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## Organisational justice, employee representation, and firm performance

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# Organisational justice, employee representation, and firm performance

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## Abstract

Empirical studies find that firms with employee representation have a higher productivity than firms without employee representation. The exact mechanisms for this consistent finding remain unclear, however. A frequent theoretical argument postulates that employee representation provides a safeguarding mechanism which improves justice perceptions of employees that in turn improves cooperation and performance. Using a German longitudinal linked employer-employee dataset, we show that employees in firms with a collective bargaining agreement have higher individual and shared justice perceptions. These higher justice perceptions contribute to the productivity premium of firms with collective agreement. In contrast, justice perceptions are not higher in firms with than in firms without a works council.

**Keywords:** works councils, collective bargaining, organisational justice, firm performance

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**Notes:** The used data is confidential and can be accessed via the Research Data Centre (FDZ) of the German Federal Employment Agency (BA) at the Institute for Employment Research (IAB): . For help with the data, our statistical programs in Stata, and replication studies contact Jens Mohrenweiser.

## 1. Introduction

Protecting employees from unfair treatment at work is one of the functions of employee representation (Freeman and Medoff 1984; Freeman and Lazear 1995; Jirjahn and Smith 2018 among many others). Perceptions of being treated fairly at the workplace matter for behavioural intentions and actions of employees' and are a relevant precondition for employees' willingness to cooperate, increase discretionary effort and share information. If organisational processes and managerial decisions contradict justice beliefs<sup>1</sup> of employees, the processes and outcomes are interpreted as misusing power and violating social norms. The consequence is a loss of trust and legitimacy of management leading to lower effort, withdrawal behaviour, and reduced cooperation of employees. The key argument is that employees' perceptions of fair or unfair treatment is an important determinant for behavioural actions such as quitting, information sharing, discretionary effort, and ultimately task performance (Zapata-Phelan et al. 2009; Poon 2012; Colquitt et al. 2013).

Employee representation can mitigate the risk of perceived unfairness of organisational processes and managerial decisions by negotiating, for example, working conditions that account for the preferences of employees, by establishing credible grievance-arbitration systems, and by insisting on fair and sustainable performance goals (Freeman and Medoff 1984; Smith 1991; Jirjahn and Smith 2018). Hence, employee representation can improve employees' fairness perceptions which in turn can lead to more cooperation and higher performance. Despite the relevance of the fairness argument in theoretical frameworks in industrial relations, the role of fairness perception in different industrial relations regimes has never been empirically scrutinised.

This paper analyses if employee representation indeed affects fairness perceptions of employees and if those perceptions matter bottom line for firm performance in Germany. Since employee representation by works councils and collective bargaining is positively associated with firm performance in Germany (Jirjahn and Müller 2014; Brändle 2017; Laroche 2021), this paper analyses the relevance of one mechanism – fairness perceptions – for the productivity premium of firms with an employee representation.<sup>2</sup> The paper uses a unique linked employer-employee dataset combining establishment level productivity and employment relation bodies with employees fairness perceptions

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<sup>1</sup> The paper will use the terms fairness and justice interchangeably like most of the literature (Colquitt et al. 2023).

<sup>2</sup> In addition to the justice mechanism, establishments with employee representation are associated with more productivity-enhancing HR-practices (Zwick 2008), more effective HR-practices (Broszeit et al. 2019; Jirjahn et al. 2024), attracting higher quality employees (Müller and Neuschäfer 2021) and lower employee turnover (Hirsch et al. 2010; Pfeifer, 2011; Grund et al. 2016; Fackler et al. 2024), all of which can contribute to the productivity premium beyond fairness perceptions.

for more than 1000 establishments. This unique dataset allows us to analyse the relation between establishment level characteristics, employee level responses, and establishment level outcomes.

The paper shows that employees in firms covered by a collective bargaining agreement have higher individual and shared fairness perceptions, particularly for the dimension distributional fairness and to a lesser extent procedural fairness. In contrast, collective agreements do not affect relational justice. Thereby, we empirically confirm that collective agreements are associated with higher fairness perceptions of employees. Afterwards, we show that fairness perceptions matter bottom-line for productivity of establishments, particularly distributional justice. Finally, we show that fairness perceptions absorb a modest part of the magnitude of the collective bargaining coefficient in productivity regressions. This last step demonstrates that fairness perceptions are indeed one mechanism through which employee representation affect establishment productivity. In contrast to collective agreements, works councils are not associated with higher fairness perceptions of employees.

The paper contributes to three strands of literature. First, it contributes to the literature of productivity effects of employee representation in Germany (Müller 2012; Jirjahn and Müller 2014; Müller 2015; Brändle 2017; Mohrenweiser 2021; Müller and Neuschäfer 2021; Jirjahn et al. 2024). The paper extends the literature by scrutinising the theoretically relevant mechanism perceptions of fair treatment for the productivity premium. Perceptions of fair treatment are a precondition for employees' willingness to cooperate and share information. The paper demonstrates that justice perceptions indeed matter for productivity and that they can explain a modest part of the performance premium of firms with collective bargaining agreement.

Secondly, the paper contributes to the literature of organisational justice by empirically demonstrating that individual justice perceptions matter for firm-level productivity, particularly the distributional justice dimension. This extends the organisational justice literature that predominantly focusses on individual-level responses. A few studies investigate firm-level productivity but only for procedural justice (Cropanzano et al. 2007; Colquitt et al. 2023).

