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Works Councils and Apprenticeship Training: Heterogeneous Works Councils, Heterogeneous Effects?*

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Abstract

In Germany, works councils possess co-determination rights concerning apprenticeship training, which may influence training outcomes in firms. While the literature commonly assumes homogeneous effects of works councils, this study reveals considerable heterogeneity in their involvement in training-related decisions. Using representative German firm-level data, we explore two dimensions of works councils' heterogeneity: their participation in various decisions and their success in enforcing agendas. We document the extent to which works councils influence decisions on hiring apprentices, determining the number of apprentices, and retention after training. Our findings indicate that works council participation is associated with higher training propensity and retention rates, but no significant effect on the number of apprentices hired. However, the number of apprentices is notably higher in firms with collective bargaining agreements. Interestingly, works councils that are rated as successful are associated with lower retention rates, highlighting potential conflicts between representing the interests of apprentices and those of other worker groups.

Keywords: Works council heterogeneity, apprenticeship training, training quality
JEL code: J24, J50, J53, M53

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1 Introduction

Works councils, which represent employees' interests at the firm level, are a cornerstone of the German labor market. These institutions are vested with significant rights to participate in and oversee a range of firm decisions, including those related to apprenticeship training and the subsequent retention of apprentices. Existing empirical research has shown that firms with works councils tend to exhibit higher retention rates for apprentices (Koch et al., 2019; Kriechel et al., 2014). However, the majority of studies have focused solely on the presence or absence of a works council within a firm, largely overlooking the variation in how works councils operate. Recognizing that works councils differ substantially in their areas of activity and in their success at enforcing their agendas, this study contributes to the literature by examining these two critical dimensions of heterogeneity and their impact on firm-level apprenticeship decisions.

Apprenticeship training decisions warrant particular attention for at least two reasons. First, by engaging in apprenticeship training, firms not only address their own future skill needs but also contribute to the broader supply of skilled workers within the economy. Understanding the drivers behind firms' decisions to train apprentices is therefore essential for both research and policy. Second, in Germany, nearly 60% of young adults pursue vocational education through apprenticeships. For lower-qualified school leavers who do not intend to pursue higher education, apprenticeships are crucial for gaining entry into the labor market and establishing a successful occupational career. Thus, analyzing how works councils influence firm-level decision-making on apprenticeship participation and retention is of paramount importance, particularly for educational policymakers in countries with well-established apprenticeship systems.

Our analysis draws on unique firm-level data that provides comprehensive information on both works council heterogeneity and apprenticeship training outcomes. Utilizing the BIBB

Establishment Panel on Training and Competence Development (BIBB-Training Panel), a representative dataset of German firms, we identify two key dimensions of works council influence: their participation in decision-making processes and their success in enforcing their agendas. While previous studies have explored works council heterogeneity in relation to outcomes such as turnover rates or environmental investments (Askildsen et al., 2006; Dilger, 2002, 2006), the effects of this heterogeneity on apprenticeship training have yet to be empirically examined.

Our findings reveal substantial variation in the involvement of works councils in apprenticeship training decisions. Not all works councils participate in such decisions, and their success in enforcing agendas is far from uniform. This heterogeneity leads to divergent outcomes for firms. Specifically, works council participation is associated with a greater propensity for firms to engage in apprenticeship training, although it has no significant effect on the number of apprentices hired. The number of apprentices, however, is notably higher in firms covered by collective bargaining agreements. Works councils that actively participate in decision-making processes tend to foster higher retention rates among apprentices, whereas those that are deemed more successful in enforcing their agendas are paradoxically linked to lower retention rates. Similar patterns are observed in apprenticeship dropout rates.

The remainder of this paper is organized as follows. Section 2 outlines the institutional framework of works councils and apprenticeship training in Germany. Section 3 provides a review of the literature on the relationship between works councils and apprenticeship training, focusing on works councils' participation in training decisions and their heterogeneity in influencing other firm-level outcomes. Section 4 details the dataset and descriptive statistics. Section 5 describes the identification strategy. Section 6 presents the empirical results, examining the relationship between works council heterogeneity and four key outcomes in the apprenticeship training process. Finally, Section 7 concludes with a discussion of the results and their implications for policy and future research.

2 Institutional Framework

Germany's industrial relations system is characterized by a dual structure. At the industry level, collective agreements are negotiated between unions and employer associations through centralized social partnerships. At the establishment level, workers' interests are represented by works councils, which serve as a key institutional mechanism for employee representation (Jäger et al., 2022). Works councils can be established in firms with at least five employees, based on an initiative by the employees themselves. Once formed, works councils are granted extensive information, consultation, and codetermination rights under the Works Constitution Act (WCA).

Although works councils were present in only 8% of German firms in 2021, they covered 39% of employees in West Germany and 34% in East Germany (Ellguth & Kohaut, 2022). Despite this relatively low firm-level coverage, works councils continue to be a vital institution for ensuring democratic participation in German workplaces. Over the years, interest in works councils and the functioning of this institution has been maintained or even revived , although their reach has diminished (Budde et al., 2024). Among their broad array of rights and responsibilities, works councils play a critical role in hiring decisions and in ensuring that apprentices receive appropriate training within firms.

Apprenticeship training occupies a central place in Germany's labor market and education system. The country's dual apprenticeship system relies heavily on firms, which serve as primary sites for the development of practical skills. In deciding whether to train apprentices and whom to train, firms effectively act as gatekeepers to skilled employment. Apprenticeship programs allow firms to meet their firm-specific skill demands by cultivating and retaining future skilled employees. However, apprenticeship training also imposes significant costs on firms (Schönfeld et al., 2020).

The apprenticeship market in Germany faces a persistent "mismatch" phenomenon: many

firms struggle to find suitable apprentices for the positions they offer, while prospective apprentices often face difficulty securing placements in their desired occupations or regions. This mismatch has led to a decline in both the share of firms providing apprenticeship training—falling to 19.1% in 2021—and the overall number of apprentices (Mohr, 2023). Such trends exacerbate existing and future skill shortages, posing a significant challenge to the labor market.

Given the extensive rights and responsibilities of works councils, as well as the crucial role apprenticeships play in the German labor market, several empirical studies have examined the influence of codetermination on apprenticeship training. These studies, discussed in detail below, explore how works councils shape firm-level training decisions and the broader apprenticeship system.

3 Related Literature

3.1 Works Councils and Apprenticeship Training

In firms with works councils, both apprenticeship participation and, particularly, the intensity of apprenticeship training tend to be lower than in firms without works councils (Niederalt, 2004; Backes-Gellner et al., 1997). However, some studies report these differences as statistically insignificant (Bellmann et al., 2014; Czepek et al., 2015). Several factors contribute to this disparity. For example, in firms with works councils where the net costs of apprenticeship training are higher, due to elevated recruitment and wage expenses (Kriechel et al., 2014; Wenzelmann et al., 2017), firms tend to follow an investment strategy for long-term retention (Mohrenweiser & Backes-Gellner, 2010; Pfeifer et al., 2019). This strategy is reflected in the higher retention rates of apprenticeship graduates in firms with works councils compared to those without (Dummert, 2021; Koch et al., 2019; Kriechel et al., 2014).

