examine the impact of required minority representation on workers’ satisfaction and well-being. Using data from the IAB’s Linked Personnel Panel, we observe that required representation is strongly positively associated with job satisfaction in establishments with works councils, relative to establishments without works councils (Table 4, column 1). In terms of magnitude, the coefficient implies that a one standard-deviation increase in required representation (i.e., 15 percentage points) boosts job satisfaction by about 2% relative to the average satisfaction, or about 7% of the standard deviation of job satisfaction.

We find similar impacts of required minority representation on workers’ emotions toward their work (column 2) and their commitment to their employer (column 3). The emotions and commitment outcomes are the principal components of various related survey questions. In Figure 7, we provide a breakdown of the underlying questions and their relation to required

representation. With respect to emotions, we observe that workers of establishments with higher required representation express that they are more enthusiastic about work, feel more like working, are more carried away by their work, and more inspired by their work (Panel A of [Figure 7](#)). With respect to commitment, we observe that workers say that they derive more personal meaning from their work, are more likely to stay for the rest of their life with their employer, are less likely to feel like they are not part of the family, and are less likely to feel that they need to leave (Panel B of [Figure 7](#)).

We also find that required minority representation appears to boost workers’ perceived contribution to the firm and society ([Table 4](#), column 4). Workers in establishments with higher required minority representation express that they perceive their employer as charitable and helping society, and that they perceive that they meaningfully contribute to their employer’s goals through their work (Panel C of [Figure 7](#)).

Among the control variables, we also observe noteworthy patterns. We observe that establishments with works councils tend to exhibit lower levels of satisfaction, positive emotions, and perceived contribution. These negative associations plausibly reflect the endogenous adoption of works councils. Workers opt for works councils when they are dissatisfied. Consistent with this interpretation, we observe that the main effect of the works-council indicator turns positive (or non-negative) when matching on the determinants of works councils in supplemental tests ([Figure A2](#)). Importantly, the coefficient estimate of our variable of interest, the two-way interaction of required representation and the works-council indicator, appears widely unaffected by the matching. (We report robustness tests in [Section 6](#).)

Across all columns in [Table 4](#), we also observe that the coefficient estimates on the required representation and/or the minority share are negative (though mostly not significant). The negative coefficients appear to echo the negative coefficient on the workforce-minority share observed in the context of works-council activity. It is consistent with prior work documenting a negative association between gender balance and job satisfaction in a sample of establishments without works councils (e.g., [Ellison and Mullin, 2014](#)). While we have no

insights into *why* this association arises, it is important to estimate this association as the relevant benchmark for how minority representation in the workforce maps into job satisfaction and other worker and establishment outcomes, absent works councils with required representation. The main effect on required representation and the minority share, together, approximate this benchmark. Compared to the within works-council design in the previous section, this benchmark can more easily be differentiated from our variable of interest (i.e., required representation in works councils) thanks to the inclusion of establishments without works councils. The establishments without works councils appear to provide a reasonable benchmark as they produce a negative coefficient on minority share (and/or the main effect of required representation), consistent with the noisy but negative minority-share estimate in the previous analysis, which uses establishments with works councils only. (We probe the robustness of our findings to relaxations of this assumption in [Section 6.3](#).)

Collectively, our evidence is consistent with required minority representation boosting workers’ job satisfaction. The increased job satisfaction appears to reflect more positive emotions toward work and employers, a greater commitment to work and employers, and an improved perception of workers’ contribution to employers and society through their work. These positive outcomes align with the expected benefits touted by proponents of shared governance (e.g., [Freeman and Lazear, 1995](#); [Jirjahn and Smith, 2018](#); [Jäger et al., 2022c](#)). In conjunction with our evidence on works-council activities, our evidence, so far, seems to suggest that required minority representation can boost works councils’ effort and, as a result, workers’ satisfaction. It remains unclear though *how* minority representation affects workers’ satisfaction and *which* workers benefit from the representation.

5.3.1 Amenities for Workforce

To better understand how required minority representation boosts job satisfaction, we examine its impact on workplace amenities. We focus on four major amenities: work conditions, information and consultation, pay, and family friendliness. In [Table 5](#), we observe

that required representation in establishments with works councils is significantly positively associated with work conditions (column 1). *Work Conditions* is the principal component of four survey questions relating to work content and design. Figure 7 provides a breakdown of the individual questions and their relations to required representation. Workers appear to perceive their work content as more interesting, their work to be more autonomous, their tasks to be more varied, and their surrounding working conditions to be less poor (Panel D of Figure 7). These improvements align with the increased effort of works councils (e.g., in areas such as health & safety and work-time accounts) and occur in the areas where works councils have the strongest rights (i.e., co-determination rights).

In column 2, we observe that required representation is also significantly positively associated with information and consultation amenities, albeit less strongly than with work conditions. *Information & Consultation* is the principal component of three survey questions relating to communication with employers. Panel E of Figure 7 shows that workers in establishments with required minority representation perceive a small (and statistically insignificant) reduction in discrimination, a better understanding of management, and a clear communication from management. These improvements plausibly reflect that works councils make use of their rights to be informed and consulted by employers about day-to-day issues and important decisions.

In column 3, we find that required representation is negatively, but statistically insignificantly associated with pay satisfaction. We find highly consistent results when using administrative data on workers' actual wages, instead of their subjective pay satisfaction. The insignificant effect on pay is consistent with the fact that struggles over pay are widely outsourced to sector-level bargaining by unions. Accordingly, works councils have comparably limited rights when it comes to pay, and should focus on joint wins, not distributive issues. The insignificant pay effect is also comforting as recent evidence suggests that, while establishments with (board-level) worker representation pay higher wages, worker representation does not cause wage increases (e.g., Jäger et al., 2020; Blandhol et al., 2020). The consis-

tency of our findings with recent causal evidence alleviates concerns that our findings simply reflect an omitted factor which leads to improvements across the board, including pay (e.g., due to larger, more profitable establishments adopting works councils).

Lastly, in column 4, we observe that required representation is insignificantly associated with the employers' family friendliness. *Family Friendliness* is the principal component of four survey questions relating to childcare and family issues. In Panel F of [Figure 7](#) shows that there is some small but insignificant evidence that workers express higher childcare satisfaction. Otherwise, workers do not express that they can better combine their work and family responsibilities, that work is less of a strain on their family, or that work interferes less with their family. The absence of clear improvements of family friendliness suggests that required minority representation does not appear to lead to a gender-specific shift in works council priorities. This finding is consistent with our earlier results, which showed that works councils appear to primarily focus on health & safety and work-time account issues, less so on equality and family issues.

Overall, our evidence is consistent with required minority representation improving work conditions (e.g., the variety and autonomy of work) and, to some extent, the communication with employers, thereby increasing job satisfaction. These improvements are well within works councils' purview and seem to align well with the areas in which works councils, institutionally, have the strongest rights. They are also consistent with recent research stressing the importance of autonomy and task variety for job satisfaction (e.g., [Cassar and Meier, 2018](#)). Interestingly, required representation does not seem to come with costs to employers in the form of higher wages. It also does not appear to lead to gender/minority-specific reallocation of efforts and activities. These findings raise the possibility that all workers benefit from required minority representation. They even raise the possibility that employers also benefit (e.g., if job satisfaction and commitment to work result in lower turnover and higher productivity). We explore these aspects next.

5.3.2 Minority or Workforce Benefits

We examine whether the impact of required minority representation on workers' satisfaction and well-being differs across minority vis-à-vis majority workers. In [Table 6](#), we interact our two-way interaction of interest ($Works\ Council \times Required\ Representation$) with an indicator for workers belonging to the minority gender in the establishment (*Minority Worker*). The two-way interaction now captures the impact on majority workers, whereas the three-way interaction captures the incremental impact on minority workers. Across all columns, we find that required representation is positively associated with outcomes for majority workers. We do not find that minority workers are significantly more or less affected by required minority representation. In line with our findings on workplace amenities, these results suggest that the entire workforce appears to benefit from required representation (e.g., through better work conditions), not just one faction (e.g., the majority or minority workers).

5.3.3 Female or Minority Representation

We also examine whether required representation matters because of female representation or minority representation. The required representation is intentionally *not* limited to one gender (e.g., women). In most establishments in our sample, however, women are in the minority. Accordingly, the documented minority representation effects could plausibly reflect the inclusion of women in works councils, not necessarily the minority gender. We attempt to disentangle these two possibilities by examining whether we observe distinct effects of minority representation in the small subset of establishments with a male minority (e.g., in the healthcare sector). In Panel A of [Table 7](#), we interact our two-way interaction of interest with an indicator for male-minority establishments (*Male Minority Workplace*). Across all columns, we fail to find significant evidence that male-minority establishments exhibit impacts of required minority representation distinct from those observed for female-minority establishments.

To further explore this issues, we examine whether we observe that greater female repre-

sentation, irrespective of whether they are in the minority or majority, leads to improvements in worker satisfaction and well-being. For this purpose, we substitute our required representation measure (*Required Representation*) with a measure capturing the share of women that should be on the works council if they were represented according to their share in the workforce (*Female Representation*). In Panel B of [Table 7](#), across all columns, we observe small and statistically insignificant positive associations with worker outcomes.

In sum, our evidence suggests that required minority representation captures the effect of ensuring the representation of minorities, not a specific gender. It is consistent with the idea that, while the quota primarily helped female representation, it also ensures a minimum representation of men in female-majority establishments. In the latter establishments, men do not typically need the quota to be represented. Still, men appear to also take advantage of the quota to ensure their representation (e.g., even in female-dominant establishments where they would not be voted in absent the quota). The fact that the required representation effects appear to materialize irrespective of the gender of the minority, hence, suggests that we capture a diversity effect, not a gender effect.

5.3.4 Cross-Sectional Differences

We conclude our examination of workers' satisfaction effects by exploring when required representation works best. In [Table 8](#), we split the required representation variable into whether it requires overrepresentation (i.e., required representation exceeds the minority share) or averts underrepresentation (i.e., required representation falls short of the minority share). Consistent with our results on works-council activities, we observe that the effect of required representation is strongest when it averts underrepresentation. This findings is consistent with the idea that ensuring representation is particularly important if the minorities would otherwise (i.e., without the quota) be underrepresented. By contrast, ensuring representation even if not necessarily warranted by the underlying workforce composition may not be as effective. Still, even for overrepresentation we see some positive and, at times,

significant effects. We also note that, besides this economic argument for the differential effect sizes, there may also be a statistical explanation. The overrepresentation variation is smaller and potentially measured with more noise because it relies more on the exact cutoffs (i.e., that representation is required in a three-member council as soon as the minority share crosses 25%). As we do not observe the exact workforce composition as of the time of the works council elections, our required representation measure contains measurement error, especially right around the cutoffs.

In [Table 9](#), we also explore how employer characteristics moderate the impact of required representation. We observe that improvements in work conditions are observed primarily in establishments where employers view flexibility as an important aspect of work. Similarly, we observe that improvements in information and consultation amenities are most pronounced (albeit not significantly so) in establishments where employers state that contact with workers is crucial. Lastly, we observe that the effect of required representation materializes in smaller works councils with up to nine members (i.e., establishments with less than 500 workers), not in larger ones. Notably, in smaller works councils, minorities may be severely underrepresented (or not represented at all) absent a quota. By contrast, in large councils, zero-representation is unlikely, even in establishments with relatively few minority workers.

Collectively, these results suggest that averting zero- or underrepresentation seems to matter for workers' satisfaction and well-being, especially when employers also value flexible work and information exchange between workers and management. These results point to the importance of diverse works councils and a mutual interest in exploring joint wins among workers and employers.

5.4 Turnover of Workforce

We now turn from worker satisfaction to worker turnover. Turnover is a substantial cost to employers, reduces workers' incentives to invest in employer-specific human capital, and may ultimately reduce productivity (e.g., [Freeman and Lazear, 1995](#); [Hall, 2019](#); [Friebel](#)

et al., 2022; Ember and Casselman, 2023). By increasing job satisfaction, required minority representation may reduce worker turnover. In fact, our earlier results show that workers in establishments with higher required minority representation express an increased desire to stay with their employers. We use administrative data on worker flows from the IAB’s Linked Employer-Employee Panel to explore whether workers indeed stay longer with their employers.

In Table 10, we observe that required minority representation is strongly negatively associated with worker flows (columns 1 to 3) and the rate of worker turnover (column 4), while it is positively associated with average worker tenure.¹³ These results align with workers’ stated commitment to their employers. In terms of magnitude, they suggest that a one standard-deviation increase in required representation (i.e., 15 percentage points) reduces worker turnover by about 1% (or increases average worker tenure by about 2%).

5.5 Performance of Establishment

We next examine whether required minority representation helps or hurts employers’ performance. Using data from the IAB’s Establishment Panel, we explore how required representation relates to establishments’ investment, value added, and worker productivity. In Table 11, we observe that establishments with higher required representation exhibit higher investments, value added, and productivity. In terms of economic magnitudes, the estimates imply that a one standard-deviation increase in required representation increases investment by about 12% and value added and productivity by about 4%. These estimates imply relatively large benefits of required minority representation.¹⁴ They are consistent with Jäger et al. (2020) who document large, positive investment effects of about 30-50%

¹³Required representation is negatively associated with outflows and inflows. The negative association with outflows is larger though than the negative association with inflows, consistent with small, albeit insignificant workforce growth.

¹⁴The establishment-level outcomes are estimated using a broader sample, which includes more smaller establishments and works councils (see Section 4.2). Our cross-sectional results (Table 9) suggest that smaller establishments and works councils are most effected by the required minority representation. Accordingly, it appears reasonable that the establishment-level effects in the broader LIAB sample appear, if anything, larger than the worker-level effects in the LPP.

and productivity effects of about 15-30% in response to labor representation on boards of German firms. Notably, works-council representation is widely believed to be the more powerful lever, compared to board-level representation (e.g., [Jäger et al., 2022a](#)).¹⁵

Our evidence at the establishment level is consistent with workers’ increased satisfaction translating into more investment and better performance. Together with our earlier results that workers’ pay remains unchanged but satisfaction increases and turnover decreases, our evidence indicates that both workers and employers appear to benefit from required minority representation, consistent with the view that works-council effort can lead to joint wins.

6 Robustness

We assess the robustness of our main findings to alternative research design choices.

6.1 Design Choices

We probe the robustness of our main findings and design to various design choices. In [Figure A3](#), we plot the coefficient estimates and (90%) confidence intervals for various design alternatives. We start with the main design, but without controls. We then successively add fixed effects (for industry, state, and year), the control for workers, and the control for the minority share. The resulting design is our main design. We next report a design which additionally matches on determinants of the works-council adoption choice and a design that additionally adds these determinants in the matched-sample regressions. Finally, we report a fully interacted design. This design interacts the minority share and worker controls with the works-council indicator. It thereby focuses on the narrow variation in required representation that remains after controlling for the number of workers and minority share *within* establishments with works councils. For this design, we also report a version with

¹⁵Among Finnish firms, [Harju et al. \(2021\)](#) also document positive albeit small effects on job satisfaction, investment, and productivity, for both board-level and shop-floor-level representation (i.e., works councils). Compared to German works councils, the Finnish board representation and works councils have limited rights (i.e., primarily information, no co-determination rights).

matching on the determinants of the works-council adoption choice, and versions which include the determinants as (flexible) controls in the matched-sample regressions. (For more detail, refer to [Section A1.](#))

Across all our main outcomes, we observe that the various design alternatives widely produce point estimates that are similar to those reported by our main design. We take comfort in the robustness of the point estimates, but also acknowledge that especially the most stringent design variants produce large confidence intervals which, in several cases, do not allow us to reject the null of no effect. Still, we note that even the most stringent variants and widest confidence intervals do not lend much support to the pervasive view that shared governance and gender quotas are necessarily detrimental to firms’ investment incentives and performance (e.g., [Jensen and Meckling, 1979](#)).

6.2 Regression-Discontinuity Design

We revisit our main findings using stacked-cohort regression-discontinuity designs. For each minority-share cutoff defined by the D’Hondt rule, we create a cohort of establishments with minority shares falling just below and just above the cutoff.¹⁶ For each cohort, we define establishments above the respective cutoff (*Above Threshold*) as treated by the quota. We stack all cohorts and interact the treatment indicator with the indicator for establishments with a works council (*Works Council*). We include the same controls as before. The only changes are that we add cohort fixed effects, to compare establishments around cutoffs within each cohort, and that we center the minority share (i.e., the assignment or running variable) at the cutoff, to identify discrete jumps right at the cutoff value. The resulting design closely resembles our main design; instead of using a continuous treatment (*Required Representation*) though it uses a dichotomous treatment indicator (*Above Threshold*).

¹⁶The bandwidth of minority-share values around the cutoffs is cohort-specific. It depends on the number of cutoffs dictated by the D’Hondt rule for works councils of distinct sizes. For 3-member councils, for example, the rule prescribes only one cutoff (at 25%). Accordingly, we use a bandwidth of $\pm 25\%$ around the cutoff (i.e., $1/(M + 1)$ where M is the size of the council). For 9-member councils, by contrast, the rule prescribes four cutoffs (at 10%, 20%, 30%, and 40%). Accordingly, we use a bandwidth of $\pm 10\%$ around each of the cutoffs.

In Panel A of [Table 12](#), we obtain results consistent with our main design’s findings. Being subject to a higher required minority representation is associated with higher job satisfaction, lower turnover, higher investment, higher value added, and higher productivity. All results, but the value added and productivity ones, are statistically significant. The magnitudes implied by the level shifts are also similar in size to those implied by a one standard-deviation increase in the continuous required representation treatment. For example, workers’ job satisfaction increases by about 5% of the standard deviation of job satisfaction, turnover decreases by about 1%, and investment increases by about 15%.

The results in Panel A, in essence, illustrate that our main design already (implicitly) focuses on the discontinuities around the many quota cutoffs. The similarity between our main design and the regression-discontinuity design in Panel A, however, also means that both designs are subject to the same limitations. In particular, the results in Panel A again rely on the assumption that establishments without works-councils provide a useful counterfactual for how the minority share maps into worker and establishment outcomes (e.g., job satisfaction). We relax this assumption and probe the robustness of our main findings to this assumption in Panel B. Here, we restrict our attention to establishments *with* works councils that fall within a narrow bandwidth around the quota’s cutoffs. The benefit of the narrow-bandwidth design is that it obviates the need to control for differences in the minority share (e.g., via a control for minority share and a control group without works councils). Its drawback is that it severely limits the number of observations and available variation, thereby lowering statistical power.

In Panel B, we obtain results consistent with our main design’s findings, even when focusing only on establishments with works councils. Comparing establishments with works councils within a $\pm 10\%$ bandwidth around the quota cutoffs, we find that establishments above the cutoff exhibit higher job satisfaction, higher value added, and higher productivity than those below. These estimated increases are statistically significant, albeit often only tenuously so. Notably, the magnitudes of those increases remain widely unaffected when nar-

rowing the bandwidth to $\pm 5\%$ or even $\pm 2.5\%$. The estimated increase in job satisfaction, for example, is about 5% of the standard deviation of job satisfaction, for the 10%-bandwidth specification as well as for the 2.5%-bandwidth specification. The estimated increase ceases to be statistically significant when going from the widest to the narrowest bandwidth specification (with 494 observations only) though.

In Panel B, we also obtain results consistent with our main design’s findings when benchmarking the changes of establishments with works councils with the changes among two distinct control groups. Compared to establishments without works councils, establishments with works councils exhibit a significantly increased job satisfaction and reduced turnover when they are above the quota’s cutoffs. They also exhibit increased investment, value added, and productivity. These increases are not statistically significant though (across all the bandwidth sizes). Similar results obtain when using the few establishments with 1-member works councils as a control group.¹⁷ Like the treated establishments, these establishments have works councils. Yet, unlike the treated establishments, these councils are not subject to the quota. Using this alternative control group, we find that establishments with works councils subject to the quota exhibit significantly lower turnover, higher value added, and higher productivity when they are above the quota’s cutoffs (in the 10% and 5% bandwidth specifications).

Overall, the results of the regression-discontinuity design variants support our main design’s findings. They reduce concerns about our main design’s identifying assumption that establishments without works councils constitute a valid counterfactual for the mapping of establishments’ minority share to worker and establishment outcomes absent a works-council quota. Indeed, they show that very similar results obtain even when only focusing on works-council establishments falling within a narrow bandwidth of the quota’s cutoffs. The results of the narrower design variants, however, are often statistically insignificant; echoing the patterns observed in the previous section (6.1).