Third, the paper complements an emerging literature of trust between works councillors and managers (Addison and Teixeira 2020; van den Berg et al. 2024a, b).<sup>3</sup> While this literature focusses on the relationship between works councillors and managers to implement effective policies, our paper extends this view to the perceptions of employees about the results of these negotiations and how the

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<sup>3</sup> Trust is the willingness to be vulnerable to a trustee irrespective of the ability to monitor or control the trustee's actions (Mayer et al. 1995). Justice perceptions are a relevant precondition that trust evolves (Kougiannou et al. 2021). Organisational justice is typically correlated between 0.4 and 0.6 with measures of trust (Colquitt et al. 2013).

results affect employees' perceptions of fair treatment in outcomes, processes, decisions and interactions.

## **2. Institutional Setting**

The German system of employment relations is dominated by two employee representation bodies: collective bargaining agreements predominantly at the industry-level and works councils at the establishment level.

Collective bargaining agreements are predominantly concluded between unions and employer associations at the industry level but a few firm-level agreements exist. About 50 percent of all employees are covered by an industry-level bargaining agreement and about eight percent by firm-level agreements (Bossler 2019). Collective agreements typically cover pay, pay grades, working hours, overtime pay, performance related pay, holiday pay, and continued payment in case of illness. If a firm is member of the pay negotiations body of the employer association, the collective agreement applies to all employees – union members and non-members alike (Schnabel 2020).

Works councils are establishment level employee representation bodies with statutory rights for information, consultation, and codetermination based on the Works Constitution Act (WCA). Works councils are not automatic but need to be established by the workforce of an establishment in establishments with five or more employees. However, only about a third of eligible firms have a works council but the coverage increases in firm size (Oberfichtner and Schnabel 2019). The WCA requires works councils and employers to work in a spirit of cooperation and mutual understanding considering the interest of both the establishment and its employees. The WCA grants the strongest codetermination rights, that are areas in which the employer needs the consent of works councils to change policies and practices, for working time regulations, technical devices designed to monitor employees, performance pay principles, and health and safety processes. Hence, works councils play a pivotal role in the design and implementation of HR-policies and HR-practices (Mohrenweiser 2022). In contrast, works councils neither have the right to bargain about wages nor to call for strike, these two areas are preserved for unions. Moreover, all employees in an establishment – not only union members – elect the works council every four years (Goerke and Pannenberg 2024).

## **3. Background Discussion**

This section briefly summarises the dimensions of organisational justice perceptions and discusses its effect on establishment productivity. Afterwards, the section elaborates on the impact of employee representation on fairness perceptions and how these fairness perceptions in turn affect establishment productivity.

### *The Impact of Individual and Organisational Fairness Perceptions on Productivity*

Organisational justice refers to the personal evaluation about the ethical and moral standing of managerial conduct (Cropanzano et al. 2007). The individual subjective perception of organisational justice comprises the three dimensions fair distribution of outcomes (distributive justice), fair processes and decisions (procedural justice), and fair treatment in personal interactions (relational justice).

Distributive justice reflects the appropriateness in decision outcomes typically based on the equity principle (Adams 1965). The equity principle states that employees compare their input into and the output out of an employment relationship amongst each other. An employee feels under-rewarded for example, if he or she receives the same reward despite of substantial higher efforts compared to co-workers. Outcomes can relate to any kind of payments and rewards, job security, social approval, promotions, and career opportunities.

Procedural justice refers to the processes by which outcomes are allocated and decisions justified. Procedural justice rules reflect appropriateness in decision-making processes, including consistency, accuracy and bias suppression in decisions, and the possibility to voice concerns and correct mistakes (Colquitt et al. 2013). Procedural justice perceptions relate to managerial authority and legitimacy, particularly that managers behaviour is congruent with their communicated intentions and that decisions are unbiased and based on facts (Tyler and Lind 1992).

Relational justice refers to perceptions of interpersonal treatment, or the degree to which employees are treated with dignity, politeness, and respect (Kim and Leung 2007). For example, the desire to name and blame people but not questioning underlying organisational processes and systems can put a strain on the relationship between managers and employees in terms of relational justice perception. Relational justice emphasises the one-to-one interactions predominantly with the line manager (Cropanzano et al. 2007).

Employee responses to perceived unfair treatment in each justice domain can comprise exit behaviour, withdrawal behaviour – reducing discretionary effort that goes beyond the remit of a job description – voice and rationalising the injustice (Turnley and Feldman 1999). Skarlicki and Folger (1997) report that perceptions of unfair treatment can lead to employee responses such as time and material wasting, taking sick leave, disobeying instructions, or spending time on personal matters at work. Particularly highly committed employees who devote additional discretionary effort are more likely to take an oppositional stance in response to perceived unfair treatment (Brockner et al. 1994). Employees experiences of unfair treatment in the past determine their responses and are pivotal for trust and cooperation (Colquitt and Zipey 2015). Accordingly, organisational justice predicts the effectiveness

with which workers discharge their job duties such as task performance and extra-role behaviour (see review by Colquitt et al. 2013). Norms of conduct such as equity, consistency, and respect help employees particularly to manage in situations of ambiguity and uncertainty (Colquitt and Zipey 2015).

#### *The Role of Fairness Perceptions for the Productivity Enhancing Effect of Employee Representation*

Employee representation matters for organisational justice perceptions. According to the incomplete contract theory, an employee representation implements fairer rules and procedures and a fairer distribution of outcomes which subsequently lead to higher productivity. However, the theory does not touch on relational justice.