Higher retention rates allow firms to recoup their training investments by retaining firm-trained apprentices and addressing their skilled labor needs internally. At the same time, works councils prioritize the development of strong internal labor markets, which provide long-term employment opportunities. However, the retention of apprenticeship graduates may pose a threat to the interests of incumbent skilled workers. Works councils, cognizant of these high retention rates, might seek to limit apprenticeship training efforts to mitigate competition between new graduates and the existing workforce for long-term positions.

Nevertheless, works councils also have a vested interest in representing apprentices, particularly in advocating for their retention by the training firm. In doing so, works councils must balance the interests of apprenticeship graduates with those of already-employed skilled workers. A common criticism directed at works councils is that they may support a pre-selection process at the apprenticeship entry stage, ensuring that only a select group of applicants are provided with apprenticeship opportunities and long-term employment prospects. This may lead to a system in which works councils secure favorable outcomes for a small group of apprentices at the expense of a broader access.

Another explanation for the observed higher retention rates and lower training intensity in firms with works councils is that works councils genuinely represent the interests of the entire workforce, including apprentices. By striving to maximize retention rates, they align with the interests of all workers. In anticipation of such high retention expectations, management may seek to limit the number of apprentices to preserve flexibility in workforce planning, particularly when future skill needs are uncertain.

Empirical studies on the relationship between works councils and apprenticeship training have thus far focused on differences between firms with and without works councils, typically assuming a homogeneous impact of works councils across firms. This approach neglects potential heterogeneity in works council behavior, largely due to limitations in the available data.

3.2 Participation in Training Decisions

Works councils can differ across various dimensions, with participation in decision-making within designated areas of activity being a particularly relevant example. Although none of the major surveys explicitly address apprenticeship training as a separate category, they do allow some insights into works councils' involvement in further training, which may provide clues about their engagement with apprenticeship-related issues. The limited frequency with which works councils cite further training as a primary area of focus (Erol et al., 2021; WSI-Works Council Survey, 2017b; van den Berg et al., 2019) could be due to employees seldom seeking assistance from works councils in this domain (WSI-Works Council Survey, 2017a). This low level of engagement may signal that training issues are not perceived as particularly conflict-sensitive between employees and employers (Schneider et al., 2019; van den Berg et al., 2019; RBS, 2012).

Moreover, firm-level agreements on further training are relatively uncommon compared to agreements in other areas (Baumann & Maschke, 2016). This suggests that works councils may not view further training as a priority unless a specific conflict of interest arises that necessitates their intervention. Several factors may explain this tendency: works councils often face capacity constraints, must prioritize among a wide range of responsibilities, and may lack expertise in training-related topics (Backes-Gellner et al., 1997; Schneider et al., 2019; Berger & Eberhardt, 2019).

Given these constraints, it is clear that works councils' engagement with further training issues should not be assumed as automatic or universal. This observation likely extends to apprenticeship training, which may similarly fail to command the full attention of works councils unless specific conditions prompt their involvement.

3.3 Heterogeneity of Works Councils and Their Effects

Empirical studies have documented how the participation of works councils in decisions related to further training (Erol et al., 2021) and the establishment of firm-level agreements on further training (Baumann & Maschke, 2016) vary according to firm characteristics such as industry and size. Additional research has explored the determinants of management's attitude toward workplace codetermination (Jirjahn & Smith, 2006), the reasons behind employers' negative perceptions of works councils (Mueller & Stegmaier, 2020), and the nature of the relationship between management and works councils (Jirjahn et al., 2011). However, there remains a dearth of empirical work examining how these dimensions of works council heterogeneity influence specific outcomes, such as how participation in decision-making, management's attitude toward works councils, or the quality of the relationship between management and works councils affects firm-level results in various domains.

When examining outcomes beyond training, the heterogeneity of works councils has been shown to produce varied effects. For instance, studies indicate that the participation of works councils in decision-making processes impacts outcomes such as technological and organizational innovation (Frick, 2002; Dilger, 2002), employee turnover (Dilger, 2002, 2006), productivity, wages, and profitability (Pfeifer, 2011; Addison et al., 2020), financial stability and labor productivity growth (Addison et al., 2020), and environmental investments (Askildsen et al., 2006). These studies suggest that the influence of works councils depends significantly on their involvement in particular decisions, the type of works council in place, and the nature of their relationship with management.

In the context of further training, Wiß (2017), drawing on data from the European Company Survey, finds that firms where employee representatives are involved in training decisions or regularly receive training themselves are more likely to assess further training needs and provide time off for training for specific employee subgroups. In the German institutional

context, Weis (2022) demonstrates that the share of employees participating in further training is higher in firms where works councils play a role in these decisions, although their participation does not significantly increase the likelihood of training being provided. Additionally, a recent report notes that in Germany, firms where works councils proposed the use of short-time work (*Kurzarbeit*) for further training had a higher propensity to adopt this measure (Pusch & Seifert, 2022).

The findings from previous literature make it plausible to expect heterogeneous effects of works councils on apprenticeship training outcomes, depending on their specific characteristics. However, these effects have not yet been empirically analyzed. This paper contributes to the literature by examining how works council heterogeneity affects apprenticeship training outcomes. Given that works councils are often tasked with many responsibilities but have limited resources, we hypothesize that firms where works councils participate in apprenticeship training decisions and are successful in enforcing their agenda are more likely to engage in training, train with higher intensity, and retain a greater share of apprenticeship graduates compared to firms where works councils are less involved or less successful in their efforts.

4 Data and descriptive statistics

4.1 Data

For our empirical analysis, we rely on data from the BIBB Establishment Panel on Training and Competence Development (BIBB Training Panel) (Friedrich & Gerhards, 2017). This dataset is a representative, annual survey of 3,500 to 4,000 German firms, offering detailed information on firms' training activities and a wide range of firm characteristics. While other surveys, such as the WSI-Works Council Survey, provide insights into the topics works councils focus on or the nature of their relationship with management, no dataset simultaneously

offers information on both apprenticeship training outcomes and works council heterogeneity.

To address this gap, we incorporated additional variables into the 2015 wave of the BIBB Training Panel, capturing the heterogeneity of works councils, including their designated fields of activity and their success in enforcing agendas. This allows us to explore the connection between works council characteristics and apprenticeship training outcomes. To the best of our knowledge, this dataset is the only one that provides both comprehensive information on works council heterogeneity and firm-level apprenticeship training behavior.

4.1.1 Works Councils' Heterogeneity

We measure works council heterogeneity using nine dummy variables, each capturing whether the works council participates in decisions within specific fields of activity. These activities include recruitment of new employees, job reductions, measures to balance work and family life, promotions, investments in new technologies, decisions on further training, and three apprenticeship training-related decisions (whether the firm offers apprenticeship training, the number of apprenticeships offered, and the number of apprentices retained post-training). Additionally, we create a composite dummy variable that takes the value of 1 if the works council participates in at least one of the three apprenticeship training decisions and 0 otherwise.

To assess the second dimension, works council success in enforcing its agenda, we construct a dummy variable from an original categorical variable ranging from "not successful at all" to "very successful." This dummy variable equals 1 if the works council is rated as "mostly" or "very successful" and 0 otherwise.

While works councils exhibit heterogeneity along dimensions beyond participation in decision-making and success in enforcing agendas—such as their relationship with management, available resources, expertise in specific areas, or the duration since their establishment—participation and success are key dimensions that we identify as crucial for influencing

firm decisions. Future research could benefit from more granular data, capturing the extent to which different tasks occupy the works council's portfolio and assessing the success of the works council in each specific field of activity.