¹⁷These establishments are only available in the LIAB, not the LPP, due to the fact that the LPP is limited to establishments with 50 or more workers.

6.3 Difference-in-Differences Design

We can exploit the introduction of the quota in 2001/2 as a shock to minority representation for select outcomes in a difference-in-differences design. The IAB’s Linked Employer-Employee Panel and Establishment Panel provide information on worker flows, investments, value added, and productivity also in the pre-quota period (i.e., before the first election subject to the quota in 2002). The data start with full coverage in 2000. Accordingly, we use the years 2000 and 2001 as pre-quota years, and the subsequent years up until 2018 as post-treatment years. We interact the post-treatment indicator (*Post*) with our two-way interaction of interest (*Works Council* $\times$ *Required Representation*). To avoid endogenous changes over time in the works council adoption and workforce composition, we use the works-council status and required representation as of 2001. In our difference-in-differences design, we include establishment fixed effects, to account for cross-sectional differences between establishments (e.g., with and without works councils), and industry-year and state-year fixed effects in Panel A and industry-state-year fixed effects in Panel B, to account for confounding industry- and state-level trends.

In [Table 13](#), we observe that establishments with a works council and higher required representation are associated with increased investments (column 1), value added (column 2), and productivity (column 3) after the quota introduction. These associations are consistent with our main findings in terms of sign and magnitudes.¹⁸ They are noisily estimated though, with only productivity and value added being statistically significant. We also observe that establishments with works councils and higher required representation appear to attract more workers in the post-quota period (significantly so in Panel A, not Panel B). This effect appears consistent with these establishments benefiting from the required representation, thus, growing in size.

¹⁸The magnitudes implied by the productivity and value added estimates is slightly higher than in our main design. The elevated magnitudes could reflect that the 2001 works-council reform not only introduced the quota but also strengthened the rights of works councils. This additional change could amplify the quota effect. We note though that the elevated magnitudes could also simply reflect their noisy estimation.

In sum, the difference-in-differences estimates seem to support our main findings. Notably, while noisily estimated (e.g., due to limited variation used in this design), the difference-in-differences estimates reduce the concern that our main findings merely reflect selection (e.g., of voluntary works-council adopters). They also support the view that our main findings indeed capture a quota effect; not just that establishments with works councils generally exhibit a more favorable mapping between workforce composition and worker outcomes (e.g., due to works councils effectively moderating conflict in the workforce even without the quota).

7 Discussion

Our evidence suggests that required minority representation can increase works councils' effort which, in turn, boosts workers' satisfaction and, ultimately, establishments' productivity. Better work conditions and communication constitute plausible mechanisms through which works-council effort improves all workers' satisfaction, irrespective of the workers' gender.

We interpret our evidence as consistent with required minority representation solving an agency conflict that is aggravated by biased perceptions about the minority gender (e.g., due to stereotyping; [Bertrand, 2020](#)). We illustrate our interpretation using a stylized model in which N workers elect M peers to serve on the works council and advocate on their behalf. The effectiveness of the works council depends on the ability (a) of the works-council members (with $a \sim U[0, 1]$ among all workers) and the council members' effort (e).

The delegation of workers' rights to works-council members creates an agency conflict between workers and their delegates for two reasons. First, the interests of workers and works-council members are not perfectly aligned. Works-council members, for example, enjoy private benefits (b) (e.g., status and job security), irrespective of their effort. Workers, by contrast, only benefit from work-condition improvements (v) if works-council members

are able *and* exert effort. The higher the collective ability of the works-council members ($\prod_{i=1}^M a_i$), the greater the probability that they successfully advocate for better conditions ($E[v] = v \prod_{i=1}^M a_i$).

Second, works-council effort (e) is costly to council members but unobservable to their fellow workers. Hence, works-council members may choose to collude and shirk rather than exert collective effort to advocate for their fellow workers (e.g., [Tirole, 1986](#)). Their choice depends on their private cost-benefit trade-off. If they exert effort, they earn $b - e$, while their fellow workers expect to earn $E[v]$. By contrast, if the council members collude and shirk, they earn $b - c \prod_{i=1}^M a_i$. They incur a collusion penalty (c) which represents punishment by their fellow workers in the absence of expected improvements.¹⁹ The expected punishment increases in the ability of works-council members, as better works-council teams are expected to deliver improvements at higher rates. Thus, failure to observe an improvement is a stronger signal that the works-council members colluded and shirked.

Minority representation can reduce the agency conflict by complicating collusion. It, for example, may make it harder to achieve mutual agreements among diverse works-council members or to sustain the mutual trust necessary for collusion (e.g., [Phillips et al., 2006, 2009](#); [Hoogendoorn et al., 2013](#); [Levine et al., 2014](#)). We model the costlier collusion through a parameter γ that increases the likelihood that the collusion cost is incurred when shirking (i.e., $c(\prod_{i=1}^M a_i + \gamma)$).

Required minority representation can improve the effectiveness of works councils and outcomes of workers if workers have biased perceptions about the minority. Workers, for example, may neglect the benefit of diversity (i.e., lower collusion) or underestimate the ability of the minority. In this case, even a representative election among workers may not lead to outcomes that are in the best interest of the workers (e.g., [Casas-Arce and Saiz,](#)

¹⁹We use $c \prod_{i=1}^M a_i$ as the expected penalty for short. It reflects that workers punish the works council with c when they do not observe success. This punishment also affects works councils that exerted effort but were unsuccessful in their negotiations. The probability of no success given effort is: $1 - \prod_{i=1}^M a_i$. Accordingly, works councils compare the payoff of effort, $b - e - c(1 - \prod_{i=1}^M a_i)$, with the payoff of shirking, $b - c$. This comparison is unaffected by redefining the payoff of effort as $b - e$ and the payoff of shirking as $b - c \prod_{i=1}^M a_i$, as we do above.

2015).

We illustrate the potential benefit of required minority representation for the case where workers appreciate the benefits of diversity but exhibit a bias against the minority (δ). This bias is the average ability discount applied to minorities. It may reflect that majority workers underestimate the minority workers' ability. It may, however, also simply reflect that minority workers underestimate their ability as works-council members and/or their chances to win in the works council elections.

In Figure 8, we plot the minority representation and worker outcome for three cases: A benchmark case without bias (Panel A); a case with bias but without quota (Panel B); and a case with bias and quota (Panel C). In the background of the figure, we plot the share of minority workers (in light blue bars) as a function of the number of minority workers. We consider the case of an establishment with a workforce of $N = 30$ workers. In this case, the number of minority workers (N_{min}) in the workforce can range from zero to 14 (on the x-axis) and the required works-council size is $M = 3$. We plot the expected ability of the third majority works-council member in black (dots and line). The expected ability is the third-order statistic of the ability distribution among the majority workers.²⁰ The third best majority candidate is the marginal majority candidate that workers consider electing to the council. This candidate competes with the best minority candidate. We plot the expected ability of the best minority candidate in light blue (dots and line). As the number of minority workers in the workforce increases (holding the workforce size fixed), the expected ability of the best minority candidate increases, whereas the expected ability of the third majority candidate decreases. These patterns reflect that the pool of minority candidates increases whereas the one of the majority decreases.

In Panel A, we show the benchmark case without biased perceptions of the minority candidate's ability. In this case, workers elect the best minority candidate to the works

²⁰Given a uniform ability distribution, the j -th order statistic follows a $Beta(j, N - j + 1)$ distribution. The third-best majority candidate's expected ability is, thus, $E[a_{3,maj}] = \frac{N - N_{min} - 2}{N - N_{min} + 1}$ and the best minority candidate's expected ability is $E[a_{1,min}] = \frac{N_{min}}{N_{min} + 1}$.

council when $N_{min} \geq 6$; that is, when the minority makes up 20% or more of the workforce. The resulting works-council minority representation is 33% (dark blue line). Workers elect the minority candidate to the council even before the expected ability of this candidate matches that of the third majority candidate. This favoring of minority candidates reflects that a diverse council comes with the benefit of reduced collusion. This benefit translates into benefits for the workforce, as illustrated by the dashed gray line. This line represents the probability that the works council is successful in negotiating for the workers. In our specific example, this probability spikes when the works council becomes diverse, because the works council would shirk absent diversity.

In Panel B, we show a case with biased perceptions of the minority candidate’s ability. In this case, the workers perceive the minority candidate’s ability to be 15% ($\delta = 0.15$) lower than it actually is. We depict the true ability in lighter blue and the downward shifted, biased ability perception in light blue (dots and line). As a result of the biased perception, the best minority candidate is never chosen over the third majority candidate, despite the diversity benefits *and* despite the minority candidate’s superior ability (starting at $N_{min} > 7$). Notably, the underrepresentation of minorities, in this case, hurts all workers, as the homogeneous works council colludes and shirks.

Finally, in Panel C, we show how required minority representation would affect minority representation and worker outcomes in the case of biased perceptions. According to the D’Hondt rule, one seat would be reserved for the best minority candidate when the minority share in the workforce is 25% or larger. In our example, the rule reserves a seat for the best minority candidate when there are $N_{min} \geq 8$ minority workers. At this point, the expected (true) ability of the best minority worker exceeds that of the marginal third-best majority candidate. Accordingly, if anything, the quota-based selection leads to a better works-council team. In addition, the minority candidate comes with the benefit of collusion reduction.²¹

In sum, our stylized model illustrates how required minority representation can achieve

²¹The two mechanisms can partially offset each other as a lower perceived ability can reduce the works-council members’ expected collusion penalty.

both a reduction of minority underrepresentation and an improvement of all workers’ outcomes. Our proposed mechanisms—complicated collusion and/or improved selection—are in line with prior evidence on the impact of diversity on team decisions (e.g., [Lee et al., 2014](#); [Glover and Kim, 2023](#)) and the impact of quotas on the selection of team members in the presence of bias (e.g., [Besley et al., 2017](#); [Casas-Arce and Saiz, 2015](#); [Bertrand et al., 2019](#)). We acknowledge though that other mechanisms may be at play, too.²² Ultimately, our empirical evidence cannot speak to the precise mechanism of how required minority representation leads to more works-council effort and better worker outcomes. Still, it provides novel evidence that these positive outcomes seem to result from required minority representation, which appears consistent with required representation alleviating agency issues in the presence of biased perception / unequal representation.

8 Conclusion

We examine how required representation of worker and minority interests in corporate governance affects workers’ well-being, turnover, and productivity. Our institutional context is a quota which reserves seats for the gender that is in the minority in the workforce on German works councils. The works councils are a powerful form of worker representation and the quota provides useful regulatory variation in the extent of required minority representation on the councils. We combine this quota-induced works-council variation with detailed survey and administrative data on works councils’ composition and activities, workers’ satisfaction and turnover, and establishments’ investment and productivity.

We document evidence that required minority representation appears to work. We observe that required representation appears to elevate works councils’ efforts, boost workers’ well-being and tenure, and aid establishments’ investment and productivity. The observed

²²Required representation could, for example, also affect the activities of works councils by forcing out some entrenched members and introducing new members into the council. This rotation aspect, however, is most likely to occur upon quota introduction, not in later years. Our evidence, however, is mostly derived from a period years after the introduction. Accordingly, we consider the rotation (or fresh-look) mechanism as less plausible.

improvements appear to benefit workers, irrespective of their gender, *and* employers. The improvements appear to result from improved work conditions and communication between workers and employers, not from gender-specific amenities (which could be costly for majority workers) or wage increases (which would be costly to employers).

We interpret our evidence as consistent with required minority representation alleviating an agency conflict between workers and their delegated advocates; i.e., works-council members. Minority representation complicates works-council members' ability to collude, thereby increasing the chance that council members exert effort to advocate for their fellow workers. In the presence of biased perceptions (e.g., regarding the ability of minority workers), however, workers may fail to elect minority representation without an explicit requirement, even if it is in their best interest. The requirement, thus, can be beneficial for workers, by ensuring minority representation and combating biases (e.g., against able minority workers). It can even be beneficial for employers if the required minority representation leads to more efficient information exchange between workers and employers and helps identify joint wins (e.g., [Freeman and Lazear, 1995](#); [Jirjahn and Smith, 2018](#); [Jäger et al., 2022c](#)).

Our evidence supports the notion that worker and minority representation can be beneficial, in line with recent calls for the inclusion of worker and diverse perspectives in corporate governance. We caution though that our evidence comes with important limitations. First, our evidence is context specific. In Germany, works councils have a long tradition and are embedded in a set of complementary institutions (e.g., sector-level bargaining of unions). Transplanting one institution (i.e., establishment-level works councils) without the other formal and informal institutions (e.g., sector-level unions and traditions) may not work. Second, our evidence does not allow conclusively demonstrating that both workers and employers win. We do not observe employers' well-being and bottom-line profitability. Accordingly, we may miss important costs imposed on employers. We note though that most employers express positive attitudes toward worker representation (e.g., [Levinson, 2000](#); [Jäger et al., 2022a](#)), in line with effective works councils producing joint wins. Third, our evidence does

not allow ruling out that required minority representation does not matter. In our most stringent specifications, which only use the discontinuous variation in minority representation due to the quota *within* establishments with works councils, we mostly fail to reject the null of no effect. Still, even these specifications typically produce point estimates similar to our main estimates and confidence intervals that do not extend far into the negative effect zone. Accordingly, our evidence, at a minimum, can reduce the frequently voiced concern that shared governance and minority quotas necessarily lead to substantial efficiency losses (e.g., [Jensen and Meckling, 1979](#); [Kaplan, 2020](#)).

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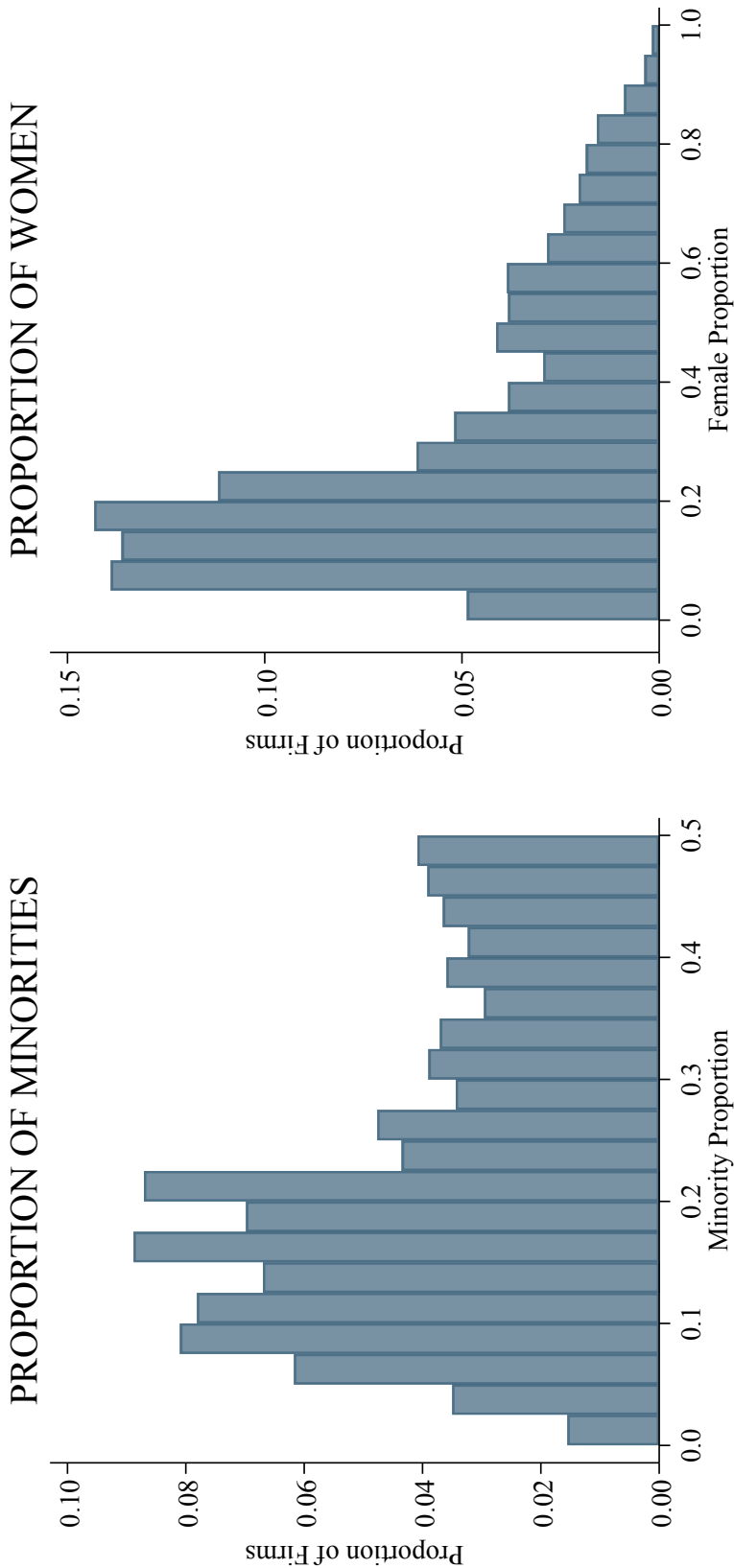
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Figure 1: Histograms of Establishments' Share of Minority and Female Workers

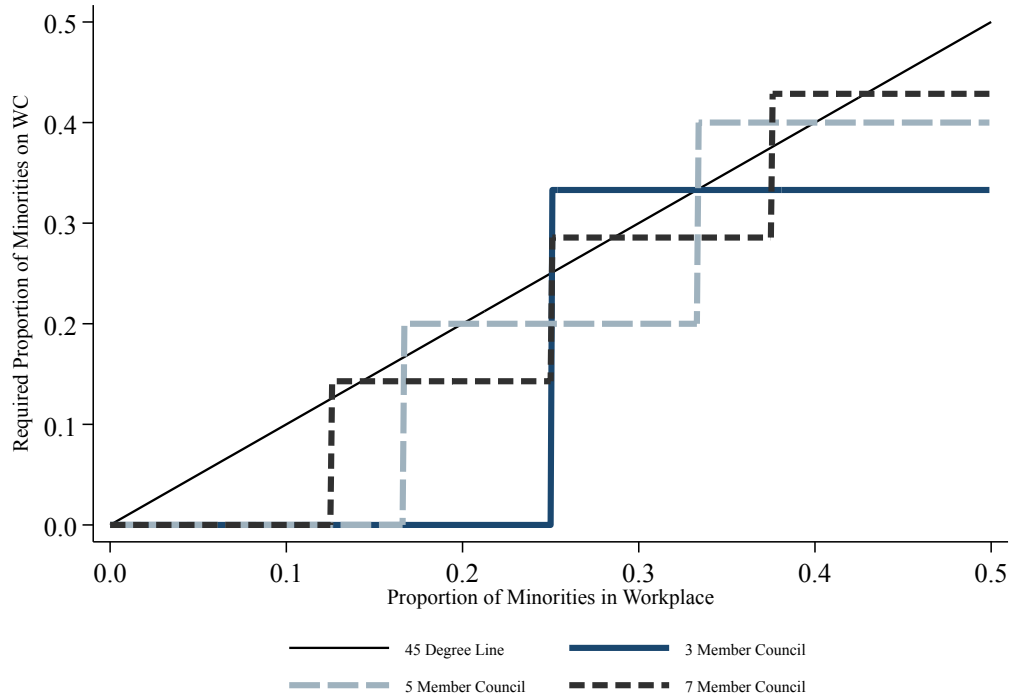


Panel A: Histogram of Workplace Minority Shares

Panel B: Histogram of Workplace Female Shares

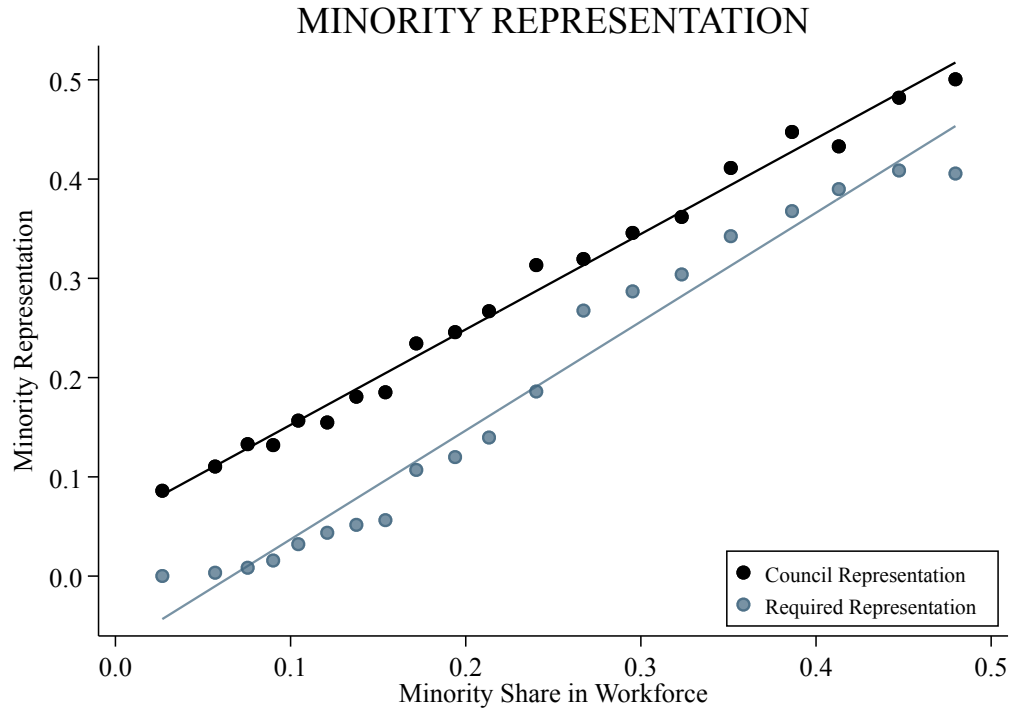
Notes: This figure illustrates the distribution of minority and female shares in the workforce of establishments. Panel A plots the distribution of the minority share. The horizontal axis shows the minority share in the workforce, and the vertical axis shows the proportion of establishments. The scale only extends to 0.5 because, by definition, a gender is only in the minority when it represents less than 50% of the workforce. Panel B plots the distribution of the female share. The horizontal axis shows the female share in the workforce, and the vertical axis shows the proportion of firms.