The incomplete contract theory postulates that managers are occasionally tempted to violate fairness norms when career opportunities arise. This managerial opportunism refers to situations of vulnerability when employees invest in an employment relationship by increasing effort or sharing information and managers can decide after the investment if they reciprocate or seize the opportunity to achieve career goals on the expense of the employees' investment (Smith 1991; Jirjahn and Smith 2018). For example, when the employer introduces a performance bonus for achieving performance targets, employees might respond by increasing their effort-level substantially and the increased output exceeds what can be sold. In this situation, managers might be tempted to seize the opportunity and reduce the workforce to cut costs and thereby improve the competitiveness of the firm. From an employee perspective however, an increased risk of losing the job because of higher effort is seen as an unfair treatment.<sup>4</sup>

Smith (2006) summarises several situations in which managers might deliberately violate norms of fairness for their own career goals. Deliberate actions for managers own advantage comprise authority hoarding, information flow opportunism, and credit taking for work of inferiors in order to justify own pay raises and bonuses. In addition, managers might accidentally breach fairness perceptions. Accidental actions include situations in which the line manager leaves and the successor does not know implicit and unwritten obligations and expectations. Further accidental situations include external competitive pressure and changes in strategic directions that inhibit line managers to honour implicit obligations.

Even if employers plan to stick to the initial agreed promises and fairness norms, they cannot always credibly signal their intention to employees, which is known as the employer commitment problem

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<sup>4</sup> Further examples include: if employees share information that can increase the efficiency of processes but the more efficient process also increases the risk of job cuts. Another example is if managers change the performance targets and production norms in response to substantially higher output. If the new target implies that employees take home the same pay as before the introduction of the performance bonus but have to work with substantially higher effort, the new target is seen as unfair as it leaves employees worse-off.

(Smith 1991; Jirjahn and Smith 2018). All these situations can be avoided in firms with strong employee representation based on union bargaining power or statutory rights. If employers have to negotiate changes in performance pay rules with employee representatives, employee representatives will object against changes that disadvantage employees and prevent managers to change rules and procedures unilaterally. Hence, employees have an additional layer safeguarding their interests – a layer that reduces the likelihood of perceived unfair decisions, processes, and outcomes. Consequently, increased perceived fairness leads to a higher willingness to cooperate and share information. Employees perceive work arrangements negotiated by employee representatives with statutory or factual power as more credible and trustworthy than similar management-led arrangements which is particularly relevant in situations characterized by ambiguity and lack of transparency (Jirjahn and Smith 2018). Moreover, an employee representation can monitor managerial actions and holding managers accountable for misusing power (Dow 1987). For example, monitoring remuneration schemes for managers and transparent processes for calculating managers' pay can lead to a higher sense of fairness.

Hence, the incomplete contract theory postulates that firms without an employee representation have a higher likelihood that employees perceive decisions, processes, and outcomes as unfair because of deliberate or accidental actions by managers. Employee representation provides a safeguarding mechanism for employees' interests that reduces the likelihood of perceived unfair treatment. Consequently, employees are more likely to increase discretionary effort, cooperate, and share information leading to higher organisational performance in firms with compared to firms without an employee representation.

Despite the relevance of fairness arguments in the theoretical literature, empirical studies about the relation between fairness perceptions and employee representation are scarce. The two exceptions show that employees in works council firms perceive their wages as fairer than employees in firms without a works council (Pfeifer 2014) and that distributional fairness perceptions do not differ significantly between employees in firms with and without a works council (Mohrenweiser and Pfeifer 2023).<sup>5</sup> More importantly, mediation models showing that increased fairness perception consequently affect employee or firm-level outcomes are missing.

#### **4. Data, Variables, Empirical Method**

We use the Linked Personnel Panel (LPP) a German linked-employer employee dataset for the years 2012, 2014, 2016, and 2018. The LPP is a representative survey for German establishments with 50

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<sup>5</sup> Besides these studies for Germany, Kougiannu et al. (2015) show for the UK that justice perceptions are positively associated with the subjective effectiveness of British works councils (joint consultation committees).



and more employees and stratified regarding four regions, five industries, and four firm-size categories. The LPP asks establishments about their business strategy, business indicators, HR-policies, and HR-practices. Afterwards, a selection of employees in participating firms is surveyed about their perception of HR-practices, working conditions, traits, and attitudes. The establishment questionnaires were collected via personal interviews and the employee questionnaires via telephone interviews, both by a professional survey institute (Ruf et al. 2020).

We restrict the data to establishments with at least three employee responses without missing values in order to calculate shared fairness perceptions. This minimum number of employees threshold balances two opposing problems: constructing a reasonable indicator for shared perceptions of employees in an establishment vs. keeping a large part of establishments in the estimation sample to avoid a selection problem on the establishment side. Typical thresholds in the literature using similar datasets vary between three (Ho and Kuvaas 2020) and five (Wood and Ogbonnaya 2018) employees per establishment. The restriction reduces the number of observations from 11,269 employees in 1,712 establishments to 10,312 employees in 1,221 establishments with a median number of eleven employees per establishment.<sup>6</sup>

The dependent variables are establishment productivity, employee justice perceptions, and shared justice perceptions. Productivity is measured in the establishment questionnaire and defined as the log of value added per employee, measured as total sales minus material input costs in Euros per employee. Organisational justice perceptions are measured in the employee questionnaire with three questions of the organisational justice short scale developed by Kim and Leung (2007). The scale is reliable with alpha 0.65 which can be considered as reliable for a short scale. Employees evaluate the justice questions on a 1-5 scale with higher numbers representing higher fairness perceptions. The three questions are the sub-dimensions of organisational justice: distributional justice, procedural justice, and relational justice (Kampkötter et al. 2016). The questions are summarised in Appendix Table A1 together with the descriptive statistics for all variables on the establishment level. For the shared justice perceptions, we aggregate the average individual justice perceptions on the establishment-year level. Appendix Table A2 provides the descriptive statistics on the employee level.