4.1.2 Apprenticeship Training

We utilize several indicators to capture different stages of the apprenticeship training process within firms. These include the decisions on "whether to train apprentices," "how many apprentices to train," the "share of successful graduates retained," and the "share of apprentices who drop out."

The variable *Training participation* is set to 1 if the firm had at least one apprentice (in a BBiG/HwO-recognized occupation) as of December 31, 2014, and 0 otherwise. The *Number of apprentices* refers to the total number of apprentices (in BBiG/HwO-recognized occupations) on the same date. The *Retention rate* is calculated as the share of successfully graduated apprentices retained by the firm out of all apprentices who passed their final exams. Additionally, the *Share of dropouts* is defined as the ratio of apprentices who dropped out in 2014 to the total number of apprentices on December 31, 2014, plus graduates and dropouts during that year.

4.1.3 Control Variables

The BIBB Training Panel includes a robust set of control variables. Since works council rights under the Works Constitution Act expand with firm size, and bargaining power typically increases with firm size, we control for size effects by incorporating a categorical variable for firm size. Furthermore, we control for collective bargaining status, industry sector, whether the firm provides further training, and the firm's geographical location.

Additionally, we include several workforce-related controls, such as the share of fixed-term employees, the proportion of employees in skilled positions, and the average monthly wage of

skilled employees.[1]

4.2 Descriptives

4.2.1 Sample description

To examine the impact of works council heterogeneity on apprenticeship training outcomes, we restrict our sample to firms that have established works councils, leveraging the internal variation in works councils' participation in apprenticeship-related decisions and their success in enforcing their agendas. This study differs from most empirical research on works councils, which typically compares firms with works councils to those without. Such comparisons may be prone to bias due to unobserved factors that influence the presence of works councils in firms. By leveraging the "within-firm variation" in works council participation areas and agenda success, our analysis mitigates this specific source of selection bias.

Further sample restrictions arise due to the different outcome variables corresponding to specific subgroups of firms. As these outcome variables are only available for certain firms, each analysis is conducted on a slightly different subset of the data. Tables 6 and 7 (Appendix) present summary statistics for the relevant sample variables corresponding to each outcome variable. *Sample 1*, for "training participation," includes all firms with works councils and valid data on training participation, works council involvement in the decision of "whether to train apprentices," their success in enforcing their agenda, and all control variables (Appendix Table 6). *Sample 2*, for the "number of apprentices," includes all firms with works councils that had apprentices as of December 31st, with valid information on the number of apprentices, the works council's participation in decisions regarding "how many apprenticeships to offer," their success, and all control variables (Appendix Table 6). *Sample 3*, for the "retention rate," focuses on firms with works councils that had apprentices

[1]Data contains the average gross monthly wage of full-time employees in skilled jobs. For further analysis we generated a wage-variable by dividing the survey values by 100.

participating in graduation exams in 2014. This sample includes firms with valid data on the number of apprentices who took the final exams, the number of apprentices who successfully graduated, the works council's involvement in decisions regarding "how many apprenticeship graduates to retain," their success, and all control variables (Appendix Table 7). *Sample 4*, for the "share of dropouts," includes all firms with works councils that had apprentices as of December 31st and information on apprentices who dropped out. This sample captures data on works council participation in at least one decision related to apprenticeship training, their success, and all control variables (Appendix Table 7). These restrictions result in four distinct samples, ranging from 1,046 to 1,669 observations.

4.2.2 Descriptive statistics

Works councils engage with a wide range of topics, and the likelihood of their involvement in specific areas of decision-making varies significantly (Table 1). Nearly 90% of works councils participate in decisions related to the recruitment of new employees and job cuts, while less than 20% are involved in decisions regarding investments in new technologies.

A similar heterogeneity exists within the realm of apprenticeship training. Approximately 50% of works councils are involved in decisions regarding the retention of apprentices, while participation decreases to about 26% for decisions concerning the number of apprenticeships offered. Moreover, 33% of works councils take part in determining whether the firm engages in apprenticeship training at all. These initial findings demonstrate that works councils are not as homogeneous as previously assumed. The presence of a works council in a firm does not automatically imply that it is highly successful or actively involved in key decisions related to apprenticeship training. This observed heterogeneity in the functioning of works councils suggests that diverse effects on apprenticeship training outcomes are plausible and warrants further analysis.

The second dimension of works councils' heterogeneity focuses on the variation in their

Table 1: Share of firms in which works councils participate in certain decisions

	1	2	3	4	5	6	7	8	9	10
Total	90.0%	87.9%	72.9%	63.3%	59.7%	50.3%	43.4%	32.6%	25.8%	18.3%
1 to 19	76.0%	86.1%	65.3%	58.7%	56.9%	50.7%	29.2%	34.1%	18.2%	4.2%
20 to 99	94.7%	86.5%	73.0%	60.1%	54.2%	43.1%	49.0%	29.3%	26.6%	19.3%
100 to 199	97.5%	94.1%	74.6%	62.0%	64.8%	51.9%	50.6%	38.8%	38.7%	29.0%
200 and more	98.0%	90.1%	85.7%	81.6%	75.5%	67.5%	49.7%	33.9%	27.7%	33.8%
Agric., mining, energy	97.7%	94.7%	82.9%	82.7%	90.3%	59.8%	58.0%	52.4%	55.6%	43.0%
Manufacturing	90.1%	97.8%	65.4%	40.3%	61.9%	47.0%	28.6%	32.0%	23.1%	20.5%
Construction	90.1%	100.0%	42.9%	40.9%	48.5%	43.7%	43.4%	32.2%	21.4%	41.7%
Trade, Repair Services	92.6%	98.9%	63.2%	38.9%	71.4%	45.5%	47.9%	49.9%	35.2%	21.1%
Business Services	57.7%	64.5%	35.5%	38.7%	31.6%	25.2%	24.3%	15.8%	16.5%	10.2%
Personal Services	96.8%	94.7%	85.0%	87.4%	83.2%	79.9%	19.3%	42.7%	46.0%	12.0%
Medical Services	94.0%	89.3%	79.0%	65.0%	58.8%	54.2%	61.3%	27.3%	14.0%	18.5%
Public Services & Education	97.2%	84.5%	88.1%	78.3%	54.0%	43.2%	54.4%	33.3%	25.7%	20.2%
East	94.3%	89.5%	83.6%	48.9%	72.9%	63.1%	56.6%	36.4%	37.5%	23.4%
West	89.3%	87.6%	71.0%	65.8%	57.4%	48.1%	41.1%	32.0%	23.8%	17.4%

Notes: Column titles are as follows: (1) Hiring of new employees, (2) Job cuts, (3) Balance work and family life, (4) Promotions, (5) At least one apprenticeship topic, (6) Number of apprentices to be retained, (7) Further training, (8) To train apprentices or not, (9) Number of apprenticeships offered, (10) New technologies. BIBB-QP 2015, design weighted, N=1547 (only firms with works councils, with valid information on works councils' participation for all nine decisions and on the works councils' success).