Figure 2: Treatment Variation



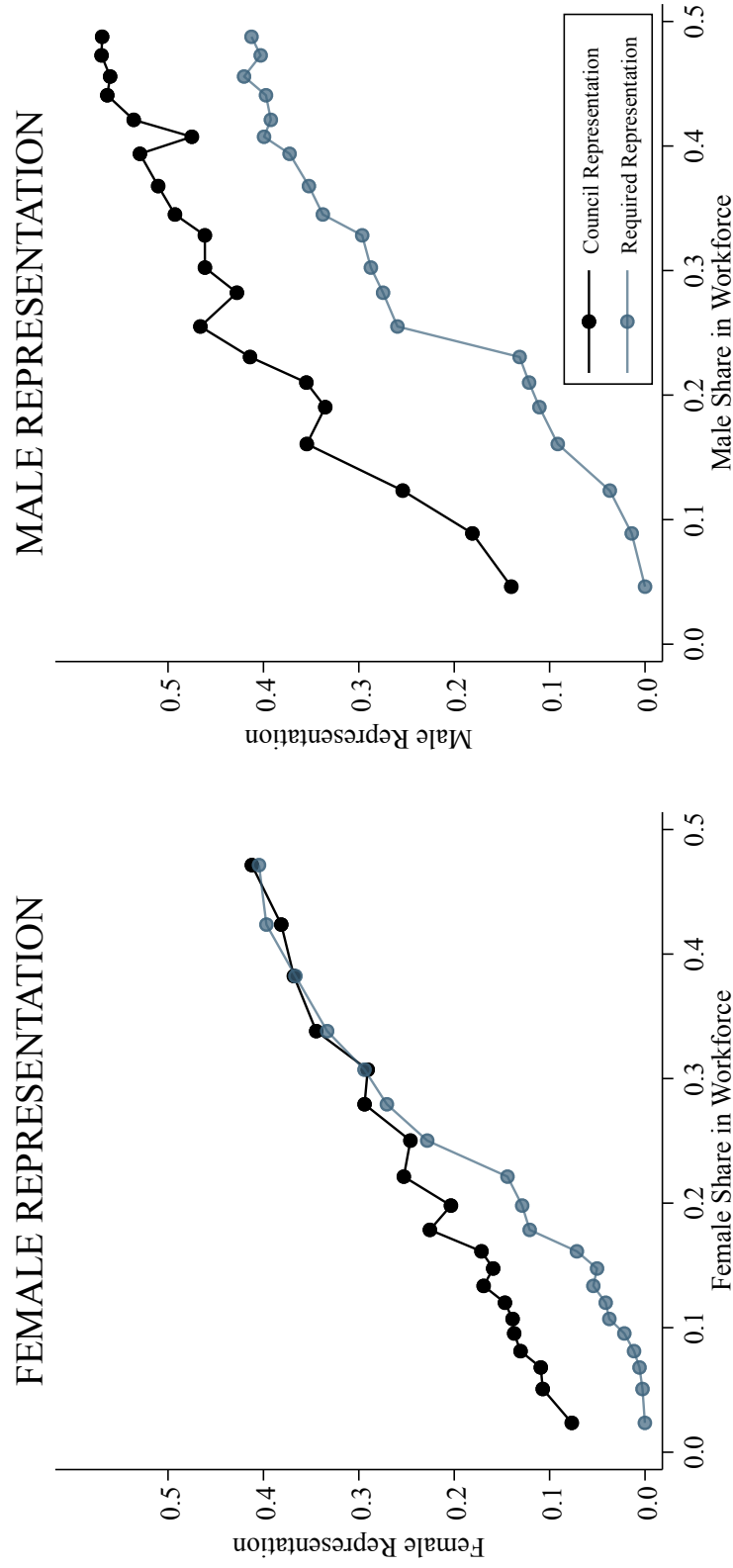
Notes: This figure illustrates the variation in the *Required Representation* measure across works councils of different sizes. The horizontal axis shows the minority share in the workforce, while the vertical axis shows the minority share on the works council. The solid black line is the 45-degree line, which corresponds to equal representation of minorities in the workforce and works council. The solid dark blue line illustrates the required minority share on a 3-member works council as a function of the minority share in the workforce. The dashed light blue line illustrates the required minority share on a 5-member works council as a function of the minority share in the workforce. The dashed black line illustrates the required minority share on a 7-member works council as a function of the minority share in the workforce.

Figure 3: Graphical First-Stage Relationship



Notes: This figure illustrates how the minority share in the workforce maps into required minority representation and actual minority representation on works councils. The blue (black) dots represent binned scatter plots of required representation (works-council minority share) (shown on the vertical axis) as a function of the minority share in the workforce (on the horizontal axis). The blue (black) line represents the linear fit between required representation (works-council minority share) and the minority share in the workforce. The variation of the dots around the linear fits represent the residual variation in the required representation and the actual works-council share, after controlling (linearly) for the underlying minority share in the workforce.

Figure 4: Graphical First-Stage for Male/Female

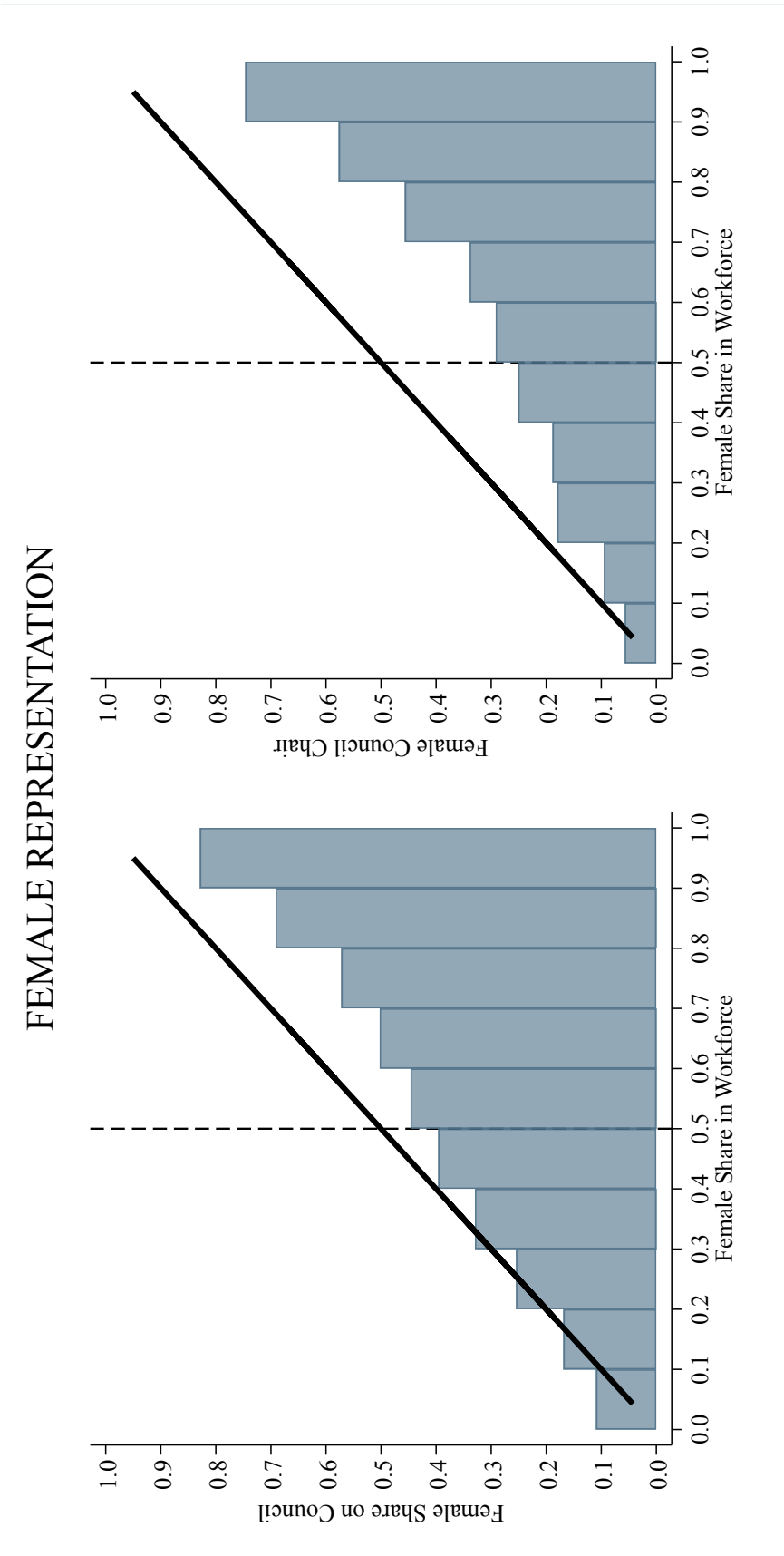


Panel A: Workforce Female Share and Female Representation on Works Council

Panel B: Workforce Male Share and Male Representation on Works Council

Notes: This figure illustrates the required level of female (male) representation on works councils (when they are in the minority in the workforce) and the actual level of female (male) representation on the works councils. Panel A illustrates the required and actual representation of women on works councils. The horizontal axis shows the share of women in the workforce, while the vertical axis shows the (required and actual) female representation on the works council. The blue line plots the required female representation on works councils, according to the minority quota, as a function of the female share in the workforce. The black line plots the actual female representation on the works councils as a function of the female share in the workforce. Likewise, Panel B illustrates the required and actual representation of men on works councils, when they are in the minority in the workforce.

Figure 5: Required Representation and Female Representation on Councils

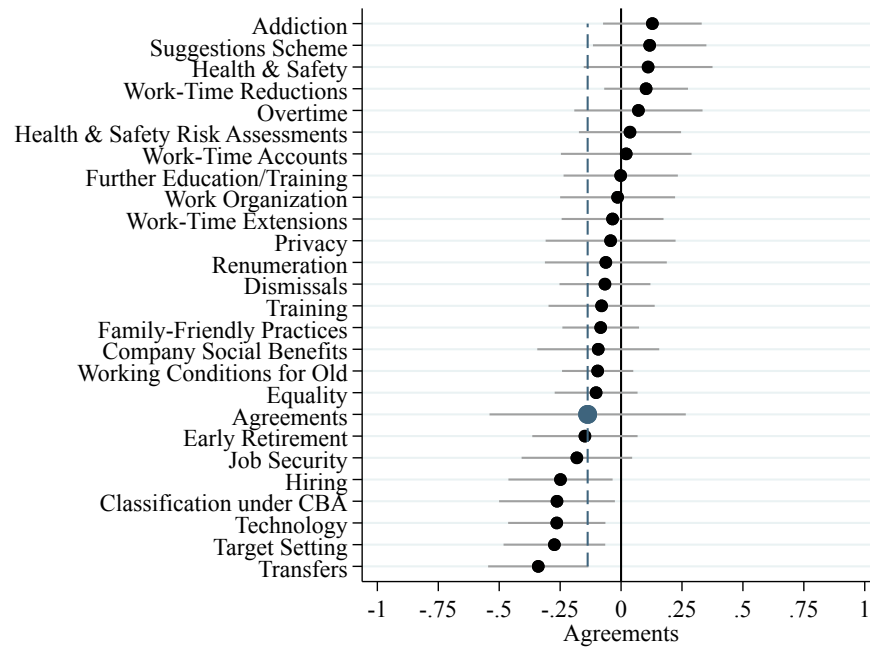


Panel A: Workforce Female Share and Share of Women on Works Council

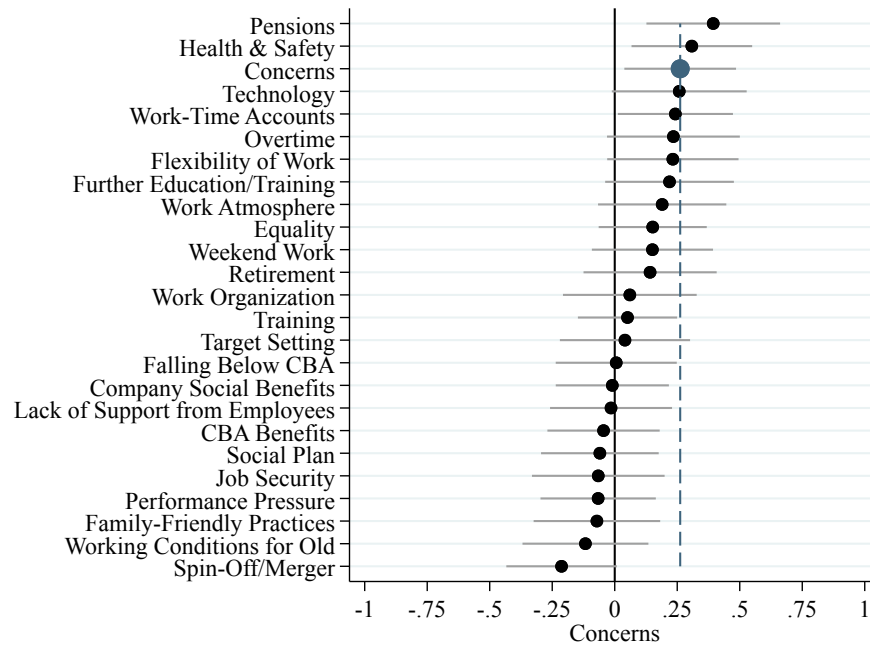
Panel B: Workforce Female Share and Women as Works-Council Chair

Notes: This figure shows the female share on works councils and of works-council chairs. Panel A plots the female share on works councils as a function of the female share in the workforce. The horizontal axis shows the female share in the workforce, while the vertical axis shows the female share on works councils. Panel B plots the share of establishments with a female works-council chair as a function of the female share in the workforce. The horizontal axis shows the female share in the workforce, while the vertical axis shows the share of establishments with a female works-council chair. In both panels, the solid black lines represent 45-degree lines, which denote proportional representation of women in the workforce, on works councils, and in the position of works-council chair. The dashed black line denotes the point at which women are no longer the minority gender in the establishment.

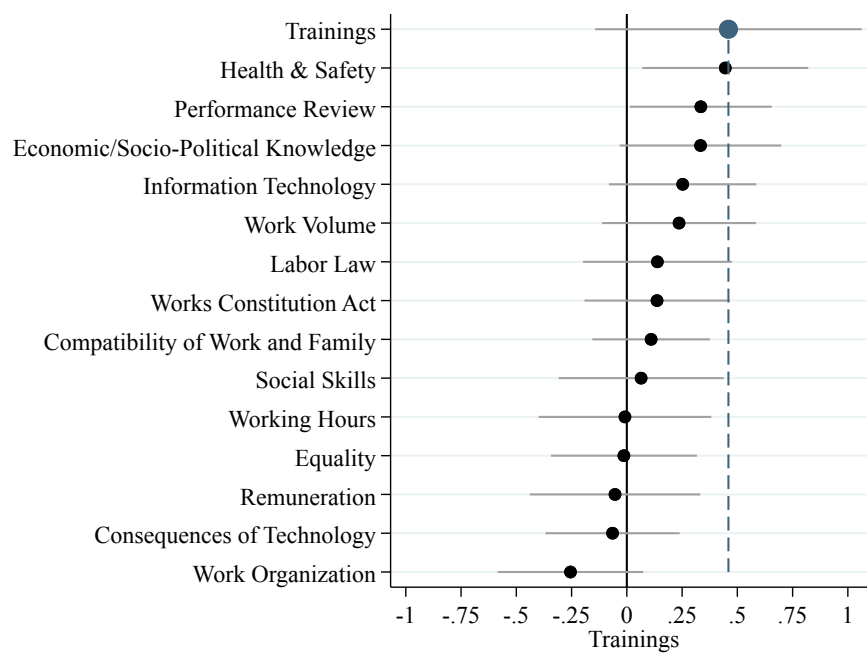
Figure 6: Required Representation and Effort on Councils



Panel A: Required Representation and Works-Council Agreements



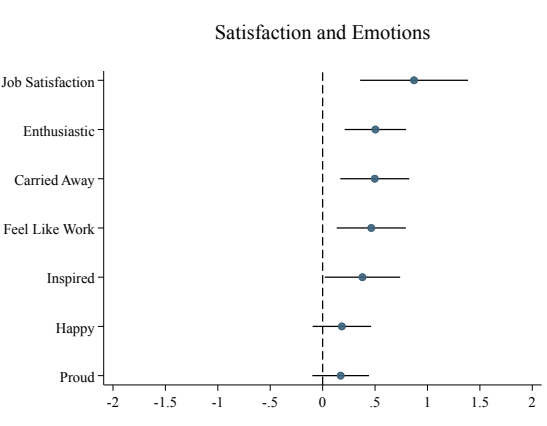
Panel B: Required Representation and Works-Council Concerns



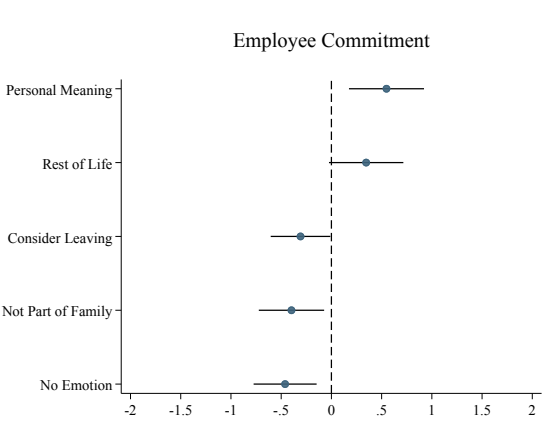
Panel C: Required Representation and Works-Council Training

Notes: This figure shows the relation between works-council activities and required minority representation. It plots coefficient estimates and 90% confidence intervals of regressions of works-council activities on required representation. Panel A reports the estimates across various types of agreements that works councils make with their employers. Panel B reports the results across various issues that works councils deal / are concerned with. Panel C reports the results across various types of training that works-council members attend to learn how to advocate for their workforce. For detailed definitions of the activities and underlying individual survey questions, please see [Table A1](#). In all panels, the horizontal axis shows the coefficient estimate, while the vertical axis lists works-council activity (outcome). The dashed blue line represents the coefficient on the main outcomes shown in [Table 3](#) (i.e., *Agreements*, *Concerns*, and *Trainings*). These outcomes represent the logarithm of the count of all agreements, concerns, or training sessions.