The key explanatory variables are two dummy variables for the presence of the two predominant employee representation bodies in Germany: collective bargaining agreements and works councils. The control variables for the establishment level regressions comprise the number of employees, capital intensity, workforce composition, voluntary staff involvement committees, firm ownership, competition pressure on the product market, legal structure, region, and industry. In addition, because works councils can influence working conditions (Grund et al. 2024; Jirjahn et al. 2024), the selection

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<sup>6</sup> We test the robustness of this restriction and find robust estimates when adjusting the threshold.

of employees (Müller and Neuschäffer 2021), and wages (Addison et al. 2010; Hirsch and Müller 2020), we include such potentially endogenous variables in some regressions. Working conditions comprise the job characteristics physical work, decision autonomy, task variety, interdependent work and being available outside working hours. We account for selection of employees into firms with employee representation with the Big 5 personality traits, self-reported health, well-being, and the average wage per employee in the establishment. The personality and working condition variables come from the employee questionnaire and we aggregate the average of each variable on the establishment-year level. For the regressions on the individual level, we additionally include the characteristics of the individual respondents' gender, age, education, children at home, living with a partner, having a permanent work contract, weekly working hours, having a position with supervising responsibilities, and the salary of the individual participant.

We test our hypotheses with a series of OLS estimations on the individual and establishment level. OLS estimations have the advantage of a simple interpretation and calculation of indirect effects in mediation models. Nevertheless, we get qualitatively the same results if we run ordered probit models to account for the ordered nature of the individual justice perception variables and mixed effect models to account for the nested structure of the data (employees within firms).

## **5. Findings**

### *Individual and Shared Justice Perceptions*

For organisational justice and its dimensions, Table 1 presents the averages on the individual and establishment level and shows the averages for each employee representation regime on the firm-level. The organisational justice score is significantly higher in firms with a collective bargaining contract than in firms without a collective bargaining contract irrespectively of the works council status. The same holds for procedural justice. For distributinal justice, employees in firms without a collective agreement and without a works council have significantly lower distributinal justice perceptions than employees in all other regimes. Relational justice is rather equal throughout all four regimes but significantly higher if a collective bargaining agreement is present but no works council.

The descriptive differences in justice perceptions can be driven by establishment characteristics which are controlled for in the regression models presented in Table 2. Table 2 presents the results for the dependent variables organisational justice (Panel A) and its dimensions distributinal justice (Panel B), procedural justice (Panel C) and relational justice (Panel D). In each panel, models 1 and 2 show the individual level and models 3 and 4 the establishment level regressions (shared justice perceptions). Models 1 and 3 show the coefficients of the employee representations without and model 2 and 4 with the potentially endogenous variables. Potentially endogenous variables comprise salary, personality

and job characteristics, all of which might be influenced by employee representation. The detailed regression output is available in the appendix.

The estimations for individual and shared justice perceptions show a qualitatively similar pattern for all dependent variables. For the organisational justice perceptions (Panel A), the presence of a works council has no significant effect but working in an establishment covered by a collective bargaining agreement has a significant positive impact on individual and shared organisational justice perceptions. This holds for the model with and without the potentially endogenous variables. The coverage of a collective bargaining agreement increases the organisational justice perceptions by 0.147 on the one-to-five Likert scale (Model 3). This corresponds with a four percent increase at the mean of organisational justice. A quantitatively similar pattern emerges for the procedural justice (Panel C). In contrast, the magnitude of the effect of collective bargaining contract on distributional justice is about twice as large as for procedural justice (Panel B). Moreover, the magnitude of the works council coefficient on distributional justice is also substantially larger than for procedural justice but remains insignificant. This finding holds even if we control for wages as a potential endogenous variable in models 2 and 4. Controlling for wages might be particularly interesting for the distributional justice dimension to scrutinise whether perceptions of distributional justice are predominantly driven by higher wages associated with collective bargaining agreements (Gürtzgen 2009; Brändle 2024) and works council (Addison et al. 2010; Hirsch and Müller 2020).<sup>7</sup> For relational justice (Panel D), both employee representation bodies are insignificant and the coefficients are close to zero in magnitude.

### *Productivity Estimations*

Table 3 presents the productivity estimations on the establishment level. Model 1 shows the regression without justice. This model establishes the total effects of works councils and collective bargaining agreements for the following mediation analysis. The total effect for works councils on establishment productivity is 17.2 percent and for collective bargaining 13.4 percent. This regression confirms that our basic model produces point estimates in the range of previous studies albeit the collective bargaining agreement coefficient is on the upper end (see Mohrenweiser 2022 for a review).

Model 2 adds the organisational justice score to the regression. The organisational justice score is significant and establishments with a one standard deviation higher shared justice perception have an about seven percent higher productivity. Moreover, including the organisational justice scale reduces the collective bargaining coefficient by about two percentage points from 0.126 to 0.103 while the works council effect remains unaffected. In other words, the justice coefficient absorbs about 19

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<sup>7</sup> Mohrenweiser and Pfeifer (2023) show that this pattern for distributional justice also holds for several indicators of relative differences in salary to peers within and outside the firm.

percent of total effect of collective bargaining on productivity.<sup>8</sup> This is the indirect effect or mechanism that collective bargaining improves organisational justice perceptions which in turn increase productivity. We estimate the significance of the indirect effect using a bootstrapping procedure with 1000 repetitions following Coutts and Hayes (2023).

Splitting the justice perception in its three dimensions (Model 3) reveals that the organisational justice coefficient in Model 2 is predominantly driven by distributional justice while procedural and relational justice are insignificant. The indirect effect of collective bargaining via distributional justice on productivity is also significant on the one percent level. More importantly, distributional justice absorbs about 35.5 percent of the total effect of collective bargaining on productivity. Moreover, the works council coefficient also changes slightly when including the three justice dimensions (Model 1 to Model 3). However, we cannot infer that distributional justice absorbs a part of the works council effect on productivity because the first stage that is the effect of works councils on distributional justice (Table 2) is insignificant (Coutts and Hayes 2023).