Table 2: Works councils' success in enforcing their agenda

	Not at all successful	Not very successful	Mostly successful	Very successful
Total	0.7%	12.7%	70.9%	15.8%
1 to 19	0.1%	22.9%	69.5%	7.5%
20 to 99	0.7%	9.4%	71.5%	18.5%
100 to 199	1.8%	8.5%	67.9%	21.8%
200 and more	0.1%	5.5%	74.1%	19.7%
Agriculture, Mining, Energy	0.0%	7.8%	62.3%	29.9%
Manufacturing	0.9%	14.7%	71.4%	13.0%
Construction	2.5%	7.6%	73.2%	16.7%
Trade, Repair	0.5%	1.4%	80.6%	17.5%
Business Services	0.0%	13.2%	77.1%	9.7%
Personal Services	0.4%	32.7%	57.5%	9.5%
Medical Services	1.0%	5.6%	78.6%	14.8%
Public Services, Education	0.6%	10.8%	64.9%	23.8%
East	1.6%	10.1%	69.4%	18.9%
West	0.5%	13.1%	71.1%	15.3%

Note: BIBB-QP 2015, design weighted, N=1547 (only firms with works councils, with valid information on the works councils' participation for all nine decisions and on the works councils' success).

success in enforcing their agenda within firms (Table 2). Table 3 presents apprenticeship training outcomes based on works councils' participation in the relevant decisions and their success in enforcing their agendas.[2] In firms where the works council participates in the decision of whether to engage in apprenticeship training, the share of firms training at least one apprentice is significantly higher compared to firms where the works council does not participate in this decision. However, the number of apprentices is significantly higher in firms where the works council participates in decisions regarding the number of apprenticeships offered, compared to firms where works councils do not participate in this decision.

The retention rate is notably higher in firms where works councils are involved in decisions concerning the number of apprenticeship graduates to be retained. In contrast, the

[2]Table 3 reports for each outcome, mean and standard deviation for the firms with a participating (successful) works council and for firms with a not-participating (rather not successful) works council, as well as the difference, and the number of observations. The variation of the latter results from the varying samples for each outcome (see Appendix Table 6 and Table 7).

Table 3: Outcomes on apprenticeship training by works councils' participation and success

	Training participation	Number of apprentices	Retention rate	Dropout share
Participating				
Mean	0.487	20.122	0.760	0.028
SD	0.500	70.310	0.358	0.093
Not-participating				
Mean	0.408	12.329	0.712	0.022
SD	0.492	54.656	0.405	0.060
Difference	0.079***	7.793**	0.048**	0.007
Successful				
Mean	0.433	15.204	0.719	0.025
SD	0.496	62.474	0.390	0.074
Rather not successful				
Mean	0.425	9.769	0.855	0.039
SD	0.496	29.032	0.308	0.135
Difference	0.008	5.435	-0.136***	-0.014**
Observations	1669	1268	1046	1299

Note: BIBB-QP 2015, design weighted, firms with works councils and valid information on the works councils' success and participation in the corresponding decision (training participation — whether to train or not; number of apprentices — number of apprenticeships to offer; retention rate — number of apprenticeship graduates to be retained; share of dropouts — at least one apprenticeship topic). *, **, *** significant at the 10, 5, and 1 percent levels.

difference in the share of dropouts between firms with works council participation in at least one apprenticeship-related decision and those without is small and statistically insignificant.

Regarding the success of works councils, both the retention rate and the share of dropouts are significantly lower in firms where works councils are successful in enforcing their agendas, compared to firms with less successful works councils. However, there are no significant differences in training participation or the number of apprentices based on works council success.

Particularly noteworthy is the finding of a lower retention rate in firms with successful works councils, which offers initial insights into the dynamics at play. Successful works councils may prioritize the interests of incumbent employees over those of apprenticeship graduates, potentially offering long-term employment opportunities to a smaller group of graduates while limiting the overall number of retained apprentices. This approach could be aimed at protecting existing employees from competition with new apprenticeship graduates

and securing stable employment for both the established workforce and a select group of graduates.

5 Identification Strategy

We estimate the impact of the presence of a works council on a firm's decision to provide apprenticeship training using a regression adjustment approach. Specifically, we run regression models where the dependent variable y captures different training outcomes, such as the training decision, the number of apprentices it hires, and the retention rate (i.e., the share of apprentices offered a skilled worker contract after graduation) on a binary indicator for the presence of a works council that is active in the particular field of apprenticeship training. The regression model is specified as follows:

$$\mathrm{y}_i = \alpha + \beta\,\mathrm{WC}_i + \mathbf{X}_i\gamma + \mathrm{WoCo}_i \cdot (\mathbf{X}_i - \bar{\mathbf{X}}_i)\delta + \epsilon_i \tag{1}$$

where y_i is our dependent variable of interest, and WoCo_i is a binary treatment variable indicating the presence of a works council in firm and its activity in the corresponding field of apprenticeship training (i.e., $\mathrm{WoCo}_i = 1$ if a works council is present and actively involved, and 0 otherwise), $\mathbf{X}_i$ is a vector of control variables that account for observable characteristics of firm i, including firm size, industry, location of the firm, skilled worker wages, employment structure and the provision of further training. To account for heterogeneity in treatment effects, we include an interaction of the treatment indicator with the covariates centered about $\bar{\mathbf{X}}_i$. Our primary focus is on estimating β, which is the average treatment effect on the treated (ATET) of the presence of a works council on the corresponding dependent variable of interest. Note that we apply non-linear regression adjustment methods when the dependent variable is binary (logit), a fraction (fractional logit) or a count variable (Poisson), which is

the case of a firm's training decision, the share of retained apprentices and the number of apprentices it hires (Negi & Wooldridge 2021).[3]

Our estimates can be interpreted causally under the assumption that no unobserved factors are correlated with both works council activity in a particular domain and the dependent variable. However, to the extent that unobserved factors contained in the error term (ϵ) are correlated with the presence or activity of works councils (WC), our treatment effects may be biased. To the best of our knowledge, there are no existing studies that specifically address the determinants of works councils' decisions regarding their engagement across various fields of activity. We recognize that these decisions are unlikely to be as good as random, and as such, concerns about potential endogeneity bias remain unresolved in the absence of random variation in works council activities, which is not practically achievable. Consequently, we refrain from interpreting our estimated treatment effects as strictly causal. Instead, we interpret them as reflecting an association between the treatment variable and the dependent variables within a selection-on-observables framework, which accommodates heterogeneity in treatment effects.

6 Empirical results

Our findings are summarized in Table 4, which contains the results of 12 regression analyses examining four key outcomes related to the apprenticeship process within firms with works councils, which are i) the decision to engage in training, ii) the number of apprentices a firm hires, iii) the retention rate after graduation, and iv) the share of dropouts during the apprenticeship period. The findings suggest that works council participation in apprenticeship-related decisions is associated with a 2.9 percentage point higher likelihood of training participation and a 5.7 percentage point higher retention rate of apprentices, and a

[3]We estimate these models using the "teffects" command in Stata (Stata.com 2023).

0.6 percentage point higher dropout rate.