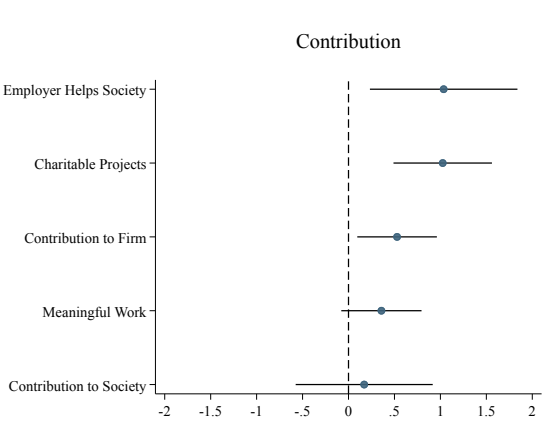
Figure 7: Required Representation and Worker Outcomes



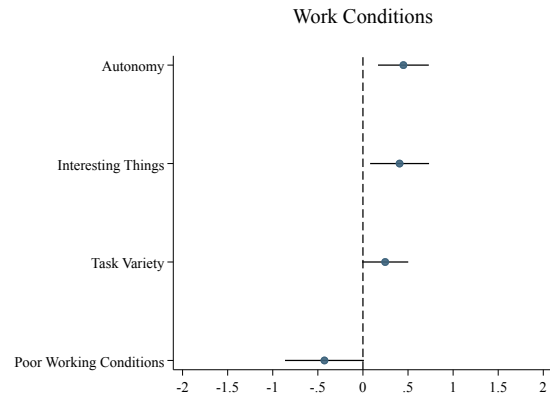
Panel A: Required Representation and Worker Satisfaction



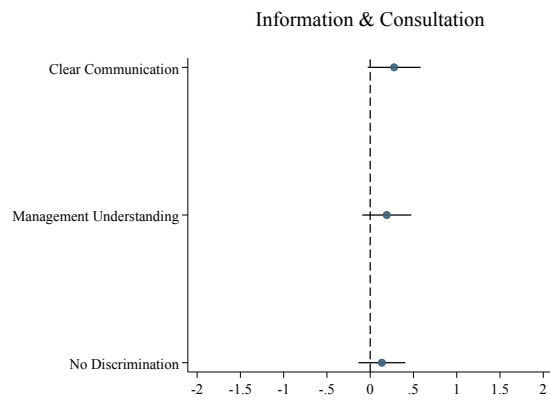
Panel B: Required Representation and Employee Commitment



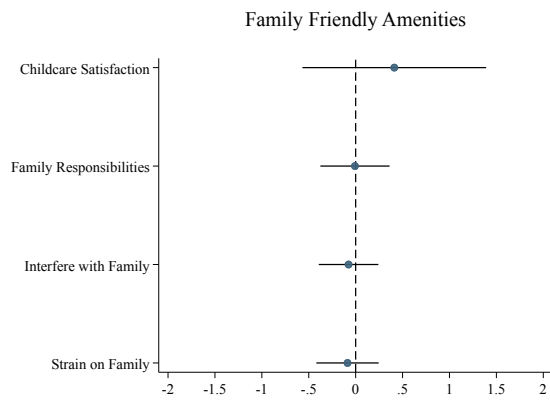
Panel C: Required Representation and Worker Contributions



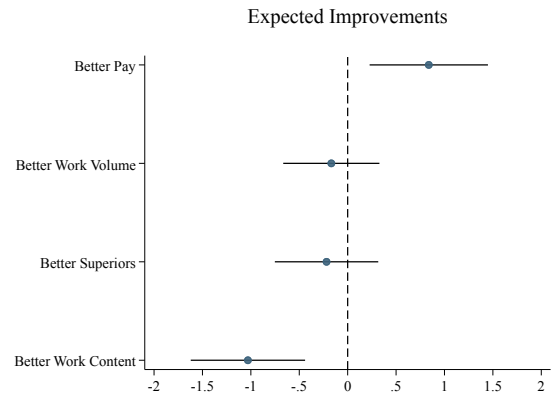
Panel D: Required Representation and Work Conditions



Panel E: Required Representation and Information & Consultation Outcomes



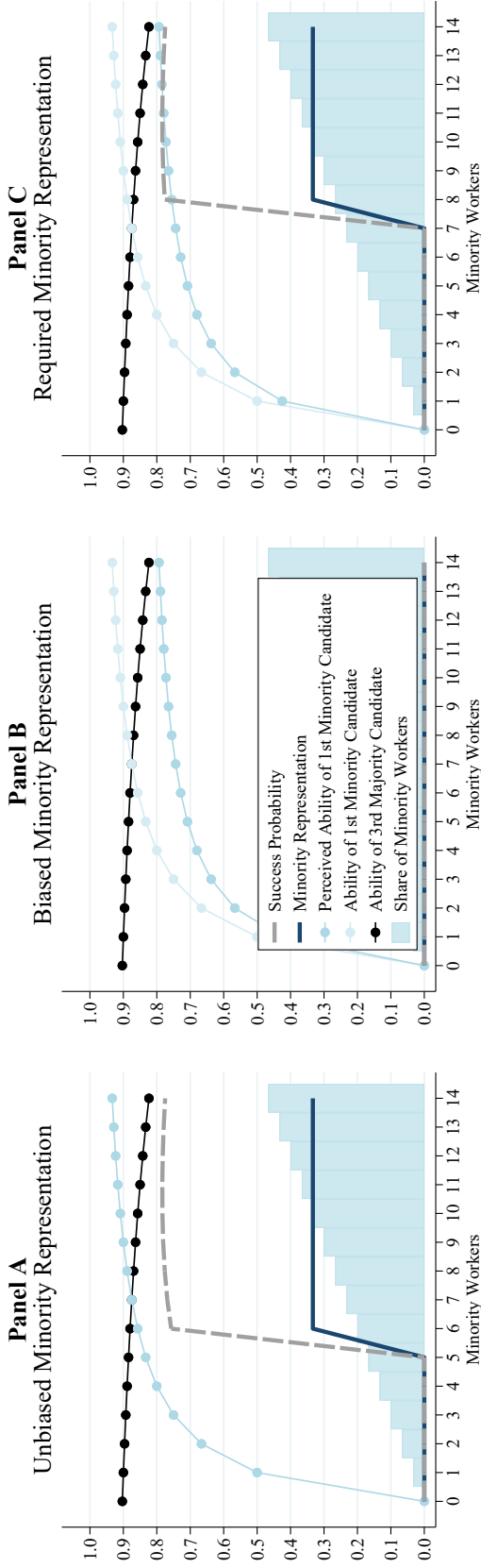
Panel F: Required Representation and Family Friendly Amenities



Panel G: Required Representation and Expected Workplace Improvements

Notes: This figure shows the relation between worker outcomes and required representation in establishments with works councils. It plots coefficient estimates and 90% confidence intervals of regressions of individual worker outcomes on required representation in establishments with works councils (*Works Council* $\times$ *Required Representation*). Panel A plots the coefficient estimates for outcomes related to workers' satisfaction and emotions. Panel B plots the coefficient estimates for outcomes related to workers' commitment to their employers. Panel C plots the coefficient estimates for workers' contribution to their employer and society. Panel D plots the coefficient estimates for workers' perceptions of the work conditions. Panel E plots the coefficient estimates for workers' perception of amenities related to their information & consultation rights. Panel F plots the coefficient estimates for workers' perceptions of their employer's family-friendliness. Panel G plots the coefficient estimates for workers' perceptions of expected improvements if they were to move to another employer. For detailed definitions of each of the individual outcomes and underlying survey questions, please see Table A1. In all panels, the horizontal axis shows the coefficient estimate, while the vertical axis lists the individual outcomes.

Figure 8: A Simple Model of Minority Representation and Works-Council Effort



Notes: This figure illustrates the predictions of a simple model of how minority representation affects works-council effort. The model features N workers electing M works-council members. There are N_{maj} majority workers and N_{min} minority workers (with $N = N_{maj} + N_{min}$ and $N_{maj} > N_{min}$). Workers are of heterogeneous ability (a with $a \sim U[0, 1]$). A higher (collective) ability of the works-council team increases the chance that the team can successfully negotiate improvements (v) for workers ($E[v] = v \prod_{i=1}^M a_i$). Council members receive a private benefit (b), which motivates workers to run for the council. To effectively advocate for workers, council members need to exert (collective) effort (e). This effort is not observable to workers, creating an agency conflict. Works-council members decide between exerting effort ($b - e$) and colluding / shirking ($b - c \prod_{i=1}^M a_i$). If they shirk, they are penalized by the workers with penalty (c). As workers cannot differentiate between council teams working but failing to ensure an improvement and council teams not working at all, they temper the penalty by the expected probability of unsuccessful negotiation given effort (i.e., $1 - \prod_{i=1}^M a_i$). Minority representation in the works-council team can complicate collusion (γ), reducing the attractiveness of shirking ($b - c \prod_{i=1}^M a_i + \gamma$). Accordingly, workers can maximize the expected improvements to their work conditions by electing able and diverse advocates. Their assessment of minority candidates' ability may be biased though (δ). This figure depicts the case of no bias (Panel A), the impact of bias (Panel B), and the impact of required representation (Panel C) for a specific set of parameter values. The values are: $N = 30$, $M = 3$, $b = 1$, $v = 0.5$, $e = 0.5$, $c = 0.6$, $\gamma = 0.2$, and $\delta = 0.15$ (in Panel B and C). The ability values (a) are the average/expected ability for the j -th candidates, which follows a $Beta(j, N - j + 1)$ distribution. The ability of the third majority candidate is depicted in black (dots and line). The ability of the best minority candidate is depicted in light blue (dots and line). Panel A presents the case without biased perceptions about the minority candidate's ability ($\delta = 0$). In this case, workers elect the best minority candidate to the works council when $N_{min} \geq 6$, which results in a 33% minority representation (dark blue line). Upon inclusion of the minority candidate, the improvement probability (dashed gray line) spikes because the collusion penalty increases, rendering effort more attractive than shirking. Panel B presents the case with biased perceptions about the minority candidate's ability. The bias shifts the (perceived) ability (light blue dots and line) down ($a \times (1 - \delta)$). As a result of the biased perception, the minority candidate is not elected and the homogeneous works-council team shirks. Panel C represents the case with biased perception but required representation. In this case, the requirement, following D'Hondt's rule, ensures that the best minority candidate gets into the council when $N_{min} \geq 8$. As a result, the required representation increases minority representation and expected improvements for all workers, relative to the case without a quota (Panel B).

Table 1: Summary Statistics

Panel A: Summary Statistics for the Linked Personnel Panel (LPP) Data

	Obs.	Mean	Std. Dev	p10	p25	p50	p75	p90
Establishment-Level Variables								
Works Council	21,734	0.815	0.389	0.000	1.000	1.000	1.000	1.000
Workers	24,899	6.792	2.196	4.522	5.247	6.163	7.402	11.045
Minority Share	21,726	0.225	0.132	0.072	0.116	0.202	0.326	0.439
Works Council Members	20,619	10.822	5.919	5.000	7.000	9.000	13.000	17.000
Required Representation	20,588	0.196	0.150	0.000	0.091	0.182	0.333	0.429
Required Representation (> Minority Share)	20,588	0.059	0.130	0.000	0.000	0.000	0.000	0.286
Required Representation ($\leq$ Minority Share)	20,588	0.137	0.147	0.000	0.000	0.111	0.222	0.400
Female Representation	20,588	0.273	0.252	0.000	0.091	0.200	0.429	0.667
Required Representation - Minority Share	20,588	-0.032	0.039	-0.084	-0.054	-0.026	-0.005	0.011
Female Minority Workplace	21,804	0.801	0.399	0.000	1.000	1.000	1.000	1.000
Minority	21,011	0.229	0.420	0.000	0.000	0.000	0.000	1.000
Employee Survey Variables								
Job Satisfaction	24,076	7.462	1.760	5.000	7.000	8.000	8.000	9.000
Commitment	23,860	-0.000	1.562	-2.292	-1.033	0.241	1.116	1.945
Contribution	5,028	0.006	1.345	-1.804	-0.894	0.033	0.956	1.844
Works Conditions	23,988	0.006	1.259	-1.767	-0.692	0.203	0.705	1.887
Family Friendliness	4,565	-0.003	1.520	-1.959	-1.129	-0.185	1.019	2.191
Emotions	23,612	0.003	1.982	-2.906	-1.160	0.336	1.453	2.548
Income Satisfaction	24,074	6.891	2.074	4.000	6.000	7.000	8.000	9.000
Meaningful Work	11,118	3.814	1.045	2.000	3.000	4.000	5.000	5.000
Contribution to Firm	5,174	4.293	0.698	4.000	4.000	4.000	5.000	5.000
Contribution to Society	5,162	3.512	1.101	2.000	3.000	4.000	4.000	5.000
Enthusiastic	24,006	3.765	1.022	2.000	3.000	4.000	4.000	5.000
Inspired	23,890	3.382	1.259	1.000	3.000	4.000	4.000	5.000
Feel Like Work	24,007	3.512	1.133	2.000	3.000	4.000	4.000	5.000
Happy	23,980	3.823	1.083	2.000	3.000	4.000	5.000	5.000
Proud	24,026	4.089	1.005	3.000	4.000	4.000	5.000	5.000
Carried Away	23,917	3.466	1.159	2.000	3.000	4.000	4.000	5.000
No Discrimination	23,903	4.271	1.058	3.000	4.000	5.000	5.000	5.000
Personal Meaning	24,058	4.097	1.164	2.000	3.000	4.000	5.000	5.000
Interfere with Family	24,067	2.188	1.155	1.000	1.000	2.000	3.000	4.000
Family Responsibilities	24,075	2.255	1.190	1.000	1.000	2.000	3.000	4.000
Strain on Family	24,074	2.412	1.193	1.000	1.000	2.000	3.000	4.000
Childcare Satisfaction	4,572	7.694	2.108	5.000	7.000	8.000	9.000	10.000
Clear Communication	24,052	3.745	1.044	2.000	3.000	4.000	4.000	5.000
Management Understanding	24,047	3.730	0.975	2.000	3.000	4.000	4.000	5.000
Autonomy	24,082	3.955	1.004	2.000	4.000	4.000	5.000	5.000
Task Variety	24,076	4.186	0.945	3.000	4.000	4.000	5.000	5.000
Poor Work Conditions	24,080	2.759	1.534	1.000	1.000	2.000	4.000	5.000
Charitable Projects	16,093	3.865	1.180	2.000	3.000	4.000	5.000	5.000
Employer Helps Society	5,143	3.241	1.196	2.000	2.000	3.000	4.000	5.000
Log(Wages)	21,046	8.113	0.579	7.438	7.783	8.132	8.476	8.780
Rest of Life	24,032	3.763	1.129	2.000	3.000	4.000	5.000	5.000
No Emotion	24,006	2.208	1.204	1.000	1.000	2.000	3.000	4.000
Not Part of Family	23,978	2.207	1.193	1.000	1.000	2.000	3.000	4.000
Consider Leaving	23,813	1.586	0.913	1.000	1.000	1.000	2.000	3.000
Better Pay	6,081	3.372	1.388	1.000	2.000	4.000	5.000	5.000
Better Superiors	6,077	3.106	1.315	1.000	2.000	3.000	4.000	5.000
Better Work Content	6,084	3.468	1.196	2.000	3.000	4.000	4.000	5.000
Better Work Volume	6,071	3.106	1.227	1.000	2.000	3.000	4.000	5.000

Panel B: Summary Statistics for Linked Employer-Employee (LIAB) Data

	Obs.	Mean	Std. Dev	p10	p25	p50	p75	p90
Works Council	98,873	0.578	0.494	0.000	0.000	1.000	1.000	1.000
Works Council Members	99,377	7.071	4.400	3.000	3.000	7.000	9.000	11.000
Workers	99,377	4.836	1.221	3.332	3.829	4.682	5.649	6.494
Minority Share	99,377	0.248	0.140	0.067	0.125	0.238	0.370	0.450
Required Representation	99,377	0.197	0.164	0.000	0.000	0.200	0.333	0.429
Required Representation - Minority Share	99,377	-0.050	0.061	-0.136	-0.084	-0.042	-0.006	0.019
Log(Value Added)	53,794	15.391	1.620	13.592	14.275	15.239	16.396	17.514
Log(Investments)	71,253	12.789	2.211	9.904	11.156	12.685	14.403	15.705
Log(Worker Productivity)	53,794	10.745	0.927	9.709	10.278	10.795	11.278	11.769
Log(Average Tenure)	99,377	6.718	0.979	5.452	6.152	6.841	7.454	7.865
Log(Turnover)	97,890	0.166	0.209	0.052	0.078	0.119	0.190	0.308
Log(Total Flows)	96,413	3.584	1.162	2.197	2.708	3.497	4.331	5.130
Log(Inflows)	97,529	2.871	1.176	1.386	1.946	2.773	3.638	4.431
Log(Outflows)	97,980	2.861	1.177	1.386	1.946	2.773	3.611	4.443

Panel C: Summary Statistics for WSI Data

	Obs.	Mean	Std. Dev	p10	p25	p50	p75	p90
Minority Share on WC	5,745	0.278	0.221	0.000	0.097	0.286	0.400	0.600
Required Representation	5,395	0.176	0.158	0.000	0.000	0.143	0.333	0.400
Required Representation ($>$ Minority Share)	5,395	0.061	0.133	0.000	0.000	0.000	0.000	0.333
Required Representation ($\leq$ Minority Share)	5,395	0.115	0.147	0.000	0.000	0.000	0.222	0.333
Workers	8,341	4.992	1.405	3.401	3.829	4.754	5.994	6.970
Minority Share	5,586	0.226	0.134	0.066	0.111	0.200	0.333	0.429
Concerns	5,287	1.831	0.891	0.693	1.099	2.079	2.565	2.833
Agreements	4,870	1.374	1.003	0.000	0.000	1.609	2.197	2.639
Training	1,406	1.804	0.715	0.693	1.609	1.946	2.303	2.565

Notes: This table reports summary statistics for the variables used in the proceeding analysis. Panel A shows worker-level summary statistics for the variables from the Linked Personnel Panel (LPP). The variables are sorted by establishment variables (i.e., characteristics of the workplaces) and worker (survey) variables (i.e., the views and perceptions of current employees). Panel B shows summary statistics for the variables from the Linked Employer-Employee Data (LIAB). Panel C shows summary statistics for variables from the Institute of Economic and Social Research (WSI) dataset. The variables are sorted by establishment variables (i.e., characteristics of the workplaces) and works-council variables (i.e., information and views of the work-councils members). The scale for all survey variables (in both the IAB and WSI) data are expressed such that lower values represent “better” ratings, or signal more agreement. For example, on a scale of one to five, a one implies that the employee “strongly agree” while a five implies that the employee “strongly disagrees.” To ease the interpretation for tests using these outcomes, we invert the coding of survey variables so that higher values signify more agreement. Detailed variable definitions are included in [Table A1](#).