Models 4-6 in Table 3 add the potentially endogenous variables for job characteristics, personality and wages. The number of observations fell slightly because of missing information about total establishment wages. However, the changing sample does not qualitatively change the inference from Models 1-3. In Model 5, organisational justice remains a significant determinant for productivity and absorbs about 14 percent of the effect of collective bargaining on productivity. Moreover, distributional justice remains the key driver of organisational justice perceptions (Model 6) and absorbs about 24 percent of the total effect. The indirect effect is statistically significant with  $p < 0.01$ . Hence, even if we control for wage differences between establishments, shared distributional justice perceptions remain relevant for establishment performance and absorb a substantial part of the effect of collective agreements on establishment productivity.

#### *A More Nuanced View on Employee Representations*

Collective bargaining agreements and works councils are separate entities with distinct activities but do not work in isolation (Behrens 2009). More importantly, significant interaction effects between collective bargaining and works councils in productivity estimations are well documented in the empirical literature (Hübler and Jirjhan 2003; Jirjahn and Müller 2014; Brändle 2017). While we can replicate a significant interaction effect in the productivity regression, the interaction between collective agreements and works councils remains an insignificant determinant for all justice dimensions. Consequently, the interaction does not provide additional insights for the understanding of justice perceptions.

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<sup>8</sup>  $((\exp^{0.126} - 1) - \exp^{0.103} - 1) / (\exp^{0.126} - 1) = 0.192$

Moreover, collective bargaining agreements can be negotiated on the industry and firm-level. For both types of agreements, Table 4 Panel A presents the analysis with the justice scores as dependent variables and Panel B with productivity as dependent variable. Panel A shows that both types of collective agreements are significant determinants of organisational, distributional and procedural justice perceptions but not relational justice. Moreover, the magnitude of the industry-level agreements on organisational justice scores is about 50 percent higher than for firm-level agreements. This difference is entirely driven by distributional justice for which the coefficient of industry-level agreements is more than twice as large in magnitude than for firm-level agreements. In contrast, the coefficients of both types of agreement on procedural justice are similar. In the productivity regressions (Table 4, Panel B), however, only industry-level collective bargaining agreements are significant which is in line with the literature (Jirjahn and Müller 2014; Brändle 2017). Consequently, justice perceptions are a relevant mechanism for the productivity effect of industry-level collective agreements but not firm-level agreements. Justice perceptions account for about 16 percent of the overall productivity effect of industry-level agreements.

Finally, some firms also have voluntary establishment level staff involvement committees that are not formal works councils and do not have statutory rights (Oberfichtner and Schnabel 2019; Lammers and Giebel 2024). While staff involvement committees might also influence employees' fairness perception, they are insignificant in all regressions (Appendix Tables 3 and 4).

#### *Robustness Checks*

We check the robustness of the results in several ways. First, we run all regressions for firms with less than 300 employees because larger firms are more likely to have both types of employee representation but we get qualitatively similar to the results presented in Tables 3 and 4. Second, we test the robustness of the findings using different estimation methods (multi-level model for justice perceptions, ordered probit models for individual justice perceptions) and estimate qualitatively the same results. Third, we also experiment with leaving the potentially endogenous variables one-by-one out of the regression but the results remain robust. Including wages has the most substantial impact on the collective agreement coefficient, though. Forth, we experiment with the minimum number of employees threshold and get qualitatively the same results if we either include all establishments (no restriction) or restrict the sample to establishments with at least five employees without missing values. The only exception is that firm-level agreements become insignificant in the justice perception regressions if we remove the minimum number of employees restriction. Finally, we run the justice perceptions regressions also for the sample of firms that do not report sales and input costs which are necessary to calculate the productivity variable. The results remain robust for this sample as well.

## 6. Discussions and Conclusion

The paper shows three relevant results: first, that a collective bargaining agreement improves employees' justice perceptions, in particular the distributional and to a lesser extent the procedural justice dimension while relational justice remains unaffected. Second, justice perceptions matter for establishment level productivity, particularly the distributional justice dimension. Third, justice perceptions mediate the impact of collective bargaining agreements on productivity and explain about 19 percent of the total productivity effect of collective agreements. The mediating effect is predominantly driven by distributional justice.

The paper confirms the theoretical argument that has long been discussed in the literature but never been empirically scrutinised: that employee representations improve employees' perceived fairness of processes and outcomes (Freeman and Medoff 1984; Dow 1987; Smith 1991; Jirjahn and Smith 2018; Mohrenweiser 2022). Perceptions of fairer treatment can lead to more cooperation, additional effort, and information sharing resulting in an establishment level productivity premium. Our findings confirm that the mechanism indeed exists and that the mechanism accounts for a modest part of the productivity premium of employee representation. The effect is mainly driven by industry-level collective bargaining agreements but not works councils or firm-level agreements. This finding provides an additional rationale why firms still choose collective bargaining agreements as they improve employees' fairness perceptions. Moreover, the mechanism through industry-level agreements supports the view that industry-level collective agreements remove distributional conflicts from the firm-level (Hübler and Jirjahn 2003).

However, the finding that collective agreements are significantly associated with fairness perceptions but not works councils might sound puzzling given that works councils are not only associated with a higher productivity premium but should also have more substantial impact in the working-life of employees than collective bargaining agreements. Works councils negotiate work agreements at the establishment level covering for example working time regulations, the implementation of pay grades, and HR-policies and HR-practices regarding health and safety, performance pay principles, and monitoring. This puzzling finding might be down to the politicization of the workforce effect that has been extensively discussed in the union-job satisfaction literature (Bryson et al. 2004; for recent surveys see: Goerke 2020 and Aertz and Heywood 2022).