In terms of the decision to participate in apprenticeship training, our results suggest that a works council involved in this decision tends to promote apprenticeship programs and marginally increase the probability of training apprentices. However, neither the training decision nor the number of hired apprentices are associated with the success of a works councils. Conversely, works councils' success in enforcing their agenda is linked to a significantly lower retention rate and a lower share of dropouts, while we find no significant association on training participation or the number of apprentices. Thus, our results are in line with the notion that the mere presence of works councils does not unambiguously affect outcomes related to apprenticeship training. The significance of accounting for the heterogeneity of works councils is most evident when analyzing the retention of apprentices. While works councils that participate in the relevant decision-making process are associated with a higher retention rate, works councils deemed successful in enforcing their agenda are linked to a lower retention rate. The higher retention rate in cases of works council participation could reflect the councils' role in advocating for apprenticeship graduates to be retained by the training firm and offered long-term employment prospects. Additionally, works councils may seek to strengthen internal labor markets, safeguard firm-specific skills, and ensure a return on investment in apprenticeship training, all of which could contribute to the observed increase in retention when they are involved in the decision. Conversely, the lower retention rate observed in firms with successful works councils may reflect their prioritization of the interests of already-employed skilled workers. In this scenario, works councils may be protecting incumbent workers from competition with apprenticeship graduates, thereby securing long-term employment for existing employees and a select group of apprentices. Collectively, these findings suggest that successful works councils may focus primarily on representing the interests of current employees, and perhaps a small subset of apprenticeship graduates, to the detriment of the broader pool of apprentices seeking retention and employment opportunities.

Finally, successful works councils are more likely to make use of their co-determination rights regarding the quality of apprenticeship training, which in turn may increase the satisfaction of apprentices with the delivery of training in the firm. The effect size is also of economic significance: while the average drop-out share is firms with works councils that are rather not successful is close 3.9 percent (Table 3), the drop-out share is lowered by 2.7 percentage points if works councils are successful according to our regression model.

Several factors could explain why the dropout rate is lower in firms with apprenticeship-active and successful works councils. First, these firms may conduct a more thorough recruitment and selection process, potentially driven by the higher recruitment costs associated with firms with works councils (Wenzelmann et al., 2017). Second, the general working conditions and apprenticeship training framework may be superior in these firms, similar to the factors contributing to fewer days of absenteeism (Pfeifer, 2020), reducing the need for apprentices to quit or mitigating conflicts that lead to dropouts. Third, improved communication and mediation in cases of conflict may also prevent dropouts, particularly when works councils are actively involved in apprenticeship decisions and are successful in maintaining a high level of training quality within the firm.

Moreover, our findings suggest that coverage by a collective bargaining agreement is strongly associated with the number of apprentices being trained, possibly through specific training agreements, which is in line with previous empirical studies (e.g. Dustmann & Schönberg 2009).

The influence of works council heterogeneity—both in terms of success and participation—on the firm's decision about whether and how many apprentices to train should not be overstated. Instead, works councils' involvement in the decision to engage in training may simply ensure that management does not reduce training participation in firms where councils are active.

Overall, our findings reveal varying directions, magnitudes, and significance levels for

Table 4: Results of multivariate models (ATET) for selected outcomes on apprenticeship training

	Training participation	Apprentices	Retention rate	Dropout share
WoCo	0.029*	3.065	0.057***	0.006*
	(0.0176)	(5.6468)	(0.0203)	(0.0035)
Successful works council	-0.004	-0.886	-0.069**	-0.027**
	(0.0267)	(7.6492)	(0.0271)	(0.0120)
Collective bargaining agreement	-0.017	11.770***	-0.013	-0.001
	(0.0215)	(4.0616)	(0.0240)	(0.0052)
N	1669	1268	1046	1299

Note: BIBB-QP 2015, robust standard errors in parentheses, firms with works councils, with valid information on the works councils' success and participation in the corresponding decision (whether to train or not (Col 1); number of apprenticeships to offer (Col 2); number of apprenticeship graduates to be retained (Col 3); at least one apprenticeship topic (Col 4)); Controls: firm size, industry, west Germany, share of employees in skilled jobs, monthly wage for employees in skilled jobs/100, share of fixed-term workers, further training; *, **, *** significant at the 10, 5, and 1 percent levels.

Table 5: Results of multivariate models (ATET) for selected outcomes on apprenticeship training (without public sector)

	Training participation	Apprentices	Retention rate	Dropout share
WoCo	0.033*	4.919	0.051**	0.009**
	(0.0189)	(6.7547)	(0.0224)	(0.0041)
Successful works council	-0.029	9.153*	-0.082***	-0.033**
	(0.0241)	(5.0284)	(0.0290)	(0.0141)
Collective bargaining agreement	-0.024	13.683***	-0.035	-0.002
	(0.0238)	(4.5757)	(0.0266)	(0.0064)
N	1306	1003	833	1026

Note: BIBB-QP 2015, robust standard errors in parentheses, firms with works councils, without public sector, with valid information on the works councils' success and participation in the corresponding decision (whether to train or not (Col 1); number of apprenticeships to offer (Col 2); number of apprenticeship graduates to be retained (Col 3); at least one apprenticeship topic (Col 4)); Controls: firm size, industry, west Germany, share of employees in skilled jobs, monthly wage for employees in skilled jobs/100, share of fixed-term workers, further training; *, **, *** significant at the 10, 5 and 1 percent levels.

works council participation, success, and the presence of a collective bargaining agreement. The type of works council (in terms of its participation and success) and the context in which it operates (e.g., the presence of collective bargaining agreements) play a meaningful role in shaping firms' decisions regarding apprenticeship training.

6.1 Robustness analysis

Works councils are more frequently present in the public sector and tend to exert a stronger influence there than in the private sector. Consequently, many empirical studies examining the relationship between works councils and various outcomes exclude the public sector from their analysis. In this paper, we have thus far included all economic sectors in our analyses, contending that works council participation in apprenticeship training decisions and their success does not systematically vary by sector. To ensure that the results presented are not disproportionately driven by the public sector, Table 5 reports findings based on a subsample that excludes this sector. Apart from the restricted sample, the empirical approach remains consistent with that used in Table 4. Additionally, as with previous analyses, alternative models that incorporate only a reduced set of basic control variables (firm size, industry, and regional location in West Germany) are presented in Table 16 (Appendix).[4]

The results are largely consistent with those of the full sample. However, one notable difference is the marginally positive association between successful works councils and the number of apprentices at the 10 percent significance level, which was not statistically significant in the full sample (Table 4). In line with the presentation in Tables 1 to 3 and Tables

[4]Summary statistics for Samples 1 to 4, excluding the public sector, are presented in Table 10 and Table 11 (Appendix). Information regarding the share of firms in which works councils participate in specific decisions, as well as data on the success of works councils, is provided for the same subsample in Table 13 and Table 14 (Appendix). Apprenticeship training outcomes, disaggregated by works council participation and success, for the subsample excluding the public sector, are presented in Table 15 (Appendix). Additionally, Table 12 (Appendix) reports the results of Probit regressions on the presence of works councils (Column 1), works council participation in selected decisions related to apprenticeship training (Columns 2 to 5), and works council success (Column 6), for the sample excluding the public sector.

6 to 8, the Appendix provides supplementary information for the subsample excluding the public sector. This includes summary statistics, data on the key variables relating to works council heterogeneity, apprenticeship outcomes by works council participation and success, and Probit regression results on works council presence, participation, and success.

7 Conclusion

Apprenticeship training is a key component of Germany's education system and labor market, with about half of a cohort pursuing it to qualify for a specific occupation and enter the workforce. For firms, the main motivation is to meet future skilled labor needs, while also supporting a steady supply of skilled workers for the broader economy. Understanding the factors driving firms' decisions to initiate and retain apprenticeship training is crucial for shaping the future supply of skilled labor. Works councils, with significant co-determination rights over training policies, have been studied for their influence on apprenticeship outcomes, primarily comparing firms with and without councils. This paper, however, focused on the heterogeneity within works councils, examining their involvement in training decisions and success in advancing their agenda, and their impact on apprenticeship outcomes.