Table 2: Representation and Works-Council Minority Share

	(1) Minority Share on WC	(2) Female Share on WC	(3) Male Share on WC
Required Representation	0.089* (0.054)	0.133** (0.057)	0.018 (0.119)
Minority Share	0.770*** (0.062)	0.586*** (0.068)	0.882*** (0.134)
Workers	0.013*** (0.002)	0.015*** (0.002)	0.008 (0.006)
Group	All Firms	Female Minority Firms	Male Minority Firms
Fixed Effects Structure	Industry, State, Year	Industry, State, Year	Industry, State, Year
Cluster	Firm	Firm	Firm
Observations	5,388	3,982	1,406
R^2	0.397	0.329	0.310

Notes: This table reports the estimates from regressions of works councils' actual minority shares on required minority representation. *Required Representation* measures the minority (gender) representation required by the minority quota. *Minority Share* is the share of workers that belong to the minority gender in the workforce. *Workers* is the logarithm of the number of workers in the establishment. The outcome in column (1) is *Minority Share on WC*, which is the share of works-council members belonging to the minority gender in the establishment. The outcome in column (2) is *Female Share on WC*, which is the share of works-council members that are women. The outcome in column (3) is *Male Share on WC*, which is the share of works-council members that are men. Column (1) uses the sample of all establishments, column (2) uses only establishments where women are the minority gender, and column (3) uses only establishments where men are the minority gender. All columns include industry, state, and year fixed effects. Standard errors, reported in parentheses, are clustered on the establishment level (which we label as "firm" level for brevity). ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Table 3: Representation and Works-Council Effort

	Agreements		Concerns		Training	
	(1)	(2)	(3)	(4)	(5)	(6)
Required Representation	-0.137 (0.245)		0.262* (0.136)		0.460 (0.367)	
Required Representation (> Minority Share)		-0.099 (0.251)		0.285** (0.137)		0.545 (0.372)
Required Representation (≤ Minority Share)		0.009 (0.296)		0.351** (0.161)		0.917** (0.448)
Minority Share	-0.108 (0.290)	-0.231 (0.322)	-0.422*** (0.155)	-0.499*** (0.169)	-0.595 (0.416)	-0.985** (0.474)
Workers	0.190*** (0.010)	0.188*** (0.010)	0.100*** (0.006)	0.098*** (0.006)	0.226*** (0.015)	0.218*** (0.015)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Fixed Effects Structure	Industry, State, Year	Industry, State, Year	Industry, State, Year	Industry, State, Year	Industry, State, Year	Industry, State, Year
Cluster	Firm	Firm	Firm	Firm	Firm	Firm
Observations	3,167	3,167	4,210	4,210	1,288	1,288
R^2	0.157	0.158	0.748	0.748	0.207	0.209

Notes: This table reports the estimates from regressions of works councils' activities on required minority representation. *Required Representation* measures the minority (gender) representation required by the minority quota. *Minority Share* is the share of workers that belong to the minority gender in the workforce. *Workers* is the logarithm of the number of workers in the establishment. *Required Representation (> Minority Share)* captures the minority (gender) representation required by the minority quota in instances where the quota requires representation that exceeds the establishment's workforce minority share. *Required Representation (≤ Minority Share)* captures the minority (gender) representation required by the minority quota in instances where the quota requires representation that falls short of the establishment's workforce minority share. The outcome in columns (1) and (2) is *Agreements*, which is the logarithm of the total number of agreements the works council signed during the past year. The outcome in columns (3) and (4) is *Concerns*, which is the logarithm of the total number of issues/concerns the works council worked on during the past year. The outcome in columns (5) and (6) is *Training*, which is the logarithm of the total number of training sessions that the works council attended during the past year. All columns include industry, state, and year fixed effects. Standard errors, reported in parentheses, are clustered on the establishment level (which we label as "firm" level for brevity). ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Table 4: Representation and Job Satisfaction

	(1) Job Satisfaction	(2) Emotions	(3) Commitment	(4) Contribution
Works Council $\times$ Required Representation	0.872*** (0.312)	0.839** (0.365)	0.775** (0.305)	1.027* (0.592)
Works Council	-0.153** (0.077)	-0.129 (0.089)	0.003 (0.078)	-0.294* (0.154)
Required Representation	-0.197 (0.493)	-0.394 (0.537)	-0.370* (0.471)	-2.136** (1.067)
Minority Share	-0.496 (0.505)	-0.368 (0.525)	-0.268 (0.476)	1.565 (1.129)
Workers	0.076*** (0.021)	0.010 (0.024)	0.052** (0.021)	0.172*** (0.407)
Controls	Yes	Yes	Yes	Yes
Fixed Effects Structure	Industry, State, Year	Industry, State, Year	Industry, State, Year	Industry, State, Year
Cluster	Firm	Firm	Firm	Firm
Observations	19,656	19,253	19,458	2,950
R^2	0.037	0.038	0.070	0.142

Notes: This table reports the estimates from regressions of measures of workers' job satisfaction on required minority representation in establishments with works councils. *Required Representation* measures the minority (gender) representation required by the minority quota. *Minority Share* is the share of workers that belong to the minority gender. *Workers* is the logarithm of the number of workers in the establishment. *Works Council* is an indicator variable that takes on a value of one if the establishment has a works council, and zero otherwise. *Job Satisfaction* is a measure, on a scale of one to seven, of workers' overall satisfaction with their job. *Emotions* is the first principal component of six survey questions relating workers' emotions (*Enthusiastic, Feel like Work, Carried Away, Inspired, Proud, Happy*). *Contribution* is the first principal component of five survey questions relating workers' contribution to their employers and to society (*Employer Helps Society, Charitable Projects, Meaningful Work, Contribution to Society, Contribution to Firm*). *Commitment* is the first principal component of five survey questions relating workers' commitment to their employer (*Personal Meaning, Rest of Life, Not Part of Family, Consider Leaving, No Emotion*). For detailed definitions of each of the individual survey questions, please see [Table A1](#). Column (1) uses *Job Satisfaction* as an outcome, column (2) uses *Emotions* as an outcome, column (3) uses *Commitment* as an outcome, and column (4) uses *Contribution* as an outcome. All columns include controls for the minority share in the workforce and the number of workers and industry, state, and year fixed effects. Standard errors, reported in parentheses, are clustered on the establishment level (which we label as "firm" level for brevity). ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Table 5: Representation and Workplace Amenities

	(1)	(2)	(3)	(4)
	Work Conditions	Information & Consultation	Income Satisfaction	Family Friendliness
Works Council $\times$ Required Representation	0.644*** (0.220)	0.371* (0.225)	-0.463 (0.465)	0.192 (0.522)
Controls	Yes	Yes	Yes	Yes
Fixed Effects Structure	Industry, State, Year	Industry, State, Year	Industry, State, Year	Industry, State, Year
Cluster	Firm	Firm	Firm	Firm
Observations	19,574	19,455	19,653	4,008
R^2	0.057	0.048	0.154	0.082

Notes: This table reports the estimates from regressions of workplace amenities on required minority representation in establishments with works councils. *Required Representation* measures the minority (gender) representation required by the minority quota. *Works Council* is an indicator variable that takes on a value of one if the establishment has a works council, and zero otherwise. *Work Conditions* is the first principal components of four survey questions (*Interesting Things, Autonomy, Task Variety, Poor Working Conditions*) relating to the working conditions of the establishment. *Information & Consultation* is the first principal component of three survey questions relating to amenities that related to information and consultation with management (*No Discrimination, Management Understanding, Clear Communication*). *Income Satisfaction* is a measure, on a scale of one to seven, of an employee's overall satisfaction with their income. *Family Friendliness* is the first principal component of four survey questions relating workers' assessments of amenities relating to childcare and families (*Childcare Satisfaction, Family Responsibilities, Strain on Family, Interfere with Family*). For detailed definitions of each of the individual survey questions, please see Table A1. Column (1) uses *Work Conditions* as an outcome, column (2) uses *Information & Consultation* as an outcome, column (3) uses *Income Satisfaction* as an outcome, and column (4) uses *Family Friendliness* as an outcome. All columns include controls for the minority share in the workforce and the number of workers and industry, state, and year fixed effects. Standard errors, reported in parentheses, are clustered on the establishment level (which we label as "firm" level for brevity). ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Table 6: Representation and Minority or Majority Satisfaction

	(1) Job Satisfaction	(2) Emotions	(3) Work Conditions	(4) Commitment
Works Council $\times$ Required Representation	0.905*** (0.351)	0.848* (0.410)	0.599** (0.236)	0.932*** (0.328)
Works Council $\times$ Required Representation $\times$ Minority Worker	0.165 (0.634)	0.030 (0.661)	0.340 (0.405)	-0.630 (0.552)
Controls	Yes	Yes	Yes	Yes
Fixed Effects Structure	Industry, State, Year	Industry, State, Year	Industry, State, Year	Industry, State, Year
Cluster	Firm	Firm	Firm	Firm
Observations	19,645	19,243	19,448	19,563
R ²	0.037	0.039	0.057	0.071

Notes: This table reports the estimates from regressions of measures of workers' job satisfaction and amenities for minority and majority workers on required minority representation in establishments with works councils. *Required Representation* measures the minority (gender) representation required by the minority quota. *Works Council* is an indicator variable that takes on a value of one if the establishment has a works council, and zero otherwise. *Minority Worker* is an indicator variable that takes on a value of one if a worker belongs to the minority gender in the establishment, and zero otherwise. *Job Satisfaction* is a measure, on a scale of one to seven, of workers' overall satisfaction with their job. *Emotions* is the first principal component of six survey questions relating workers' emotions (*Enthusiastic, Feel like Work, Carried Away, Inspired, Proud, Happy*). *Work Conditions* is the first principal component of four survey questions (*Interesting Things, Autonomy, Task Variety, Poor Working Conditions*) relating to the working conditions of the establishment. *Commitment* is the first principal component of five survey questions relating workers' commitment to their employer (*Personal Meaning, Rest of Life, Not Part of Family, Consider Leaving, No Emotion*). For detailed definitions of each of the individual survey questions, please see Table A1. Column (1) uses *Job Satisfaction* as an outcome, column (2) uses *Emotions* as an outcome, column (3) uses *Work Conditions* as an outcome, and column (4) uses *Commitment* as an outcome. Controls are included in all columns for the establishment's minority share among its workforce and the total number of employees in the establishment. All columns include Industry, State, and Year fixed effects. Standard errors, reported in parentheses, are clustered on the establishment level (which we label as "firm" level for brevity). ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Table 7: Female or Minority Representation and Satisfaction

Panel A: Representation and Satisfaction in Female vs. Male Majority Workplaces				
	(1) Job Satisfaction	(2) Emotions	(3) Work Conditions	(4) Commitment
Works Council $\times$ Required Representation	0.948** (0.373)	0.707* (0.409)	0.686*** (0.246)	0.826** (0.344)
Works Council $\times$ Required Representation $\times$ Male Minority Workplace	-0.146 (0.747)	0.302 (0.868)	0.163 (0.432)	-0.170 (0.702)
Controls	Yes	Yes	Yes	Yes
Fixed Effects Structure	Industry, State, Year Firm	Industry, State, Year Firm	Industry, State, Year Firm	Industry, State, Year Firm
Cluster				
Observations	19,645	19,243	19,563	19,448
R^2	0.038	0.039	0.058	0.071

Panel B: Female Representation and Satisfaction

	(1) Job Satisfaction	(2) Emotions	(3) Work Conditions	(4) Commitment
Works Council $\times$ Female Representation	0.250 (0.187)	0.307 (0.213)	0.038 (0.126)	0.260 (0.182)
Controls	Yes	Yes	Yes	Yes
Fixed Effects Structure	Industry, State, Year	Industry, State, Year	Industry, State, Year	Industry, State, Year
Cluster	Firm	Firm	Firm	Firm
Observations	19,656	19,253	19,574	19,458
R^2	0.037	0.038	0.056	0.070

Notes: This table explores whether establishments with female minorities benefit more (or less) from required representation and whether female representation (rather than minority representation) drives workers' benefits. Panel A reports regressions of workers' job satisfaction and amenities for establishments with female vs. male minorities on required representation. *Required Representation* measures the minority (gender) representation required by the minority quota. Panel B reports regressions of workers' job satisfaction and amenities on female representation. *Female Representation* measures the female representation on the works council that would be required if the D'Hondt method were to extend beyond the "minority" threshold (i.e., 50%). Essentially, *Female Representation* reflects the female share in the workforce. *Works Council* is an indicator variable that takes on a value of one if the establishment has a works council, and zero otherwise. *Male Minority Workplace* is an indicator variable that takes on a value of one if men are the minority in the workplace, and zero otherwise. *Job Satisfaction* is a measure, on a scale of one to seven, of workers' overall satisfaction with their job. *Emotions* is the first principal component of six survey questions relating workers' emotions (*Enthusiastic, Feel like Work, Carried Away, Inspired, Proud, Happy*). *Work Conditions* is the first principal component of four survey questions (*Interesting Things, Autonomy, Task Variety, Poor Working Conditions*) relating to the working conditions of the establishment. *Commitment* is the first principal component of five survey questions relating workers' commitment to their employer (*Personal Meaning, Rest of Life, Not Part of Family, Consider Leaving, No Emotion*). For detailed definitions of each of the individual survey questions, please see [Table A1](#). In both panels, column (1) uses *Job Satisfaction* as an outcome, column (2) uses *Emotions* as an outcome, column (3) uses *Work Conditions* as an outcome, and column (4) uses *Commitment* as an outcome. All columns in both panels include controls for the minority share in the workforce and the number of workers and industry, state, and year fixed effects. Standard errors, reported in parentheses, are clustered on the establishment level (which we label as "firm" level for brevity). ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Table 8: Over- and Underrepresentation and Satisfaction

	(1) Job Satisfaction	(2) Emotions	(3) Work Conditions	(4) Commitment
Works Council $\times$ Required Representation ($>$ Minority Share)	0.627* (0.339)	0.250 (0.406)	0.510 (0.244)	0.449* (0.335)
Works Council $\times$ Required Representation ($\leq$ Minority Share)	1.030*** (0.349)	1.229*** (0.389)	0.789*** (0.227)	0.962*** (0.345)
Controls	Yes	Yes	Yes	Yes
Fixed Effects Structure	Industry, State, Year	Industry, State, Year	Industry, State, Year	Industry, State, Year
Cluster	Firm	Firm	Firm	Firm
Observations	19,656	19,253	19,574	19,458
R^2	0.037	0.039	0.070	0.057

Notes: This table reports the estimates from regressions of works councils' activities on measures of whether the D'Hondt quota requires over-representation or if the quota prevents under-representation. *Required Representation ($>$ Minority Share)* captures the minority (gender) representation required by the minority quota in instances where the quota requires over-representation relative to the firm's workforce minority share. *Required Representation ($\leq$ Minority Share)* captures the minority (gender) representation required by the minority quota in instances where the quota prevents under-representation relative to the firm's workforce minority share. *Works Council* is an indicator variable that takes on a value of one if the establishment has a works council, and zero otherwise. *Male Minority Workplace* is an indicator variable that takes on a value of one if men are the minority in the workplace, and zero otherwise. *Job Satisfaction* is a measure, on a scale of one to seven, of an employee's overall satisfaction with their job. *Emotions* is the first principal component of six survey questions relating workers' emotions (*Enthusiastic, Feel like Work, Carried Away, Inspired, Proud, Happy*). *Work Conditions* is the first principal component of four survey questions (*Interesting Things, Autonomy, Task Variety, Poor Working Conditions*) relating to the working conditions of the establishment. *Commitment* is the first principal component of five survey questions relating workers' commitment to their employer (*Personal Meaning, Rest of Life, Not Part of Family, Consider Leaving, No Emotion*). For detailed definitions of each of the individual survey questions, please see [Table A1](#). Column (1) uses *Job Satisfaction* as an outcome, column (2) uses *Emotions* as an outcome, column (3) uses *Work Conditions* as an outcome, and column (4) uses *Commitment* as an outcome. Controls are included in all columns for the establishment's minority share among its workforce and the total number of employees in the establishment. All columns in both panels include Industry, State, and Year fixed effects. Standard errors, reported in parentheses, are clustered on the establishment level (which we label as "firm" level for brevity). ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Table 9: Cross-Sectional Differences

Outcome	Work Conditions		Information & Consultation		Job Satisfaction	
	(1)	(2)	(3)	(4)	(5)	(6)
Group	Low Flexibility	High Flexibility	Low Contact	High Contact	Small Council	Large Council
Works Council $\times$ Required Representation	0.243 (0.318)	0.833*** (0.289)	0.188 (0.358)	0.414 (0.284)	1.186*** (0.338)	-0.350 (0.714)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Fixed Effects Structure	Industry, State, Year	Industry, State, Year	Industry, State, Year	Industry, State, Year	Industry, State, Year	Industry, State, Year
Cluster	Firm	Firm	Firm	Firm	Firm	Firm
Observations	5,943	12,356	8,712	9,468	10,183	9,325
R^2	0.075	0.061	0.061	0.059	0.046	0.059

Notes: This table reports cross-sectional differences in the impact of required representation across different employer characteristics. *High Flexibility* refers to establishments where employers view flexibility as important for worker loyalty, and *Low Flexibility* refers to establishments where employers do not view flexibility as important for worker loyalty. *High Contact* refers to establishments where employers view contact with management as important for worker loyalty, and *Low Contact* refers to establishments where employers do not view contact with management as important for worker loyalty. *Small Council* refers to works councils with 9 or less members, and *Large Council* refers to works councils with more than 9 members. For the detailed survey questions underlying the sample splits, please see [Table A1](#). *Required Representation* is a variable capturing the minority (gender) representation required by the minority quota. *Works Council* is an indicator variable that takes on a value of one if the establishment has a works council, and zero otherwise. *Work Conditions* is the first principal components of four survey questions (*Interesting Things*, *Autonomy*, *Task Variety*, *Poor Working Conditions*) relating to the working conditions of the establishment. *Information & Consultation* is the first principal component of three survey questions relating to amenities that related to information and consultation with management (*No Discrimination*, *Management Understanding*, *Clear Communication*). *Job Satisfaction* is a measure, on a scale of one to seven, of an employee's overall satisfaction with their job. For detailed definitions of each of the individual survey questions, please see Table A1. Columns (1) and (2) use *Work Conditions* as an outcome, where column (1) reports the coefficient for the *Low Flexibility* group and column (2) reports the coefficient for the *High Flexibility* group. Columns (3) and (4) use *Information & Consultation* as an outcome, where column (3) reports the coefficient for the *Low Contact* group and column (4) reports the coefficient for the *High Contact* group. Columns (5) and (6) use *Job Satisfaction* as an outcome, where column (5) reports the coefficient for the *Small Council* group and column (6) reports the coefficient for the *Large Council* group. All columns include controls for the minority share in the workforce and the number of workers and industry, state, and year fixed effects. Standard errors, reported in parentheses, are clustered on the establishment level (which we label as "firm" level for brevity). ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Table 10: Representation and Worker Turnover

	(1) Log(Outflows)	(2) Log(Inflows)	(3) Log(Total Flows)	(4) Log(Turnover)	(5) Log(Average Tenure)
Works Council $\times$ Required Representaion	-0.191*** (0.047)	-0.181*** (0.047)	-0.224*** (0.046)	-0.075*** (0.011)	0.139** (0.068)
Controls	Yes	Yes	Yes	Yes	Yes
Fixed Effects Structure	Industry, State, Year	Industry, State, Year	Industry, State, Year	Industry, State, Year	Industry, State, Year
Cluster	Firm	Firm	Firm	Firm	Firm
Observations	97,387	97,031	95,918	97,387	98,868
R^2	0.722	0.716	0.771	0.131	0.286

Notes: This table reports the estimates from regressions of measures of worker turnover on required representation in establishments with works councils. *Required Representation* measures the minority (gender) representation required by the minority quota. *Works Council* is an indicator variable that takes on a value of one if the establishment has a works council, and zero otherwise. *Log(Outflows)* is the logarithm of the total number of workers that left the establishment during the past year. *Log(Inflows)* is the logarithm of the total number of workers that entered the establishment during the past year. *Log(Total Flows)* is the logarithm of the sum of the number of workers that left the establishment and the number of workers that entered the establishment. *Log(Turnover Rate)* is the logarithm of the total number of workers that left the establishment divided by the total number of workers. *Log(Average Tenure)* is the logarithm of the average tenure of workers in the establishment. For detailed definitions of each of the individual survey questions, please see Table A1. Column (1) uses *Log(Outflows)* as an outcome, column (2) uses *Log(Inflows)* as an outcome, and column (3) uses *Log(Total Flows)* as an outcome, column (4) uses *Log(Turnover)* as an outcome, and column (5) uses *Log(Average Tenure)* as an outcome. All columns include controls for the minority share in the workforce and the number of workers and industry, state, and year fixed effects. Standard errors, reported in parentheses, are clustered on the establishment level (which we label as “firm” level for brevity). ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Table 11: Representation and Establishment Performance

	(1) Log(Investments)	(2) Log(Value Added)	(3) Log(Worker Productivity)
Works Council $\times$ Required Representation	0.814*** (0.129)	0.238*** (0.081)	0.247*** (0.079)
Controls	Yes	Yes	Yes
Fixed Effects Structure	Industry, State, Year	Industry, State, Year	Industry, State, Year
Cluster	Firm	Firm	Firm
Observations	70,929	53,584	53,584
R^2	0.582	0.756	0.338