The politicization of the workforce effect postulates that employee representatives need a latent discontent amongst members in order to rally employees and strengthening their bargaining power. Slightly dissatisfied employees are more likely to support the position of an employee representation

in negotiations. Hence, the politization effect might induce lower fairness *perceptions* despite objectively fairer procedures and outcomes in firms with employee representation.

The politization might be stronger for works councils than for collective bargaining agreements. If a firm is covered by a collective bargaining agreement in Germany, the agreement applies to all employees in a firm – regardless of the union membership of an employee. Hence, while the benefits of higher and fairer wages apply to all employees in an establishment, only the union members are exposed to politization via union rhetoric and strike action. Union members accounted for about 16.5 percent of all German employees in 2018 (Schnabel 2020). Hence, only a minority of participants in the employee survey might be union members.<sup>9</sup> In contrast, all employees within an establishment elect the works council and the works council needs their support. Works councils might also have more frequent controversial discussions because the topics covering information, consultation, and codetermination are more strongly associated with the daily challenges and plights of employees than collective agreements. Hence, politicising the workforce might be more distorting for works councils because all employees in works council firms are affected by the works council while unions affect only union members. The direction of this counter effect is also evident when separating industry-wide and firm-level bargaining agreements. The positive effect of collective bargaining agreements on justice perceptions are substantially stronger for industry-wide collective agreements. Nevertheless, we need to leave it to future researchers to evaluate this potential counter effect.

Another noteworthy finding is that distributional justice dominates the productivity effect of the organisational justice scale even if we control for the wage differences between firms. Perceived fairness in wages might stem from two sources. First, following the equality principle, collective agreements might reduce wage inequality within firms. Wage inequality that cannot be explained by clear and transparent performance differences is typically regarded as unfair (Ockenfels et al. 2014). Second, following the equity principle, firms with a collective agreement might have more performance related pay assigned to clear and transparent performance indicators. Wage differences grounded in clear, transparent, and objective performance indicators are typically seen as fair (Breza et al. 2017). However, we need to leave it to future research to investigate which justice principle drives the perceived distributional justice in firms with a collective bargaining agreement.

The study has also a number of limitations. First, the indicators for the justice perception dimensions are single-items which might entail more measurement errors than multi-item scales. However, Jordan and Turner (2008) have shown that single-items for the dimensions of organisational justice are reliable and valid. Moreover, aggregating the justice dimensions to shared perceptions means that

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<sup>9</sup> Unfortunately, a specific question about union membership is not available to investigate this argument in depth.

several employees rate the justice climate within a firm. Second, the dataset has been used in a pooled-cross-section rather than a longitudinal analysis because the key explanatory variables are rarely changing over time within an establishment. Analysing changes in the employee representation variables is not possible in our study because we find too few status changes in employee representation within establishments over time. Moreover, analysing the introduction or abolishment of employee representation also alters the theoretical mechanism under investigation because establishments with newly introduced employee representation typically face initial conflicts between employee representation and management before settling into a long-term working relationship (Jirjahn et al. 2011, Müller and Stegmaier 2017). For example, Jirjahn et al. (2011) find an elevated level of conflicts for up to ten years after a new works council has been established – although the highest level of elevated conflicts occurs in the years immediately after establishing the works council. Accounting for this dynamic development requires longer panel data than the one we have. Hence, a simple longitudinal analysis identifies employee representation in a situation with an elevated level of conflicts affecting justice perceptions and productivity. Third, analysing establishment productivity typically reduces the number of establishment observations in the sample by about one third in most datasets because establishments are less likely to report the required indicators total sales and material costs. While the study shares this issue with all other studies and estimates similar point estimates as comparable studies, the study also confirms robust results when including firms without reported sales and inputs in the justice perceptions regressions.

The study analyses a complex relationship between establishment level institutions, individual responses and establishment level performance. It is the first to investigate the role of employee representation for employees' fairness perceptions and its consequential effect on establishment performance. The paper can pin down that fairness perceptions are one relevant mechanism for the effectiveness of employee representation.

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**Table 1:** Distribution of justice dimensions by employee representation.

	Individual level		Firm level			
	all	all	wc & cb	wc but no cb	no wc but cb	neither wc nor cb
Organisational justice	3.61	3.54	3.63***	3.45	3.53**	3.39
Distributional justice	3.51	3.35	3.57***	3.19***	3.17*	3.02
Procedural justice	3.41	3.38	3.43***	3.27	3.45**	3.31
Relational justice	3.92	3.89	3.89	3.88	3.98**	3.85
Observations	10312	1221	617	254	109	241

Notes: wc = works council; cb = collective bargaining agreement, \* p < 0.1; \*\* p < 0.05; \*\*\* p < 0.01 for t-tests of neither works council nor collective agreement against the other regimes. Source: LPP 2012-2018.