Using representative firm-level data from the BIBB Establishment Panel on Training and Competence Development (BIBB Training Panel), our descriptive analysis reveals that approximately 25% to 50% of works councils participate in decisions related to apprenticeship training. This suggests that apprenticeship training is not a self-evident priority for the majority of works councils. Additionally, we observe significant variation in works councils' success, indicating that success cannot be assumed to be a uniform characteristic. Our regression analysis shows that works council participation in apprenticeship-related decisions is associated with a marginally higher propensity for training participation and a higher retention rate, though it does not significantly affect the number of apprentices trained.

Moreover, we find that the number of apprentices is significantly higher in firms covered by collective bargaining agreements. While successful works councils are linked to fewer dropouts, they are also associated with lower retention of apprenticeship graduates. This suggests potential conflicts of interest, as safeguarding incumbent employees may come at the expense of retaining apprentices, possibly to avoid future layoffs.

These findings suggest that apprenticeship training outcomes are influenced by the characteristics of works councils, including their success in enforcing their agenda and their participation in relevant decisions, as well as the broader context in which they operate (e.g., collective bargaining agreements). Consequently, our results highlight that the conclusions of previous studies on the effects of works councils on apprenticeship training cannot be universally applied to all firms with works councils. Our data provide evidence that the implicit assumption of homogeneous works councils in prior studies does not hold. By accounting for two key dimensions of works council heterogeneity, our analysis offers new insights into the relationship between works councils and apprenticeship training.

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Appendix

Table 6: Summary statistics for Sample 1 "training participation" & Sample 2 "Number of apprentices"

	Sample 1: Training Participation				Sample 2: Number of apprentices			
Variable	Mean	SD	Min	Max	Mean	SD	Min	Max
Works council participate in training decision	0.308	0.462	0	1				
Works council participate in number of apprentices					0.292	0.455	0	1
Successful works council	0.889	0.314	0	1	0.890	0.313	0	1
Collective bargaining	0.767	0.423	0	1	0.741	0.438	0	1
1 to 19 empl.	0.366	0.482	0	1	0.178	0.382	0	1
100 to 199 empl.	0.106	0.308	0	1	0.175	0.380	0	1
200+ empl.	0.133	0.340	0	1	0.212	0.409	0	1
Industry								
Agriculture, Mining, Energy	0.015	0.120	0	1	0.027	0.163	0	1
Construction	0.024	0.153	0	1	0.048	0.213	0	1
Trade, Repair	0.071	0.257	0	1	0.152	0.359	0	1
Business Services	0.105	0.307	0	1	0.119	0.324	0	1
Personal Services	0.132	0.339	0	1	0.171	0.376	0	1
Medical Services	0.230	0.421	0	1	0.084	0.278	0	1
Public Services, Education	0.342	0.474	0	1	0.254	0.436	0	1
West Germany	0.870	0.337	0	1	0.864	0.343	0	1
Workforce characteristics								
Share of skilled workers	0.597	0.262	0	1	0.665	0.232	0	1
Wage for employees in skilled jobs/100	27,082	5,900	10	50	27,615	5,842	13	50
Further training	0.852	0.355	0	1	0.992	0.089	0	1
Share of fixed-term workers	0.100	0.196	0	1	0.068	0.109	0	0.918
N	1669				1268			

Note: BIBB-QP 2015, design-weighted.

Table 7: Summary statistics for Sample 3 "retention rate" & Sample 4 "share of dropouts"

Variable	Sample 3: Retention Rate				Sample 4: Share of Dropouts			
	Mean	SD	Min	Max	Mean	SD	Min	Max
Works council participating in ...								
Amount of retained apprentices	0.482	0.500	0	1				
Training decision (yes/no)					0.682	0.466	0	1
Successful works council	0.877	0.329	0	1	0.886	0.318	0	1
Collective bargaining agreement	0.717	0.451	0	1	0.748	0.434	0	1
Firm size								
1 to 19	0.079	0.270	0	1	0.178	0.383	0	1
100 to 199	0.197	0.398	0	1	0.172	0.378	0	1
200 and more	0.292	0.455	0	1	0.215	0.411	0	1
Industry								
Agriculture, Mining, Energy	0.029	0.168	0	1	0.026	0.160	0	1
Construction	0.053	0.225	0	1	0.046	0.210	0	1
Trade/Repair	0.155	0.362	0	1	0.146	0.354	0	1
Business Services	0.130	0.337	0	1	0.115	0.319	0	1
Personal Services	0.080	0.272	0	1	0.164	0.370	0	1
Medical Services	0.108	0.310	0	1	0.105	0.306	0	1
Public Services, Education	0.269	0.444	0	1	0.258	0.438	0	1
West Germany	0.872	0.334	0	1	0.864	0.343	0	1
Share of employees in skilled jobs	0.645	0.221	0	1	0.656	0.236	0	1
Wage for employees in skilled jobs/100	28,187	5,901	13	50	27,489	5,823	13	50
Further training	0.995	0.070	0	1	0.992	0.088	0	1
Share of fixed-term workers	0.077	0.113	0	0.873	0.070	0.110	0	0.918
N	1046				1299			

Note: BIBB-QP 2015, design weighted.

Table 8: Multivariate regression analyses

	Works council	Train	No. appr.	Retention	1+ topics	Success
Collective bargaining agreement	0.186***	0.004	0.030	0.005	-0.007	0.062***
	(0.012)	(0.031)	(0.030)	(0.031)	(0.029)	(0.019)
20 to 99	0.248***	-0.009	0.131*	0.122	0.108	0.095
	(0.025)	(0.080)	(0.069)	(0.081)	(0.081)	(0.066)
100 to 199	0.513***	-0.006	0.134*	0.130	0.130	0.090
	(0.029)	(0.080)	(0.070)	(0.082)	(0.082)	(0.066)
200 and more	0.628***	0.040	0.135**	0.199**	0.175**	0.109*
	(0.026)	(0.077)	(0.066)	(0.078)	(0.079)	(0.064)
Agric., Mining, Energy	0.014	0.119	0.143*	0.059	0.088	0.070*
	(0.044)	(0.076)	(0.075)	(0.070)	(0.059)	(0.039)
Construction	-0.131***	-0.022	-0.112	-0.128	-0.138	-0.023
	(0.040)	(0.088)	(0.076)	(0.088)	(0.086)	(0.064)
Trade/Repair	-0.040	0.007	0.016	-0.072	-0.046	0.078***
	(0.028)	(0.058)	(0.056)	(0.057)	(0.053)	(0.029)
Business Services	-0.063***	-0.083**	-0.045	-0.075*	-0.045	0.036
	(0.025)	(0.043)	(0.042)	(0.044)	(0.041)	(0.028)
Personal Services	-0.016	0.033	0.070	0.029	-0.009	-0.005
	(0.027)	(0.053)	(0.052)	(0.051)	(0.046)	(0.036)
Medical Services	0.063***	-0.099***	-0.061*	-0.138***	-0.146***	-0.013
	(0.022)	(0.038)	(0.037)	(0.039)	(0.037)	(0.027)
Public Services/Education	0.166***	0.000	-0.008	-0.032	-0.030	0.042*
	(0.023)	(0.039)	(0.037)	(0.038)	(0.035)	(0.024)
Introduction of new technologies	-0.031**	0.042	0.021	0.001	0.015	0.032*
	(0.014)	(0.026)	(0.025)	(0.026)	(0.024)	(0.017)
Further training	0.085***	-0.024	-0.021	0.065	0.030	0.057
	(0.031)	(0.093)	(0.089)	(0.091)	(0.084)	(0.051)
Share of fixed-term workers	-0.137***	0.030	-0.111	-0.096	-0.076	-0.099
	(0.044)	(0.102)	(0.103)	(0.101)	(0.093)	(0.060)
Share of employees in skilled jobs	-0.002	-0.071	0.080	0.078	0.054	0.002
	(0.026)	(0.051)	(0.050)	(0.051)	(0.048)	(0.033)
Wage for employ. in skilled jobs/100	0.009***	-0.001	0.001	0.003	0.002	-0.001
	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
West Germany	-0.054***	-0.004	-0.061**	-0.088***	-0.035	0.036*
	(0.016)	(0.032)	(0.030)	(0.030)	(0.030)	(0.020)
N	2979	1547	1547	1547	1547	1547