Notes: This table reports the estimates from regressions of measures of establishment-level performance on required representation in establishments with works councils. *Required Representation* measures the minority (gender) representation required by the minority quota. *Works Council* is an indicator variable that takes on a value of one if the establishment has a works council, and zero otherwise. *Log(Investments)* is the logarithm of the total dollar amount of investments the establishment made during the year. *Log(Value Added)* is the logarithm of the value added of the establishment, which is defined as the total sales of the establishment minus the total intermediate input costs. *Log(Worker Productivity)* is value added divided by the total number of employees. For detailed definitions of each of the individual survey questions, please see [Table A1](#). Column (1) uses *Log(Investments)* as an outcome, column (2) uses *Log(Value Added)* as an outcome, and column (3) uses *Log(Worker Productivity)* as an outcome. All columns include controls for the minority share in the workforce and the number of workers and industry, state, and year fixed effects. Standard errors, reported in parentheses, are clustered on the establishment level (which we label as “firm” level for brevity). ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Table 12: Regression-Discontinuity Design

Panel A: Full-Sample Stacked-Cohort Regression-Discontinuity Design					
	(1)	(2)	(3)	(4)	(5)
	Job Satisfaction	Log(Turnover)	Log(Investment)	Log(Value Added)	Log(Worker Productivity)
Works Council $\times$ Above Threshold	0.093** (0.046)	-0.006** (0.002)	0.147*** (0.029)	0.021 (0.017)	0.021 (0.017)
Controls	Yes	Yes	Yes	Yes	Yes
Fixed Effects Structure	Cohort, Industry, State, Year	Cohort, Industry, State, Year	Cohort, Industry, State, Year	Cohort, Industry, State, Year	Cohort, Industry, State, Year
Cluster	Firm	Firm	Firm	Firm	Firm
Observations	32,497	85,388	61,331	44,621	44,621
R ²	0.041	0.141	0.587	0.827	0.424

Panel B: Narrow-Bandwidth Stacked-Cohort Regression-Discontinuity Design

Establishments with Works Councils												
	Job Satisfaction			Log(Turnover)			Log(Investment)			Log(Value Added)		
	10%	5%	2.5%	10%	5%	2.5%	10%	5%	2.5%	10%	5%	2.5%
Bandwidth												
Above Threshold	0.086* (0.047)	0.052 (0.078)	0.108 (0.115)	0.000 (0.002)	0.001 (0.004)	0.004 (0.005)	0.040* (0.024)	-0.007 (0.034)	0.039*** (0.015)	0.052** (0.022)	0.045* (0.025)	0.034** (0.014)
Observations	1,896	977	494	28,509	14,504	7,519	20,592	10,551	5,478	13,156	6,837	3,575

Establishments with Works Councils vs. Establishments without Works Councils												
	Job Satisfaction			Log(Turnover)			Log(Investment)			Log(Value Added)		
	10%	5%	2.5%	10%	5%	2.5%	10%	5%	2.5%	10%	5%	2.5%
Bandwidth												
Works Council × Above Threshold	0.190* (0.104)	0.170 (0.164)	0.158 (0.228)	-0.007** (0.003)	0.003 (0.005)	0.007 (0.007)	0.074** (0.036)	0.060 (0.050)	0.020 (0.064)	0.023 (0.021)	0.024 (0.030)	0.042 (0.036)
Observations	2,822	1,420	694	47,760	23,951	12,361	34,417	17,296	8,943	25,499	12,894	6,668

Establishments with Works Councils vs. Establishments with 1-Member Works Councils												
	Log(Turnover)			Log(Investment)			Log(Value Added)			Log(Worker Productivity)		
	10%	5%	2.5%	10%	5%	2.5%	10%	5%	2.5%	10%	5%	2.5%
Bandwidth												
Works Council Team × Above Threshold	-0.024*** (0.007)	-0.018** (0.008)	-0.000 (0.010)	0.140 (0.090)	0.034 (0.075)	-0.112 (0.103)	0.128** (0.059)	0.118*** (0.046)	0.111 (0.070)	0.105* (0.062)	0.108** (0.045)	0.094 (0.071)
Observations	32,836	16,696	8,602	23,410	11,990	6,195	14,901	7,734	4,017	14,901	7,734	4,017

Notes: This table reports the estimates from regressions of measures of workers' job satisfaction and firm outcomes using regression-discontinuity designs. Panel A reports the estimates using a full-sample stacked-cohort regression-discontinuity design. *Works Council* is an indicator variable that takes on a value of one if the establishment has a works council, and zero otherwise. *Above Threshold* is an indicator that takes on a value of one if the establishment's minority share is above the threshold to warrant another minority representative and zero if it is below. *Job Satisfaction* is a measure, on a scale of one to seven, of workers' overall satisfaction with their job. *Log(Investments)* is the logarithm of the total dollar amount of investments the establishment made during the year. *Log(Value Added)* is the logarithm of the value added of the establishment, which is defined as the total sales of the establishment minus the total intermediate input costs. *Log(Worker Productivity)* is value added divided by the total number of workers. *Log(Turnover)* is the logarithm of the total number of workers that left the establishment divided by the total number of workers. For detailed definitions of each of the individual survey questions, please see Table A1. All columns in Panel A include controls for the minority share in the workforce and the number of workers and cohort, industry, state, and year fixed effects. Panel B reports the results for a narrow-bandwidth stacked-cohort regression-discontinuity design. It restricts the sample to establishments with 9 or less works council members falling within a narrow range around the quota's cutoffs (bandwidths: ± 0.1 , 0.05, and 0.025). The first section of Panel B shows mean comparisons, among establishments with works councils (3 or more members), of establishments just above and those just below the quota's cutoffs. The second section shows the difference between mean comparisons (above vs. below) among establishments with works councils (with 3 or more members) vis-à-vis establishments without works councils (which are not subject to the quota). The third section shows the difference between mean comparisons (above vs. below) among establishments with works councils (with 3 or more members) vis-à-vis establishments with 1-member works councils (which are not subject to the quota). All columns in Panel B include cohort, industry, state, and year fixed effects. Standard errors, reported in parentheses, are clustered on the establishment level (which we label as "firm" level for brevity). ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Table 13: Difference-in-Differences Design

Panel A: Industry $\times$ Year, State $\times$ Year, and Firm Fixed Effects				
	(1) Log(Investments)	(2) Log(Worker Productivity)	(3) Log(Value Added)	(4) Log(Net Inflows)
Works Council $\times$ Post $\times$ Required Representation	0.287 (0.720)	0.406* (0.244)	0.472* (0.286)	0.621* (0.324)
Controls	Yes	Yes	Yes	Yes
Fixed Effects Structure	Firm, Industry x Year, State x Year,	Firm, Industry x Year, State x Year,	Firm, Industry x Year, State x Year,	Firm, Industry x Year, State x Year,
Cluster	Firm	Firm	Firm	Firm
Observations	34,508	22,937	22,937	20,132
R^2	0.761	0.783	0.912	0.732

Panel B: Industry $\times$ State $\times$ Year Fixed Effects

	(1) Log(Investments)	(2) Log(Worker Productivity)	(3) Log(Value Added)	(4) Log(Net Inflows)
Works Council $\times$ Post $\times$ Required Representation	0.477 (0.928)	0.515* (0.298)	0.556* (0.329)	0.088 (0.495)
Controls	Yes	Yes	Yes	Yes
Fixed Effects Structure	Firm, Industry x State x Year	Firm, Industry x State x Year	Firm, Industry x State x Year	Firm, Industry x State x Year
Cluster	Firm	Firm	Firm	Firm
Observations	25,015	14,592	14,592	12,249
R^2	0.817	0.847	0.931	0.805

Notes: This table reports the estimates from difference-in-differences regressions of establishment outcomes. *Required Representation* is a variable capturing the minority (gender) representation required by the minority quota. *Works Council* is an indicator variable that takes on a value of one if the establishment has a works council, and zero otherwise. *Post* is an indicator that takes on a value of one for periods after 2002 and zero otherwise. *Log(Investments)* is the logarithm of the total dollar amount of investments the establishment made during the year. *Log(Value Added)* is the logarithm of the value added of the establishment, which is defined as the total sales of the establishment minus the total intermediate input costs. *Log(Worker Productivity)* is value added divided by the total number of employees. *Log(Net Inflows)* is the logarithm of the total number of workers that entered the establishment minus the number of workers that left the establishment during the year. For detailed definitions of each of the individual survey questions, please see [Table A1](#). Column (1) uses *Log(Investments)* as an outcome, column (2) uses *Log(Worker Productivity)* as an outcome, column (3) uses *Log(Value Added)* as an outcome, and column (4) uses *Log(Net Inflows)* as an outcome. All columns include controls for the minority share in the workforce and the number of workers and establishment fixed effects. Panel A also includes industry-year and state-year fixed effects. Panel B instead includes industry-state-year fixed effects. Standard errors, reported in parentheses, are clustered on the establishment level (which we label as “firm” level for brevity). ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Internet Appendix

Minority Representation at Work

by Matthias Breuer, Wei Cai, Anthony Le, and Felix Vetter

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A1 Discussion of Matching and Interacted Designs

We probe the robustness of our main findings to various design choices. The two main design choices we consider are (i) matching on determinants of establishments' works-council adoption and (ii) interacting worker and minority-share controls with the indicator for establishments with works councils. The matching design attempts to reduce concerns that establishments with and without works councils are systematically different, which may carry over to how their workforce composition maps into worker and establishment outcomes. It uses entropy balancing to achieve covariate balance between establishments with and without works councils. The matching covariates include, among others, the share of blue collar workers, an indicator for shift work, and an indicator for establishments that are part of a larger firm, following [Addison et al. \(1997\)](#) and [Jirjahn \(2009\)](#) ([Table A4](#)). The interacted design focuses on the narrow variation in required representation that remains after controlling for the number of workers and minority share *within* establishments with works councils. This variation arises because the continuous assignment variables (workers and minority share) generate discontinuous variation in required representation as per the institutional rules. This variation is quite limited though among establishments with works councils. The residual variation, after accounting for workers and the minority share within establishments with works councils, is only about 1% of the raw variation of required representation.

In [Figure A3](#), we plot the coefficient estimates and (90%) confidence intervals for various design alternatives. We start with the main design, but without controls. We then successively add fixed effects (for industry, state, and year), the control for workers, and the control for the minority share. The resulting design is our main design. Its coefficient is highlighted by a dashed (vertical) line. We next report a design which additionally matches on determinants of the works-council adoption choice and a design that additionally adds these determinants in the matched-sample regressions. Finally, we report the fully interacted design. For this design, we also report a version with matching on the determinants of the works-council adoption choice, and versions which include the determinants as (flexible)

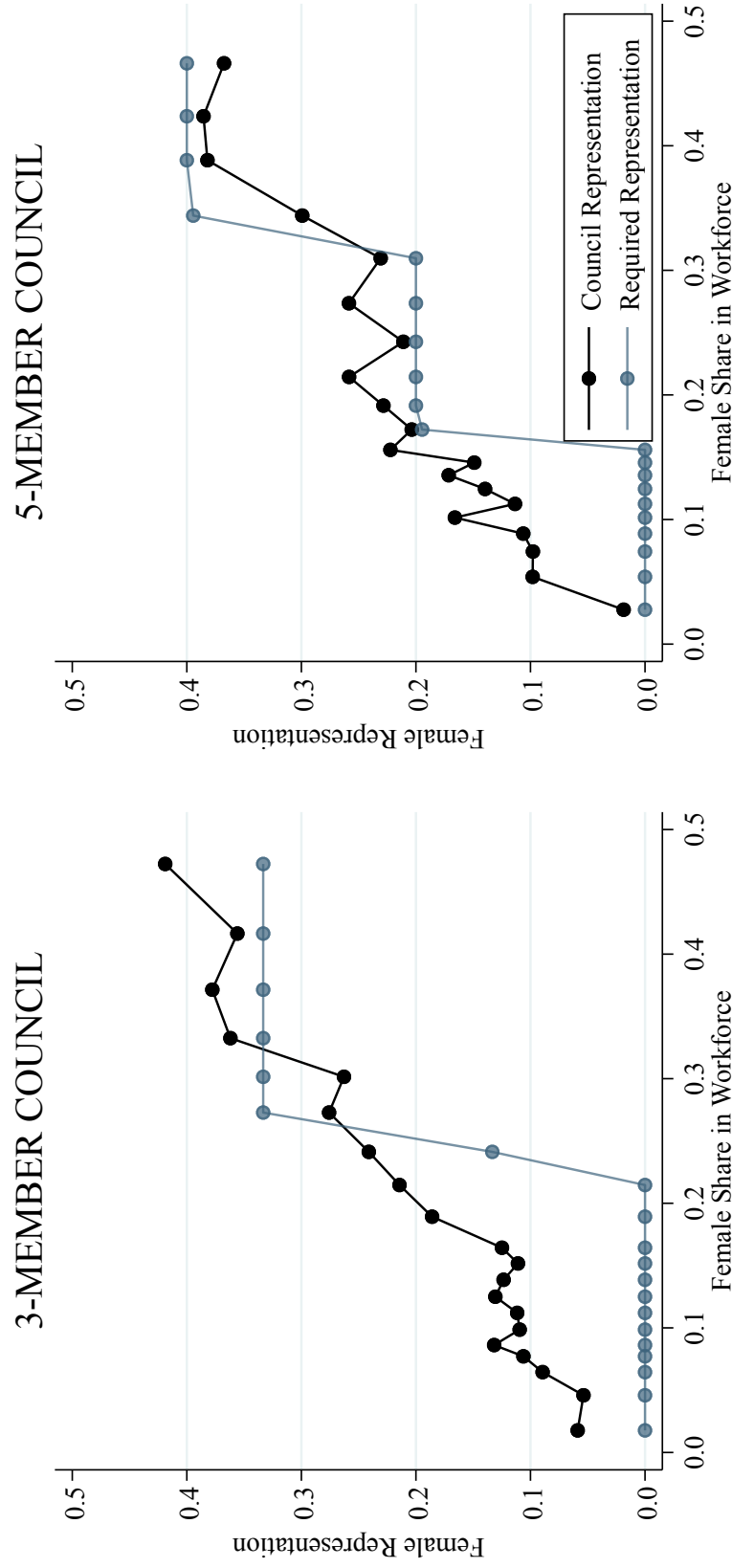
controls in the matched-sample regressions.

In Panel A, we observe that the various design variants produce point estimates of the job-satisfaction effect that are similar to our main design. The matching design reports slightly lower point estimates, while the interacted design, if anything, reports slightly higher point estimates. The main impact of the narrower designs (e.g., matching and interacted design) appears to be to reduce the precision of the estimate. The interacted design (which only uses about 1% of the variation in required representation), in particular, produces wide confidence intervals. The intervals include zero. Thus, they do not allow us to reject the null that required representation has no effect on workers' job satisfaction. Notably, even the widest confidence intervals only include, at most, relatively minor negative effect sizes.

In Panels B, C, and D, we observe similar patterns for turnover, investment, and productivity. For most of the outcomes and specifications, the estimates lie close to our main design's point estimate. In fact, our main design's point estimate lies within the confidence intervals of the vast majority of all alternative estimates. As in Panel A, the matched and, in particular, the interacted design exhibit wider confidence intervals. The confidence intervals of the interacted design often include zero. Still, for the investment and productivity outcomes, the confidence intervals of the (simple) interacted designs do *not* include zero. And those intervals that include zero, often do not extend far into the negative effect zone.

In sum, we take comfort in the fact that the various alternative design variants widely produce estimates that are similar to those reported by our main design. We acknowledge though that especially the most stringent design variants produce large confidence intervals which, in several cases, do not allow us to reject the null of no effect. Still, we note that even the most stringent variants and widest confidence intervals do not lend much support to the pervasive view that shared governance and gender quotas are necessarily detrimental to firms' investment incentives and performance (e.g., [Jensen and Meckling, 1979](#)).

Figure A1: Actual/Required Representation in Smaller Councils

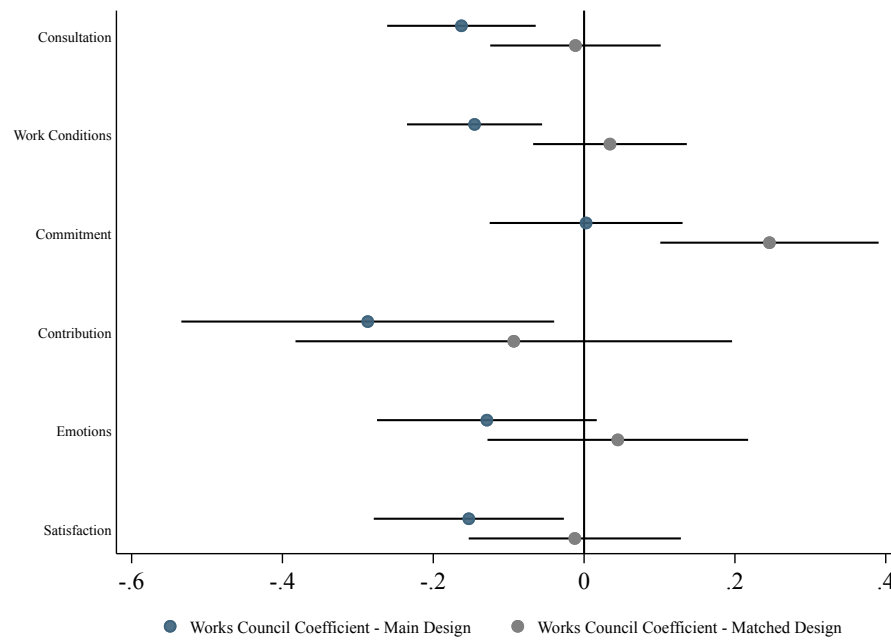


Panel A: Required Female Share and Actual Female Share on Works Council (3-Member Councils)

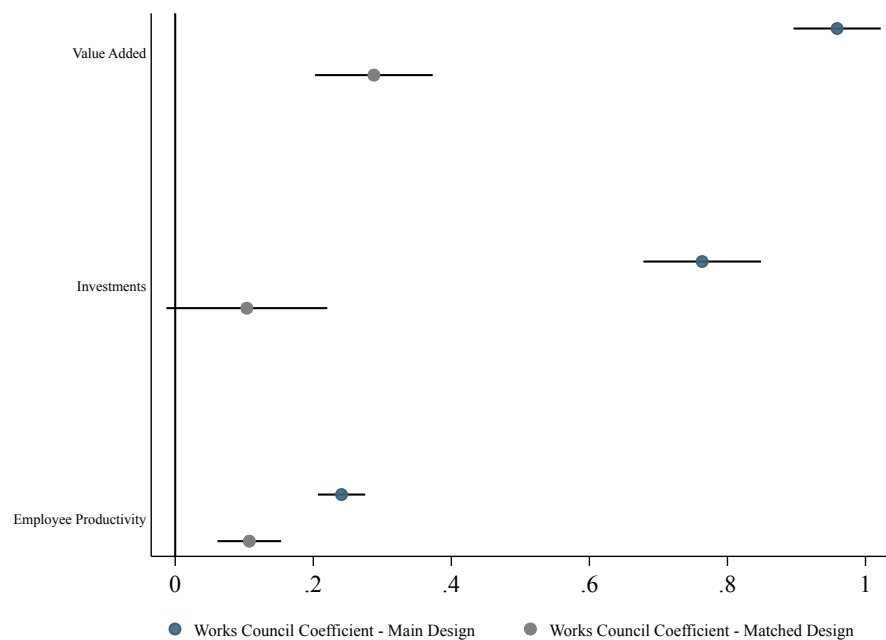
Panel B: Required Female Share and Actual Female Share on Works Council (5-Member Councils)

Notes: This figure illustrates the required and actual female share on smaller works councils (i.e., with 3 or 5 members). Panel A plots the required and actual shares for 3-member councils, and Panel B plots these shares for 5-member councils. The horizontal axis shows the female share in the workforce, while the vertical axis shows the (required and actual) female representation on the works council. The blue line represents the required representation according to the minority quota. The black line represents the actual representation on the councils.