**Table 2:** Determinants of individual and shared justice perception.

<b>Panel A</b>		<b>organisational justice</b>		
Works Council	-0.003 (0.07)	-0.031 (0.84)	0.005 (0.11)	-0.022 (0.62)
Collective Agreement	0.124*** (3.81)	0.104*** (3.39)	0.147*** (4.24)	0.131*** (4.05)
Individual controls	yes	yes	no	no
Establishment controls	yes	yes	yes	yes
Personality controls	no	yes	no	yes
Wage and job controls	no	yes	no	yes
N (employees)	10312	8395		
N (establishments)			1221	1127
R squared	0.068	0.186	0.183	0.360
<b>Panel B</b>		<b>distributional justice</b>		
Works Council	0.033 (0.52)	0.003 (0.05)	0.075 (1.16)	0.031 (0.54)
Collective Agreement	0.299*** (5.92)	0.255*** (5.03)	0.295*** (5.61)	0.258*** (5.09)
Individual controls	yes	yes	no	no
Establishment controls	yes	yes	yes	yes
Personality controls	no	yes	no	yes
Wage and job controls	no	yes	no	yes
N (employees)	10312	8395		
N (establishments)			1221	1127
R squared	0.134	0.196	0.288	0.415
<b>Panel C</b>		<b>procedural justice</b>		
Works Council	-0.030 (0.67)	-0.069 (1.54)	-0.035 (0.76)	-0.060 (1.42)
Collective Agreement	0.096*** (2.70)	0.084** (2.34)	0.133*** (3.33)	0.114*** (3.05)
Individual controls	yes	yes	no	no
Establishment controls	yes	yes	yes	yes
Personality controls	no	yes	no	yes
Wage and job controls	no	yes	no	yes
N (employees)	10312	8395		
N (establishments)			1221	1127
R squared	0.033	0.115	0.086	0.242

*(continued next page)*

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<b>Panel D</b>	<b>relational justice</b>			
Works Council	-0.011 (0.28)	-0.028 (0.76)	-0.026 (0.64)	-0.038 (1.01)
Collective Agreement	-0.024 (0.76)	-0.027 (0.92)	-0.016 (0.48)	-0.021 (0.63)
Individual controls	yes	yes	no	no
Establishment controls	yes	yes	yes	yes
Personality controls	no	yes	no	yes
Wage and job controls	no	yes	no	yes
N (employees)	10312	8395		
N (establishments)			1221	1127
R squared	0.020	0.112	0.089	0.209

Note: dependent variables in italics above each panel, OLS regressions with standard errors clustered at the establishment level; t-values in paratheses. \* p < 0.1; \*\* p < 0.05; \*\*\* p < 0.01, Source: LPP 2012-2018.

**Table 3:** Productivity estimations at the establishment level.

	(1)	(2)	(3)	(4)	(5)	(6)
Works council	0.159*** (2.83)	0.158*** (2.85)	0.145** (2.66)	0.113** (2.10)	0.115** (2.14)	0.111** (2.07)
Collective agreement	0.126*** (2.67)	0.103** (2.16)	0.083* (1.72)	0.089** (2.00)	0.077* (1.69)	0.068 (1.48)
Organisational justice		0.150*** (3.16)			0.096* (1.95)	
Distributional justice			0.160*** (4.38)			0.072* (1.86)
Procedural justice			-0.030 (0.68)			0.033 (0.73)
Relational justice			-0.031 (0.67)			-0.038 (0.88)
Establishment controls	yes	yes	yes	yes	yes	yes
Wages	no	no	no	yes	yes	yes
Personality controls	no	no	no	yes	yes	yes
Job controls	no	no	no	yes	yes	yes
N	1221	1221	1221	1127	1127	1127
R squared	0.405	0.413	0.420	0.480	0.482	0.484

Dependent variable ln (value added per employee); OLS regressions with standard errors clustered at the establishment level; t-values in paratheses. \* p < 0.1; \*\* p < 0.05; \*\*\* p < 0.01, Source: LPP 2012-2018.

**Table 4:** Distinguishing industry-wide and firm-level agreements at the establishment-level.

<i>Panel A</i>	Organisational justice	Distributional justice	Procedural justice	Relational justice
Works Council	0.007 (0.17)	0.082 (1.28)	-0.035 (0.75)	-0.026 (0.64)
Industry-wide agreement	0.166*** (4.45)	0.351*** (6.36)	0.133*** (3.20)	0.014 (0.38)
Firm-level agreement	0.098** (2.10)	0.143** (1.99)	0.127** (2.32)	0.023 (0.52)
Establishment controls	yes	yes	yes	yes
Wage control	no	no	no	no
Personality & job controls	no	no	no	no
N (establishments)	1221	1221	1221	1221
R squared	0.185	0.295	0.086	0.089

<i>Panel B</i>	(1)	(2)	(3)
Works council	0.163*** (2.90)	0.162*** (2.90)	0.149*** (2.71)
Industry-wide agreement	0.158*** (3.05)	0.134** (2.52)	0.108** (2.03)
Firm-level agreement	0.039 (0.67)	0.025 (0.43)	0.021 (0.37)
Organisational justice		0.146*** (3.06)	
Distributional justice			0.153*** (4.16)
Procedural justice			-0.026 (0.59)
Relational justice			-0.029 (0.63)
Establishment controls	yes	yes	yes
Wage controls	no	no	no
Personality & job controls	no	no	no
N	1221	1221	1221
R squared	0.408	0.415	0.421

Dependent variables: in Panel A in first row, in Panel B  $\ln(\text{value added per employee})$ ; OLS estimations with standard errors clustered at the establishment level; t-values in parentheses. \*  $p < 0.1$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$ , Source: LPP 2012-2018.