Notes: BIBB-QP 2015, average marginal effects based on Probit regressions on the existence of works council (Col 1), the works councils' participation on selected decisions on apprenticeship training (Col 2 to Col 5), and the works councils' success (Col 6)

Table 9: Results of multivariate models (ATET) for selected outcomes on apprenticeship training (reduced set of control variables)

	Training participation	Number of apprentices	Retention rate	Dropout share
Participation of works council in the corresponding decision	0.030*	2.546	0.065***	0.006*
	(0.0178)	(5.8466)	(0.0210)	(0.0036)
Successful works council	0.007	-0.158	-0.066**	-0.025**
	(0.0280)	(8.3105)	(0.0291)	(0.0128)
Collective bargaining agreement	-0.014	11.793***	-0.012	-0.001
	(0.0219)	(4.0507)	(0.0247)	(0.0055)
N	1669	1268	1046	1299

Notes: see Table 4; Controls: firm size, industry, west Germany; *, **, *** significant at the 10, 5, and 1 percent levels.

Table 10: Summary statistics for Sample 1 "training participation" and Sample 2 "number of apprentices" (without public sector)

Variable	Sample 1				Sample 2			
	Mean	SD	Min	Max	Mean	SD	Min	Max
Works council participating in ...								
Whether to train	0.352	0.478	0	1				
No. of apprentices					0.278	0.448	0	1
Successful works council	0.865	0.342	0	1	0.880	0.325	0	1
Collective bargaining agreement	0.736	0.441	0	1	0.740	0.439	0	1
Firm size								
1 to 19	0.308	0.462	0	1	0.233	0.423	0	1
100 to 199	0.127	0.333	0	1	0.185	0.389	0	1
200 and more	0.168	0.374	0	1	0.221	0.415	0	1
Industry								
Agriculture, Mining, Energy	0.022	0.147	0	1	0.036	0.187	0	1
Construction	0.036	0.187	0	1	0.064	0.245	0	1
Trade, Repair	0.108	0.311	0	1	0.204	0.403	0	1
Business Services	0.160	0.367	0	1	0.160	0.366	0	1
Personal Services	0.201	0.401	0	1	0.229	0.420	0	1
Medical Services	0.350	0.477	0	1	0.113	0.317	0	1
West Germany	0.866	0.340	0	1	0.861	0.346	0	1
Share of employees in skilled jobs	0.599	0.280	0	1	0.686	0.216	0	1
Wage for employees in skilled jobs/100	28.001	6.152	10	50	27.695	6.348	13	50
Further training	0.976	0.154	0	1	0.995	0.071	0	1
Share of fixed-term workers	0.122	0.229	0	1	0.065	0.110	0	0.918
N	1306				1003			

Notes: BIBB-QP 2015, design weighted, without public sector.

Table 11: Summary statistics for Sample 3 "retention rate" & Sample 4 "share of dropouts" (without public sector)

Variable	Sample 3				Sample 4			
	Mean	SD	Min	Max	Mean	SD	Min	Max
Works council participating in ...								
Share of retained apprentices	0.493	0.500	0	1				
At least one apprenticeship decision					0.693	0.462	0	1
Successful woco	0.853	0.354	0	1	0.882	0.323	0	1
Collective bargaining agreement	0.685	0.465	0	1	0.746	0.436	0	1
Firm size								
1 to 19	0.088	0.284	0	1	0.225	0.418	0	1
100 to 199	0.206	0.405	0	1	0.183	0.387	0	1
200 and more	0.314	0.464	0	1	0.231	0.422	0	1
Industry								
Agric., Mining, Energy	0.040	0.196	0	1	0.035	0.184	0	1
Construction	0.073	0.260	0	1	0.062	0.241	0	1
Trade, Repair	0.212	0.409	0	1	0.197	0.398	0	1
Business Services	0.178	0.383	0	1	0.155	0.362	0	1
Personal Services	0.110	0.313	0	1	0.221	0.415	0	1
Medical Services	0.148	0.355	0	1	0.141	0.348	0	1
West Germany	0.858	0.349	0	1	0.861	0.346	0	1
Share of employees in skilled jobs	0.664	0.200	0.010	1	0.678	0.218	0	1
Wage for employees in skilled jobs/100	28,370	6,459	13	50	27,567	6,293	13	50
Further training	0.994	0.077	0	1	0.995	0.069	0	1
Share of fixed-term workers	0.078	0.112	0	0.873	0.066	0.110	0	0.918
N	833				1026			

Note: BIBB-QP 2015, design weighted, without public sector.

Table 12: Probit regressions (without public sector)

	Works council	Training (yes/no)	Apprentices	Number of apprentices to be retained	At least one apprenticeship topic	Success
Collective bargaining agreement	0.209***	-0.010	0.059*	0.033	0.010	0.076***
	(0.013)	(0.035)	(0.034)	(0.035)	(0.032)	(0.021)
20 to 99	0.236***	-0.134	0.056	-0.015	-0.088	0.095
	(0.027)	(0.102)	(0.094)	(0.101)	(0.091)	(0.081)
100 to 199	0.500***	-0.142	0.036	0.017	-0.052	0.072
	(0.031)	(0.102)	(0.094)	(0.101)	(0.090)	(0.081)
200 and more	0.620***	-0.074	0.054	0.078	-0.015	0.103
	(0.028)	(0.099)	(0.091)	(0.098)	(0.087)	(0.080)
Agriculture, Mining, Energy	0.007	0.126*	0.144*	0.060	0.087	0.067*
	(0.043)	(0.076)	(0.075)	(0.070)	(0.058)	(0.039)
Construction	-0.133***	-0.018	-0.116	-0.128	-0.145*	-0.026
	(0.039)	(0.088)	(0.076)	(0.089)	(0.087)	(0.064)
Trade, Repair	-0.039	0.070	0.021	-0.078	-0.055	0.079***
	(0.027)	(0.059)	(0.057)	(0.058)	(0.054)	(0.028)
Business Services	-0.071***	-0.074*	-0.044	-0.079*	-0.045	0.034
	(0.024)	(0.043)	(0.042)	(0.044)	(0.041)	(0.028)
Personal Services	-0.020	0.039	0.069	-0.042	-0.017	-0.005
	(0.027)	(0.053)	(0.053)	(0.052)	(0.047)	(0.036)
Medical Services	0.054**	-0.089**	-0.059	-0.147***	-0.149***	-0.015
	(0.022)	(0.039)	(0.038)	(0.039)	(0.038)	(0.028)
Introduction of new technologies	-0.034**	0.055*	0.030	0.010	0.016	0.038**
	(0.015)	(0.029)	(0.028)	(0.029)	(0.027)	(0.019)
Further training	0.107***	-0.038	-0.027	0.045	-0.003	0.074
	(0.034)	(0.097)	(0.094)	(0.096)	(0.090)	(0.054)
Share of fixed-term workers	-0.071	-0.073	-0.142	-0.019	-0.130	-0.069
	(0.051)	(0.117)	(0.119)	(0.116)	(0.106)	(0.070)
Share of employees in skilled jobs	-0.010	-0.080	0.061	0.065	0.030	0.010
	(0.029)	(0.059)	(0.057)	(0.059)	(0.055)	(0.039)
Wage for employ. in skilled jobs/100	0.011***	-0.002	0.001	0.002	0.001	0.000
	(0.001)	(0.003)	(0.003)	(0.003)	(0.002)	(0.002)
West Germany	-0.067***	-0.015	-0.062*	-0.101***	-0.045	0.018
	(0.018)	(0.036)	(0.035)	(0.037)	(0.034)	(0.024)
N	2507	1228	1228	1228	1228	1228