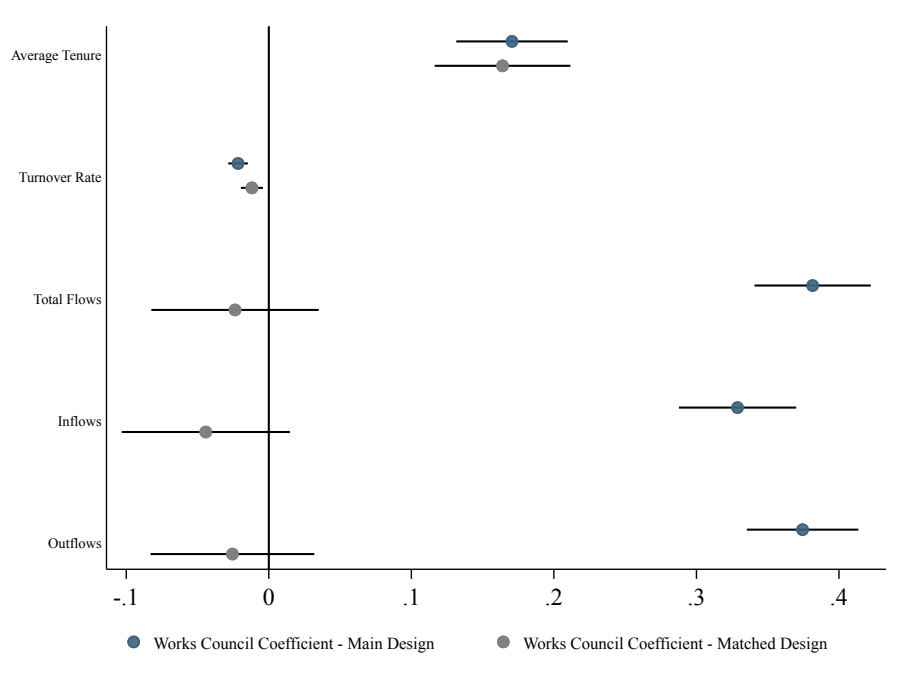
Figure A2: Works-Council Coefficient with/without Matching



Panel A: Worker Outcomes



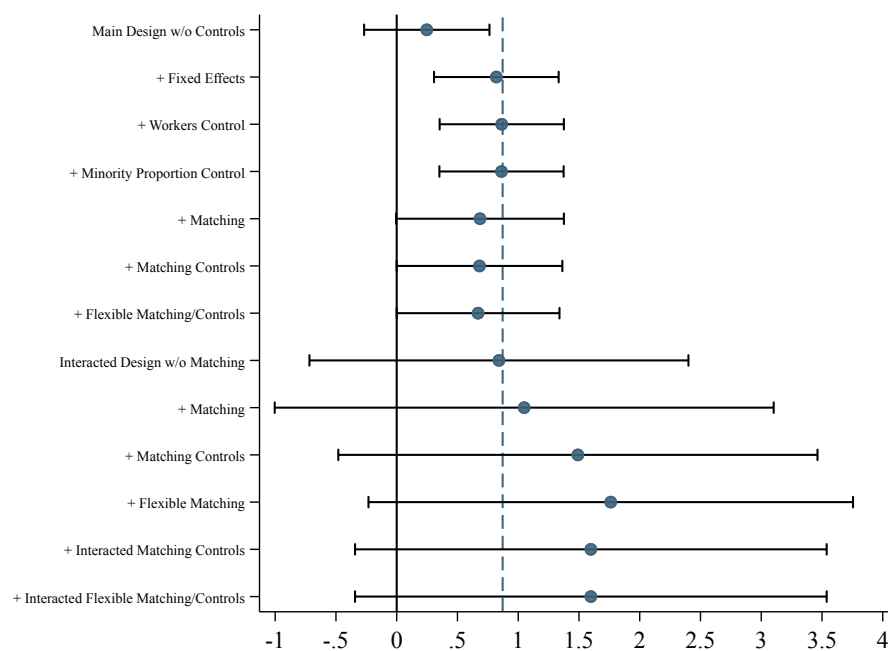
Panel B: Productivity, Value Added and Investments



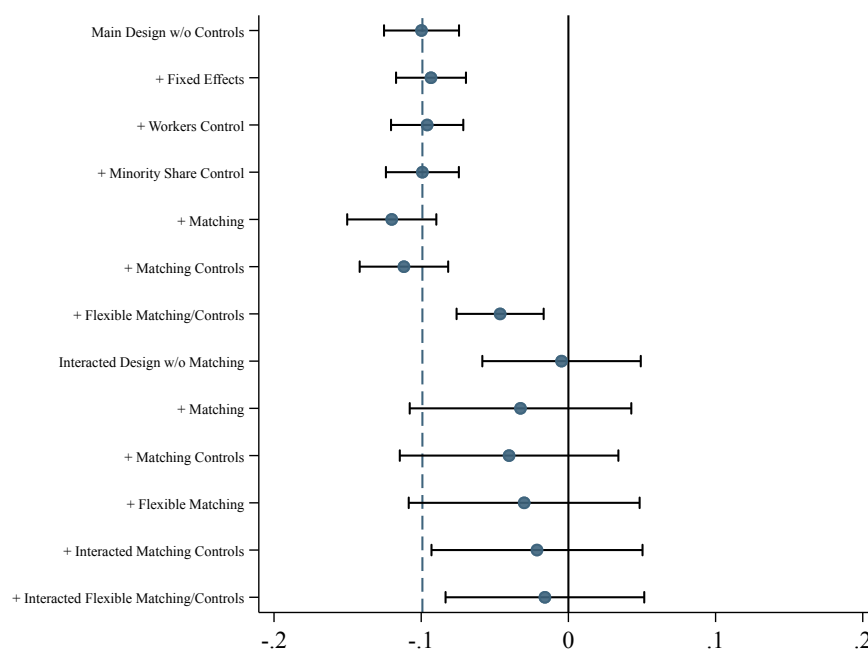
Panel C: Turnover and Worker Flows

Notes: This figure shows the coefficient estimate for the *Works Council* variable in our main design using an unmatched and a matched design. The blue dot represents the works-council coefficient in our main (unmatched) design. The grey coefficient represents the coefficient for a matched design, using entropy balancing. All coefficient are shown with their associated 90% confidence interval. Panel A plots coefficient estimates for workers' subjective well-being and satisfaction, Panel B plots coefficient estimates for worker productivity, and Panel C plots coefficient estimates for worker turnover and flows.

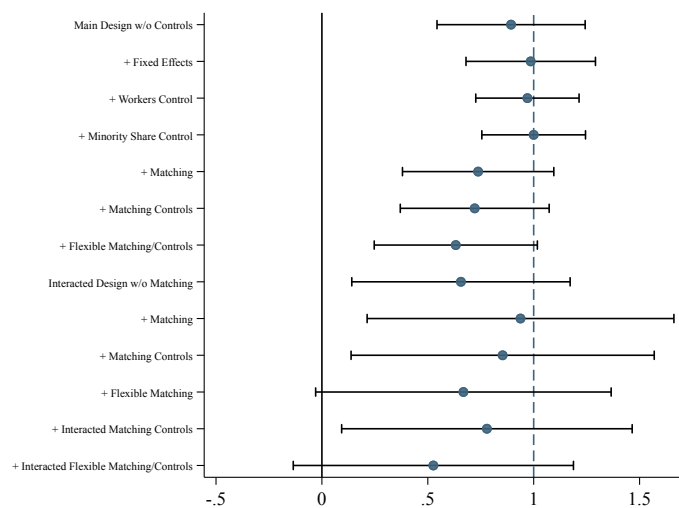
Figure A3: Robustness to Alternate Design Choices



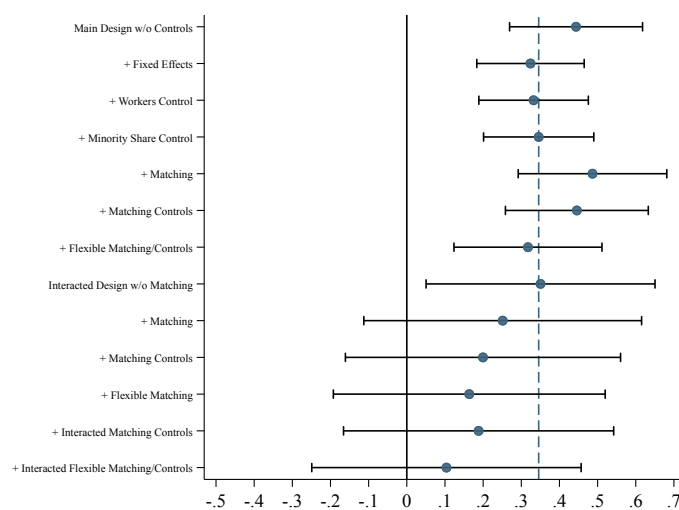
Panel A: Job Satisfaction



Panel B: Worker Turnover



Panel C: Investments



Panel D: Worker Productivity

Notes: This figure shows coefficient estimates for our main worker and establishment outcomes using various alternative design choices. The horizontal axis shows coefficient estimates, while the vertical axis lists the alternative design choices. All coefficient estimates are shown with their respective 90% confidence intervals. In the first row, we start with a bare-bone version of our main design which only controls for the main effects of *Works Council* and *Required Representation*. Each subsequent row lists additions to the specification. In the second row, for example, we add industry, state, and year fixed effects to the specification. We next, one after another, add the control for establishment size (*Workers*) and the underlying minority share (*Minority Share*). The resulting design (in the fourth row) corresponds to our main design, used throughout the paper. As a first major design variation, we next add matching of establishments with and without works councils to our design, using entropy balancing (*Matching*). We next add the matching controls also to the regression specification. We then augment the matching controls, including more flexible controls (i.e., fractional polynomials of *Workers* and *Minority Share*) in the matching and the regression. As second major design variation, we use an interacted design (*Interacted Design*), which extends our main design by including interactions of establishment size and minority share with the works-council indicator (*Works Council*). In subsequent rows, we again introduce various matching variants (e.g., with matching controls included in the regressions and/or flexible matching controls included). Panel A plots the estimates from these design variants for the *Job Satisfaction* outcome, Panel B plots the estimates for the *Worker Turnover* outcome, Panel C plots the estimates for the *Investments* outcome, and Panel D plots the estimates for the *Worker Productivity* outcome. In all panels, the dashed blue line denotes the coefficient estimate for the main design used in the paper (i.e., the main design with fixed effects and worker and minority-share controls).

Table A1: Variable Definitions

Variable	Variable Source	Survey Question/Variable Definition
Works Council	IAB Establishment Panel	An indicator that takes on a value of one if the establishment has a works council and zero otherwise.
Workers	IAB Establishment Panel	The logarithm of the total number of workers employed in the establishment.
Minority Share/Minority Proportion	IAB Establishment Panel	The share of women in the workforce.
Female Share/Female Proportion	IAB Establishment Panel	The share of minorities in the workforce. The “minority” gender is defined as the gender that represents less than 50% of workers in the workforce.
Required Representation	IAB Establishment Panel	The share of works council members reserved for the minority gender, computed according to the 2002 amendment to the Works Council Act.
Required Representation ($>$ Minority Share)	IAB Establishment Panel	An indicator that takes on a value of one if the establishment’s minority share is above the threshold to warrant another minority representatives and zero if it is below. For example, in the case of 3-member councils, establishments with a minority share below 25% are not required to have any minority representatives, while those with shares above this threshold are required to have one minority representative. Establishments above 25% would receive an “Above Threshold” value of one, while those below would receive a value of zero.
Required Representation ($\leq$ Minority Share)	IAB Establishment Panel	
Above Threshold	IAB Establishment Panel	
Post	IAB Establishment Panel	An indicator that takes on a value of one for the post-quota period (i.e., after 2002) and a value of zero in the pre-quota period.

Female Representation	IAB Establishment Panel	
Log(Outflows)	LIAB	The share of works council seats that would be reserved for women if the d'Hondt method applied to the female share in the workforce irrespective of whether women are in the minority or majority in the workforce. Essentially, the share reflects the female share in the workforce.
Log(Inflows)	LIAB	The total number of workers that left the establishment during that year
Log(Net Inflows)	LIAB	The total number of workers that entered the establishment during that year
Log(Total Flows)	LIAB	The net number of workers that entered the establishment during that year. The net inflows are calculated as $Net\ Inflows = Outflows - Inflows$.
Log(Turnover)	LIAB	The total number of workers that entered and exited the establishment during that year. The total flows are calculated as $Total\ Flows = Outflows + Inflows$.
Log(Investments)	IAB Establishment Panel	The total number of workers that left the establishment during that year divided by the total number of workers.
Log(Value Added)	IAB Establishment Panel	The logarithm of the total dollar amount of investments the establishment made during the year.
		The logarithm of value added, which equals total sales of the establishment minus the total intermediate input costs. Intermediate inputs costs refer to: "all raw materials and supplies purchased from other businesses or institutions, merchandise, wage work, external services, rents and other costs (e.g. advertising and agency expenses, travel costs, commissions, royalties, postal charges, insurance premiums, testing costs, consultancy fees, bank charges, contributions to chambers of trade and commerce and professional associations)."
Log(Worker Productivity)	IAB Establishment Panel	The logarithm of worker productivity, which is defined as $\frac{Value\ Added}{Workers}$

Blue-Collar Share	IAB Establishment Panel	The share of workers in the workforce that are deemed blue-collar workers by the establishment.
Part-Time Proportion	IAB Establishment Panel	The share of workers in the workforce that are deemed part-time workers by the establishment.
Shift Work	IAB Establishment Panel	An indicator that takes on a value of one if the establishment employs at least some shift work, and zero otherwise.
Established Before 1990	IAB Establishment Panel	An indicator that takes on a value of one if the establishment was established before 1990, and zero otherwise.
Branch Indicator	IAB Establishment Panel	An indicator that takes on a value of one if the establishment is a branch in a larger firm, and zero otherwise.
Average Employee Tenure	LIAB	The average number of years the workers in the establishment have worked at that the establishment.
Minority Worker	IAB Linked-Personnel Panel	An indicator that takes on a value of one if the worker belongs to the minority gender in the establishment, and zero otherwise.
Male Minority Workplace	IAB Linked-Personnel Panel	An indicator that takes on a value of one if the worker works for an establishment where men are in the minority.
Job Satisfaction	IAB Linked-Personnel Panel	“How satisfied are you today with your job? Please answer on a scale from 0 to 10, where 0 means totally unhappy and 10 means totally happy.”
Emotions	IAB Linked-Personnel Panel	The first principal component of six survey questions relating workers’ emotions (<i>Enthusiastic, Feel like Work, Carried Away, Inspired, Proud, Happy</i>).
Contribution	IAB Linked-Personnel Panel	The first principal component of five survey questions relating workers’ contribution to their firm and to society (<i>Employer Helps Society, Charitable Projects, Meaningful Work, Contribution to Society, Contribution to Firm</i>).

Commitment	IAB Linked-Personnel Panel	The first principal component of five survey questions relating workers' commitment to their employer (<i>Personal Meaning, Rest of Life, Not Part of Family, Consider Leaving, No Emotion</i>).
Work Conditions	IAB Linked-Personnel Panel	The first principal components of four survey questions (<i>Interesting Things, Autonomy, Task Variety, Poor Working Conditions</i>) relating to the working conditions of the establishment.
Information & Consultation	IAB Linked-Personnel Panel	The first principal component of three survey questions relating to amenities that related to information and consultation with management (<i>No Discrimination, Management Understanding, Clear Communication</i>).
Income Satisfaction	IAB Linked-Personnel Panel	"How satisfied are you today with your income? Please answer on a scale from 0 to 10, where 0 means totally unhappy and 10 means totally happy."
Family Friendliness	IAB Linked-Personnel Panel	The first principal component of four survey questions relating workers' assessments of amenities relating to childcare and families (<i>Childcare Satisfaction, Family Responsibilities, Strain on Family, Interfere with Family</i>).
Meaningful Work	IAB Linked-Personnel Panel	"What about the following statements? Please tell me, if they fully apply, largely apply, do rather not apply, do not apply at all or if you are undecided. My work helps me to experience my life as meaningful. "
Contribution to Firm	IAB Linked-Personnel Panel	"What about the following statements? Please tell me, if they fully apply, largely apply, do rather not apply, do not apply at all or if you are undecided. I make an important contribution to my firm with my work. "
Contribution to Society	IAB Linked-Personnel Panel	"What about the following statements? Please tell me, if they fully apply, largely apply, do rather not apply, do not apply at all or if you are undecided. With my work I make a meaningful contribution to society "

Enthusiastic	IAB Linked-Personnel Panel	“I now read some statements about perceiving work. Please think about how often you feel like this. I am enthusiastic about my job. ”
Inspired	IAB Linked-Personnel Panel	“I now read some statements about perceiving work. Please think about how often you feel like this. My job inspires me. ”
Feel Like Work	IAB Linked-Personnel Panel	“I now read some statements about perceiving work. Please think about how often you feel like this. When I get up in the morning, I feel like going to work. ”
Happy	IAB Linked-Personnel Panel	“I now read some statements about perceiving work. Please think about how often you feel like this. I feel happy when I am working intensely. ”
Proud	IAB Linked-Personnel Panel	“I now read some statements about perceiving work. Please think about how often you feel like this. I am proud of the work that I do. ”
Carried Away	IAB Linked-Personnel Panel	“I now read some statements about perceiving work. Please think about how often you feel like this. I get carried away when I am working. ”
No Discrimination	IAB Linked-Personnel Panel	“I will now read out some statements. Please tell me, if they fully apply, largely apply, do rather not apply, do not apply at all or if you are undecided. No one working here is discriminated because of his/her sex, age, nationality, religious affiliation, handicap, sexual orientation or skin color. ”
Personal Meaning	IAB Linked-Personnel Panel	“What about the following statements? Please tell me, if they fully apply, largely apply, do rather not apply, do not apply at all or if you are undecided. This organization has a great deal of personal meaning for me. ”
Clear Communication	IAB Linked-Personnel Panel	“What about the following statements? Please tell me, if they fully apply, largely apply, do rather not apply, do not apply at all or if you are undecided. The superiors clearly communicate requirements and objectives. ”

Management Understanding	IAB Linked-Personnel Panel	“What about the following statements? Please tell me, if they fully apply, largely apply, do rather not apply, do not apply at all or if you are undecided. Supervisors show an understanding of the people who work for them. ”
Autonomy	IAB Linked-Personnel Panel	“What about the following statements? Please tell me, if they fully apply, largely apply, do rather not apply, do not apply at all or if you are undecided. The job allows me to make a lot of decisions on my own. ”
Task Variety	IAB Linked-Personnel Panel	“What about the following statements? Please tell me, if they fully apply, largely apply, do rather not apply, do not apply at all or if you are undecided. The job involves a great deal of task variety. ”
Poor Work Conditions	IAB Linked-Personnel Panel	“Which of the following applies to your job? Please tell me, if the statements fully apply, largely apply, do rather not apply, do not apply at all or if you are undecided. At work I am exposed to unpleasant ambient conditions such as noise, extreme temperature, unpleasant lightning or odours. ”
Charitable Projects	IAB Linked-Personnel Panel	“What about the following statements? Please tell me, if they fully apply, largely apply, do rather not apply, do not apply at all or if you are undecided. Management also supports charitable and non-profit projects outside the company. ”
Employer Helps Society	IAB Linked-Personnel Panel	“What about the following statements? Please tell me, if they fully apply, largely apply, do rather not apply, do not apply at all or if you are undecided. My employer does not exclusively pursue financial goals, but also goals that benefit society or the environment. ”
Rest of Life	IAB Linked-Personnel Panel	“What about the following statements? Please tell me, if they fully apply, largely apply, do rather not apply, do not apply at all or if you are undecided. I would be very happy to spend the rest of my career with this organization. ”

No Emotion	IAB Linked-Personnel Panel	“What about the following statements? Please tell me, if they fully apply, largely apply, do rather not apply, do not apply at all or if you are undecided. I do not feel emotionally attached to this organization. ”
Not Part of Family	IAB Linked-Personnel Panel	“What about the following statements? Please tell me, if they fully apply, largely apply, do rather not apply, do not apply at all or if you are undecided. I do not feel like ‘part of the family’ at my organization. ”
Consider Leaving	IAB Linked-Personnel Panel	“How many times in the past 12 months have you thought about changing your job? Daily; a few times a week; a few times a month; a few times a year”
Better Superiors	IAB Linked-Personnel Panel	“Which occupational improvements or changes would you expect from changing jobs? I will read some points to you. Please tell me whether a point fully applies, largely applies, does rather not apply, does not apply at all or whether you do not know. Better pay and benefits. ”
Better Superiors	IAB Linked-Personnel Panel	“Which occupational improvements or changes would you expect from changing jobs? I will read some points to you. Please tell me whether a point fully applies, largely applies, does rather not apply, does not apply at all or whether you do not know. Better superiors. ”
Better Work Content	IAB Linked-Personnel Panel	“Which occupational improvements or changes would you expect from changing jobs? I will read some points to you. Please tell me whether a point fully applies, largely applies, does rather not apply, does not apply at all or whether you do not know. Different work content. ”
Better Work Volume	IAB Linked-Personnel Panel	“Which occupational improvements or changes would you expect from changing jobs? I will read some points to you. Please tell me whether a point fully applies, largely applies, does rather not apply, does not apply at all or whether you do not know. Different work volume. ”

Interfere with Family	IAB Linked-Personnel Panel	“In what follows, I have a few questions with regard to work-family balance. Please indicate again whether and to what extent the following statements apply to you. The demands of my work interfere with my home and family life. ”
Family Responsibilities	IAB Linked-Personnel Panel	“In what follows, I have a few questions with regard to work-family balance. Please indicate again whether and to what extent the following statements apply to you. The amount of time my job takes up makes it difficult to fulfill family responsibilities. ”
Strain on Family	IAB Linked-Personnel Panel	“In what follows, I have a few questions with regard to work-family balance. Please indicate again whether and to what extent the following statements apply to you. My job produces strain that makes it difficult to fulfill family duties. ”
Childcare Satisfaction	IAB Linked-Personnel Panel	“Referring to your possibilities to pursue gainful employment, how satisfied are you today with your situation of childcare relating to your job? Please rate the satisfaction with the current care situation of your children on a scale from 0 to 10. 0 means totally unhappy, 10 totally happy”
Log(Monthly Pay)	IAB Linked-Personnel Panel	“How much did you earn with your current employer last month? Please exclude any bonuses or extra pay (e.g. Christmas bonus, holiday bonus or back pays) and include payments for overtime. Please specify your gross pay before any tax deductions and social security contributions.”
High Flexibility	IAB Linked-Personnel Panel	An indicator that takes on a value of one if the employer rates their establishment as either a 4 to a 5 in response to the following question (and zero otherwise): “How important are in your view the following aspects to strengthen the employee loyalty to your establishment/office? 1 means “unimportant”, 5 “very important”. You can grade your opinion with the numbers in between. Flexible working hours. ”

High Contact	IAB Linked-Personnel Panel	An indicator that takes on a value of one if the employer rates their establishment as either a 4 to a 5 in response to the following question (and zero otherwise): “How important are in your view the following aspects to strengthen the employee loyalty to your establishment/office? 1 means “unimportant”, 5 “very important”. You can grade your opinion with the numbers in between. Personal contact between management and employees. ”
Large Council	IAB Linked-Personnel Panel	An indicator that takes on a value of one if the works council has more than 9 members, and zero otherwise.”
WC Minority Share	WSI Works Council Survey	The actual share of works council members that come from the minority gender.
Female Share in Workforce	WSI Works Council Survey	The share of the establishment’s workforce that are women.
Male Share in Workforce	WSI Works Council Survey	The share of the establishment’s workforce that are men.
Female Representation/Female Share on WC	WSI Works Council Survey	The <i>actual</i> share of the works council that are women.
Male Representation/Male Share on WC	WSI Works Council Survey	The <i>actual</i> share of the works council that are men.
Female Council Chair	WSI Works Council Survey	An indicator that takes on a value of one if the works council has a woman as the chair of the works council, and zero otherwise.
Concerns	WSI Works Council Survey	The logarithm of the number of issues that the works council is currently working on.
Agreements	WSI Works Council Survey	The logarithm of the number of agreements with the employer that the works council is currently working on.
Training	WSI Works Council Survey	“The logarithm of the number of training programs the works council is currently engaged in.”
Pensions (Concern)	WSI Works Council Survey	“Let’s now turn to the work of the works council. I will now read you a list of topics. In each case, please tell us whether the works council has been particularly concerned with. Company Pension Scheme ”

Health & Safety (Concern)	WSI Works Council Survey	“Let’s now turn to the work of the works council. I will now read you a list of topics. In each case, please tell us whether the works council has been particularly concerned with. Occupational Safety/Health promotion ”
Technology (Concern)	WSI Works Council Survey	“Let’s now turn to the work of the works council. I will now read you a list of topics. In each case, please tell us whether the works council has been particularly concerned with. Introduction of New Technologies ”
Work-Time Accounts (Concern)	WSI Works Council Survey	“Let’s now turn to the work of the works council. I will now read you a list of topics. In each case, please tell us whether the works council has been particularly concerned with. Working Time Accounts ”
Overtime (Concern)	WSI Works Council Survey	“Let’s now turn to the work of the works council. I will now read you a list of topics. In each case, please tell us whether the works council has been particularly concerned with. Overtime Work ”
Flexibility of Work (Concern)	WSI Works Council Survey	“Let’s now turn to the work of the works council. I will now read you a list of topics. In each case, please tell us whether the works council has been particularly concerned with. Employees’ requests for flexible working hours ”
Further Education/Training (Concern)	WSI Works Council Survey	“Let’s now turn to the work of the works council. I will now read you a list of topics. In each case, please tell us whether the works council has been particularly concerned with. Restriction of training ”
Work Atmosphere (Concern)	WSI Works Council Survey	“Let’s now turn to the work of the works council. I will now read you a list of topics. In each case, please tell us whether the works council has been particularly concerned with. Deterioration of the working atmosphere ”
Equality (Concern)	WSI Works Council Survey	“Let’s now turn to the work of the works council. I will now read you a list of topics. In each case, please tell us whether the works council has been particularly concerned with. Equality between men and women / promotion of women ”

Weekend Work (Concern)	WSI Works Council Survey	“Let’s now turn to the work of the works council. I will now read you a list of topics. In each case, please tell us whether the works council has been particularly concerned with. Weekend Work ”
Retirement (Concern)	WSI Works Council Survey	“Let’s now turn to the work of the works council. I will now read you a list of topics. In each case, please tell us whether the works council has been particularly concerned with. Retirement ”
Work Organization (Concern)	WSI Works Council Survey	“Let’s now turn to the work of the works council. I will now read you a list of topics. In each case, please tell us whether the works council has been particularly concerned with. Change in Work Organization ”
Target Setting (Concern)	WSI Works Council Survey	“Let’s now turn to the work of the works council. I will now read you a list of topics. In each case, please tell us whether the works council has been particularly concerned with. Target agreements ”
Falling Below CBA (Concern)	WSI Works Council Survey	“Let’s now turn to the work of the works council. I will now read you a list of topics. In each case, please tell us whether the works council has been particularly concerned with. Falling below collective bargaining standards/cutting collective bargaining benefits ”
Lack of Support from Employees (Concern)	WSI Works Council Survey	“Let’s now turn to the work of the works council. I will now read you a list of topics. In each case, please tell us whether the works council has been particularly concerned with. Lack of support from the works council among the employees ”
CBA Benefits (Concern)	WSI Works Council Survey	“Let’s now turn to the work of the works council. I will now read you a list of topics. In each case, please tell us whether the works council has been particularly concerned with. Lack of support from the works council among the employees ”
Social Plan (Concern)	WSI Works Council Survey	“Let’s now turn to the work of the works council. I will now read you a list of topics. In each case, please tell us whether the works council has been particularly concerned with. Social plan / reconciliation of interests ”

Job Security (Concern)	WSI Works Council Survey	“Let’s now turn to the work of the works council. I will now read you a list of topics. In each case, please tell us whether the works council has been particularly concerned with. Employment Security ”
Performance Pressure (Concern)	WSI Works Council Survey	“Let’s now turn to the work of the works council. I will now read you a list of topics. In each case, please tell us whether the works council has been particularly concerned with. Increased pressure to perform ”
Family-Friendly Practices (Concern)	WSI Works Council Survey	“Let’s now turn to the work of the works council. I will now read you a list of topics. In each case, please tell us whether the works council has been particularly concerned with. Compatibility of work and family ”
Working Conditions for Old (Concern)	WSI Works Council Survey	“Let’s now turn to the work of the works council. I will now read you a list of topics. In each case, please tell us whether the works council has been particularly concerned with. Working conditions for older people ”
Spin-Off/Merger (Concern)	WSI Works Council Survey	“Let’s now turn to the work of the works council. I will now read you a list of topics. In each case, please tell us whether the works council has been particularly concerned with. Spin-off /closure or merger of parts of the company ”
Addiction (Concern)	WSI Works Council Survey	“What topics are regulated in these company agreements? Addiction ”
Suggestion Scheme (Concern)	WSI Works Council Survey	“What topics are regulated in these company agreements? Suggestion System ”
Health & Safety (Agreement)	WSI Works Council Survey	“What topics are regulated in these company agreements? Occupational safety ”
Work-Time Reductions	WSI Works Council Survey	“What topics are regulated in these company agreements? Reductions in working hours ”
Overtime (Agreement)	WSI Works Council Survey	“What topics are regulated in these company agreements? Overtime ”

Health & Safety Risk Assessments	WSI Works Council Survey	“What topics are regulated in these company agreements? Risk Assessments ”
Work-Time Accounts (Agreement)	WSI Works Council Survey	“What topics are regulated in these company agreements? Working time accounts ”
Further Education/Training (Agreement)	WSI Works Council Survey	“What topics are regulated in these company agreements? Further education and training ”
Work Organization (Agreement)	WSI Works Council Survey	“What topics are regulated in these company agreements? Work organization ”
Work-Time Extensions (Agreement)	WSI Works Council Survey	“What topics are regulated in these company agreements? Working time extension ”
Privacy (Agreement)	WSI Works Council Survey	“What topics are regulated in these company agreements? Data Protection ”
Remuneration (Agreement)	WSI Works Council Survey	“What topics are regulated in these company agreements? Pay ”
Dismissals (Agreement)	WSI Works Council Survey	“What topics are regulated in these company agreements? Downsizing / layoffs ”
Training (Agreement)	WSI Works Council Survey	“What topics are regulated in these company agreements? Training ”
Family-Friendly Practices (Agreement)	WSI Works Council Survey	“What topics are regulated in these company agreements? Family friendly ”
Company Social Benefits (Agreement)	WSI Works Council Survey	“What topics are regulated in these company agreements? Company social benefits ”
Working Conditions for Old (Agreement)	WSI Works Council Survey	“What topics are regulated in these company agreements? Working conditions of older employees ”
Equality (Agreement)	WSI Works Council Survey	“What topics are regulated in these company agreements? Equality between women and men/promotion of women ”

Early Retirement (Agreement)	WSI Works Council Survey	“What topics are regulated in these company agreements? Early departure of older employees/early retirement ”
Job Security (Agreement)	WSI Works Council Survey	“What topics are regulated in these company agreements? Securing employment ”
Hiring (Agreement)	WSI Works Council Survey	“What topics are regulated in these company agreements? Hiring ”
Classification under CBA (Agreement)	WSI Works Council Survey	“What topics are regulated in these company agreements? Classification ”
Technology (Agreement)	WSI Works Council Survey	“What topics are regulated in these company agreements? Technology design ”
Target Setting (Agreement)	WSI Works Council Survey	“What topics are regulated in these company agreements? Target agreements ”
Transfers (Agreement)	WSI Works Council Survey	“What topics are regulated in these company agreements? Transfer/restructuring ”
Health & Safety (Training)	WSI Works Council Survey	“On which of the following topics does the works council take advantage of training opportunities? Occupational safety/health promotion ”
Performance Review (Training)	WSI Works Council Survey	“On which of the following topics does the works council take advantage of training opportunities? Performance control ”
Economic/Socio-Political Knowledge (Training)	WSI Works Council Survey	“On which of the following topics does the works council take advantage of training opportunities? Basic economic and social policy knowledge ”
Consequences of Technology (Training)	WSI Works Council Survey	“On which of the following topics does the works council take advantage of training opportunities? Consequences of Technology ”
Work Volume (Training)	WSI Works Council Survey	“On which of the following topics does the works council take advantage of training opportunities? Workload ”

Labor Law (Training)	WSI Works Council Survey	“On which of the following topics does the works council take advantage of training opportunities? Labor Law ”
Works Constitution Act (Training)	WSI Works Council Survey	“On which of the following topics does the works council take advantage of training opportunities? Works Constitution Act ”
Compatibility of Work and Family (Training)	WSI Works Council Survey	“On which of the following topics does the works council take advantage of training opportunities? Compatibility of work and family ”
Social Skills (Training)	WSI Works Council Survey	“On which of the following topics does the works council take advantage of training opportunities? Social Skills ”
Working Hours (Training)	WSI Works Council Survey	“On which of the following topics does the works council take advantage of training opportunities? Working Hours ”
Equality (Training)	WSI Works Council Survey	“On which of the following topics does the works council take advantage of training opportunities? Equality between men and women ”
Remuneration (Training)	WSI Works Council Survey	“On which of the following topics does the works council take advantage of training opportunities? Pay ”
Information Technology (Training)	WSI Works Council Survey	“On which of the following topics does the works council take advantage of training opportunities? IT (General) ”
Work Organization (Training)	WSI Works Council Survey	“On which of the following topics does the works council take advantage of training opportunities? Work organization/modernization consequences ”

Notes: This table lists variables used in the paper, and their detailed definitions.

Table A2: Works Council $\times$ Required Representation Determinants

	Works Council $\times$ Required Representation		
	(1)	(2)	(3)
Required Representation	0.672*** (0.045)	0.678*** (0.040)	0.679*** (0.019)
Workers	-0.000 (0.002)	-0.001 (0.002)	-0.008*** (0.001)
Minority Share	0.110** (0.052)	0.030 (0.046)	-0.731*** (0.021)
Works Council	0.194*** (0.008)	0.202*** (0.008)	-0.114*** (0.008)
Works Council $\times$ Workers			0.011*** (0.001)
Works Council $\times$ Minority Share			1.080*** (0.009)
Fixed Effects Structure	N/A	Industry, State, Year	Industry, State, Year
Cluster	Firm	Firm	Firm
Observations	20,565	20,336	20,336
R^2	0.829	0.872	0.990

Notes: This table reports determinants of the main treatment used in the paper (i.e. *Required Representation* $\times$ *Works council*). *Required Representation* measures the minority (gender) representation required by the minority quota. *Works Council* is an indicator variable that takes on a value of one if the establishment has a works council and zero otherwise. *Minority Share* is the share of workers that belong to the minority gender. *Workers* is the logarithm of the total number of workers in the establishment. Column (1) does not include any fixed effects, columns (2) and (3) include industry, state, and year fixed effects. Standard errors, reported in parentheses, are clustered on the establishment level (which we label as “firm” level for brevity). ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Table A3: Industry Breakdown

Industry	Share of Establishment-Year Obs.	Minority Proportion	Female Proportion	Share with Works Council
Manufacturing	0.521	0.212 (0.129)	0.238 (0.175)	0.719 (0.450)
Electricity, Gas, Steam and Air Conditioning Supply	0.014	0.208 (0.128)	0.221 (0.154)	0.842 (0.368)
Construction	0.047	0.099 (0.072)	0.099 (0.072)	0.437 (0.497)
Wholesale and Retail Trade	0.103	0.275 (0.121)	0.428 (0.245)	0.577 (0.495)
Transportation and Storage	0.056	0.193 (0.155)	0.214 (0.191)	0.577 (0.495)
Accommodation and Food Service Activities	0.067	0.379 (0.094)	0.528 (0.150)	0.766 (0.424)
Professional, Scientific and Technical Activities	0.026	0.290 (0.138)	0.460 (0.249)	0.608 (0.491)
Administrative and Support Service Activities	0.086	0.251 (0.142)	0.399 (0.269)	0.303 (0.460)
Human Health and Social Work Activities	0.048	0.212 (0.105)	0.764 (0.155)	0.612 (0.489)
Other Service Activities	0.019	0.298 (0.140)	0.626 (0.213)	0.700 (0.462)
Other	0.013	0.259 (0.127)	0.436 (0.267)	0.510 (0.505)

Notes: This table shows a breakdown of the sample for the Linked Personnel Panel by industry. The industry classification is based on the 2008 German Classification of Economic Activities. Column (1) shows the name of the industry, column (2) shows the proportion of establishment-year observations in our sample that belong to that industry, column (3) shows the average minority share in that industry, column (4) shows the average female share in that industry, and column (5) shows the proportion of establishment-year observations with works councils.

Table A4: Works Council Determinants

	Works Council			
	(1)	(2)	(3)	(4)
Workers	0.127*** (0.011)	0.109*** (0.012)	0.095*** (0.011)	0.055*** (0.012)
Minority Share	-0.045 (0.267)	0.018 (0.252)	-0.014 (0.245)	0.334 (0.270)
Required Representation	0.027 (0.236)	-0.130 (0.209)	-0.101 (0.208)	-0.254** (0.128)
Blue-Collar Share			0.704*** (0.107)	0.703*** (0.104)
Part-Time Share			-0.012 (0.036)	0.007 (0.034)
Shift Work			0.058** (0.026)	0.049* (0.026)
Established Before 1990			0.014 (0.027)	0.017 (0.025)
Branch Indicator			0.095*** (0.018)	0.098*** (0.017)
Workers ⁻²				0.358** (0.151)
Workers ²				-0.456*** (0.068)
Minority Share ⁻²				0.000*** (0.000)
Minority Share ²				0.079 (0.275)
Fixed Effects Structure	N/A	Industry, State, Year	Industry, State, Year	Industry, State, Year
Cluster	Firm	Firm	Firm	Firm
Observations	20,565	20,336	20,265	20,265
R ²	0.138	0.381	0.414	0.438

Notes: This table reports determinants of establishments' adoption of works councils. *Required Representation* measures the minority (gender) representation required by the minority quota. *Works Council* is an indicator variable that takes on a value of one if the establishment has a works council and zero otherwise. *Minority Share* is the share of workers that belong to the minority gender. *Workers* is the logarithm of the total number of workers in the establishment. *Blue-Collar Share* is the share of workers in the workforce that are categorized as "blue collar" workers. *Part-Time Share* is the share of workers in the workforce that are not full-time workers. *Shift Work* is an indicator variable that takes on a value of one if the establishment employs shift work and zero otherwise. *Established Before 1990* is an indicator that takes on a value of one if the establishment was founded before 1990. *Branch Indicator* is an indicator that takes on a value of one if the establishment is a branch that belongs to a multi-establishment firm. Column (1) does not include any fixed effects, while columns (2), (3) and (4) include industry, state, and year fixed effects. Standard errors, reported in parentheses, are clustered on the establishment level (which we label as "firm" level for brevity). ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Table A5: Required and Actual Minority Representation

	(1)	(2)
	WC Minority Share	WC Minority Share
Required Representation	0.779*** (0.021)	0.695*** (0.022)
Workers	0.000 (0.002)	0.003 (0.002)
Fixed Effects Structure	N/A	Industry, State, Year
Cluster	Firm	Firm
Observations	5,389	5,388
R^2	0.328	0.370

Notes: This table reports the estimates of regressions of the minority share on works councils on required minority representation. *Required Representation* measures the minority (gender) representation required by the minority quota. *Workers* is the logarithm of the total number of workers in the establishment. Both columns use *WC Minority Share* as the outcome, which is the share of minorities on the works council. Column (1) does not include any fixed effects, while Column (2) includes Industry, State, and Year fixed effects. Standard errors, reported in parentheses, are clustered on the establishment level (which we label as “firm” level for brevity). ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

Table A6: Quantile Regression

	WC Minority Share					
	$\tau = 0.1$	$\tau = 0.2$	$\tau = 0.3$	$\tau = 0.4$	$\tau = 0.5$	$\tau = 0.6$
Required Representation	0.358*** (0.075)	0.804*** (0.060)	1.000*** (0.000)	0.930*** (0.027)	0.215** (0.087)	-0.255*** (0.059)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Fixed Effects Structure	Industry, State, Year	Industry, State, Year	Industry, State, Year	Industry, State, Year	Industry, State, Year	Industry, State, Year
Cluster	Firm	Firm	Firm	Firm	Firm	Firm
Observations	5,389	5,389	5,389	5,389	5,389	5,389

Notes: This table reports the estimates of quantile regressions of the minority share on works councils on required minority representation. *Required Representation* measures the minority (gender) representation required by the minority quota. The columns show estimates by decile (τ) of the distribution of minority share on the works council (*WC Minority Share*). All columns also include a control for the minority share in the workforce and the number of workers and industry, state, and year fixed effects. Standard errors, reported in parentheses, are clustered on the establishment level (which we label as “firm” level for brevity). ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.