Note: BIBB-QP 2015, average marginal effects, without public sector, Col 1: with valid information on the works councils' existence, Col 2 to Col 6: firms with works councils, with valid information on the works councils' participation for all nine decisions and on the works councils' success.

Table 13: Share of firms in which works councils participate in certain decisions (without public sector)

	1	2	3	4	5	6	7	8	9	10
Total	87.8%	88.9%	68.2%	58.7%	61.4%	52.5%	40.0%	32.4%	25.8%	17.7%
1 to 19	73.3%	83.7%	60.7%	62.9%	62.9%	55.7%	25.9%	36.2%	20.1%	3.4%
20 to 99	93.0%	91.5%	67.2%	46.4%	52.5%	43.3%	48.1%	28.7%	28.7%	21.0%
100 to 199	96.9%	92.7%	69.0%	54.4%	62.6%	49.1%	46.0%	35.0%	33.5%	24.9%
200 and more	97.7%	90.6%	84.0%	79.3%	76.0%	67.9%	45.5%	31.0%	24.9%	32.7%
Agriculture/Mining/Energy	97.7%	94.7%	82.9%	82.7%	90.3%	59.8%	58.0%	52.4%	55.6%	43.0%
Manufacturing	90.1%	97.8%	65.4%	40.3%	61.9%	47.0%	28.6%	32.0%	23.1%	20.5%
Construction	90.1%	100.0%	42.9%	40.9%	48.5%	43.7%	43.4%	32.2%	21.4%	41.7%
Trade/Repair Services	92.6%	98.9%	63.2%	38.9%	71.4%	45.5%	47.9%	49.9%	35.2%	21.1%
Business Services	57.7%	64.5%	35.5%	38.7%	31.6%	25.2%	24.3%	15.8%	16.5%	10.2%
Personal Services	96.8%	94.7%	85.0%	87.4%	83.2%	79.9%	19.3%	42.7%	46.0%	12.0%
Medical Services	94.0%	89.3%	79.0%	65.0%	58.8%	54.2%	61.3%	27.3%	14.0%	18.5%
East	91.9%	86.3%	77.4%	43.8%	80.8%	67.7%	50.4%	42.2%	37.1%	25.3%
West	87.2%	89.3%	66.8%	61.0%	58.4%	50.1%	38.4%	30.9%	24.0%	16.5%

Notes: Column titles are as follows: (1) Hiring of new employees, (2) Job cuts, (3) Balance work and family life, (4) Promotions, (5) At least one apprenticeship topic, (6) Number of apprentices to be retained, (7) Further training, (8) To train apprentices or not, (9) Number of apprenticeships offered, (10) New technologies. BIBB-QP 2015, design weighted, N=1228 (only firms with works councils, without public sector, with valid information on works councils' participation for all nine decisions and on the works councils' success).

Table 14: Works councils' success in enforcing their agenda (without public sector)

	Not at all successful	Not very successful	Mostly successful	Very successful
Total	0.7%	13.3%	72.7%	13.3%
1 to 19	0.1%	24.1%	69.6%	6.2%
20 to 99	0.8%	8.2%	74.9%	16.2%
100 to 199	2.3%	10.1%	67.4%	20.2%
200 and more	0.2%	5.6%	78.3%	15.8%
Agriculture, Mining, Energy	0.0%	7.8%	62.3%	29.9%
Manufacturing	0.9%	14.7%	71.4%	13.0%
Construction	2.5%	7.6%	73.2%	16.7%
Trade, Repair	0.5%	1.4%	80.6%	17.5%
Business Services	0.0%	13.2%	77.1%	9.7%
Personal Services	0.4%	32.7%	57.5%	9.5%
Medical Services	1.0%	5.6%	78.6%	14.8%
East	1.6%	12.5%	71.9%	14.0%
West	0.5%	13.4%	72.9%	13.3%

Note: BIBB-QP 2015, design weighted, N=1228 (only firms with works councils, without public sector, with valid information on the works councils' participation for all nine decisions and on the works councils' success).

Table 15: Outcomes on apprenticeship training by works councils' participation and works councils' success (without public sector)

	Training participation	Number of apprentices	Retention rate	Share of dropouts
Participating woco Mean	0.466	24.118	0.716	0.030
Participating woco SD	0.499	80.887	0.377	0.098
Not-participating woco Mean	0.503	13.140	0.771	0.027
Not-participating woco SD	0.500	59.956	0.353	0.067
Diff	-0.037	10.978**	-0.055**	0.003
Successful woco Mean	0.499	17.077	0.711	0.026
Successful woco SD	0.500	70.597	0.380	0.077
Rather not successful woco Mean	0.428	9.686	0.936	0.050
Rather not successful woco SD	0.496	18.618	0.175	0.152
Diff	0.071*	7.391	-0.225***	-0.024***
N	1306	1003	833	1026

Note: BIBB-QP 2015, design weighted, firms with works councils, without public sector, with valid information on the works councils' success and participation in the corresponding decision (training participation – whether to train or not; number of apprentices – number of apprenticeships to offer; retention rate – number of apprenticeship graduates to be retained; share of dropouts – at least one apprenticeship topic), $*, **, ***$ significant at the 10, 5 and 1 percent levels.

Table 16: Results of multivariate models (ATET), without public sector, reduced set of control variables

	Training participation	Number of apprentices	Retention rate	Share of Dropouts
Participation of works council in the corresponding decision	0.035*	4.511	0.053**	0.009**
	(0.1922)	(7.2145)	(0.0229)	(0.0042)
Successful works council	-0.009	9.937**	-0.086***	-0.032**
	(0.0269)	(4.9883)	(0.0280)	(0.0156)
Collective bargaining agreement	-0.022	13.912***	-0.034	-0.003
	(0.0243)	(4.5947)	(0.0270)	(0.0067)
N	1306	1003	833	1026

Note: see Table 5; Controls: firm size, industry, west Germany; $*, **, ***$ significant at the 10, 5 and 1 percent levels.