**Appendix Table A1:** Variable definition and descriptive statistics at establishment level.

Variable	Definition (mean, sd)
<b>Main variables</b>	
Productivity	Establishment level value added defined as $\ln((\text{total sales} - \text{material input costs}) / \text{number of employees})$ (11.14; 0.71).
Organisational justice	Score based on three questions about distributional, procedural, and relational justice (details see below) based on the organisational justice perception scale developed by Kim and Leung (2007). Higher numbers indicate higher justice perceptions (3.54; 0.47).
Distributional justice	Five-point Likert scale for the question to employees: “The rules and procedures to make decisions are fair”, higher number indicate higher fairness perceptions of employee (3.35; 0.74).
Procedural justice	Five-point Likert scale for the question to employees: “I believe that I am being rewarded fairly at work”, higher number indicate higher fairness perceptions of employee (3.38; 0.52).
Relational justice	Five-point Likert scale for the question to employees: “The way my supervisor treats me is fair.”, higher number indicate higher fairness perceptions of employee (3.89; 0.45).
Works council	Dummy variable with the value 1 if the establishment has a works council, zero otherwise (0.71; 0.45).
Collective agreement	Dummy variable with the value 1 if the establishment is covered by a collective bargaining agreement, zero otherwise (0.60; 0.49).
<b>Establishment-level control variables</b>	
Staff involvement committee	Dummy variable equals 1 if the establishment as a staff involvement committee, zero otherwise (0.11; 0.31).
Firm size	Number of individuals employed at the establishment (596.08; 3232.13).
Capital	Log of capital stock of the establishment calculated using the replacement investments and the perpetual inventory method, calculation based on all available establishment observations in the IAB Establishment Panel (13.58; 2.60).
Female	Proportion of women among the workforce (0.29; 0.22).
High-skilled	Proportion of employees with a university degree among the workforce (0.12; 0.14).
Medium-skilled	Proportion of employees with an apprenticeship degree among the workforce (0.65; 0.23).
Apprentices	Proportion of employees currently undergoing apprenticeship training among the workforce (0.04; 0.04).
Part-time	Proportion of employees working part-time among the workforce (0.11; 0.16).
Owner-manager	Dummy variable with value 1 if the establishment is managed by the owner of the firm, zero otherwise (0.29; 0.45).
Modern technology	Dummy variable with value 1 if the establishment reports that machinery and equipment is state-of-the art or modern, zero otherwise (0.72; 0.45).
High-Competition	Dummy variable with value 1 if the firm report facing strong competition in the product market, zero otherwise (0.52; 0.50).

Limited	Dummy variable with value 1 if the establishment is a limited liability company or is limited by shares, zero otherwise (0.94; 0.23).
Foreign-owned	Dummy variable with value 1 if the majority owner of the establishment is not German, zero otherwise (0.18; 0.38).
Single-site	Dummy variable with value 1 if the establishment is a single-site company, zero otherwise (0.58; 0.49).
HR director	Dummy variable with value 1 if the HR function is represented among the board of directors, zero otherwise (0.43; 0.50).
<b>Wage and personality control variables (individual and establishment level)</b>	
Salary (individual-level only)	Gross pay in month before interview excluding bonus or one-time payments in Euros.
Total wages*	Total wage bill for June of an establishment multiplied by 12 (months) and 1.2 (social security contribution of the employer) and divided by the number of employees at the End of June (42481.25; 15720.76).
Agreeableness*	Score based on the Big Five Inventory short scale developed for the Socio-Economic Panel higher numbers for more friendly and compassionate individuals (4.04; 0.26).
Conscientiousness*	Score based on the Big Five Inventory short scale developed for the Socio-Economic Panel higher numbers for more efficient and organised individuals (4.38; 0.22).
Neuroticism*	Score based on the Big Five Inventory short scale developed for the Socio-Economic Panel higher numbers for more sensitive and nervous individuals (2.72; 0.34).
Openness*	Score based on the Big Five Inventory short scale developed for the Socio-Economic Panel higher numbers for more inventive and curious individuals (3.66; 0.28).
Extraversion*	Score based on the Big Five Inventory short scale developed for the Socio-Economic Panel higher numbers for more outgoing and energetic individuals (3.67; 0.33).
Health*	Subjective current health status on a five-point scale (3.62; 0.43).
Well-being*	Score based on the WHO subjective well-being score (4.09; 0.47).
<b>Job-level control variables (individual and establishment level)</b>	
Available*	Five-point Likert scale of the question: "How often do you receive business phone calls during your leisure time or how often do you answer business e-mails?", higher number for higher demand (2.04; 0.56).
Autonomy*	Five-point Likert scale of the question: "The job allows me to make a lot of decisions on my own", higher number for more autonomy (3.97; 0.48).
Task variety*	Five-point Likert scale of the question: "The job involves a great deal of task variety ", higher number for more variety (4.21; 0.45).
Interdependence1*	Five-point Likert scale of the question: "Other jobs depend directly on my job ", higher number for more interdependence (3.78; 0.59).
Interdependence2*	Five-point Likert scale of the question: "The job depends on the work of many different people for its completion ", higher number for more interdependence (3.35; 0.61).
Physical*	Five-point Likert scale of the question: "The job requires a lot of physical effort. ", higher number for more physical effort (2.51; 0.88).

<b>Stratification variables (firm-level)</b>	
Firm size categories	Three dummy variables indicating the number of employees in the establishment. Categories are: below 99 employees, 100-249, 250-499, above 500 employees.
Sector categories	Four dummy variables indicating five broad sectors metalworking and electronic industries; other manufacturing industries; retail and transport; services for firms; information and communication services.
Regional categories	Three dummy variables indicating four regions North, East, West and South.
Year	Three dummy variables identifying the year of the questionnaire, 2012, 2014, 2016 and 2018.
<b>Individual-level control variables (individual-level regressions only)</b>	
Age	Age of the employee in years.
Male	Dummy variable with the value 1 if the respondent identifies as male, zero otherwise.
Partner	Dummy variable with the value 1 if the employee lives in a permanent relationship, zero otherwise.
Kids	Number of children below the age of 14 living in the household.
University	Dummy variable with the value 1 if the employee has a university degree or a degree of an advanced technical college (Master craftsmen) , zero otherwise.
German	Dummy variable with the value 1 if the employee has the German citizenship, zero otherwise.
Permanent	Dummy variable with the value 1 if the employee has a permanent employment contract, zero otherwise.
Manager	Dummy variable with the value 1 if the employee has supervising responsibilities, zero otherwise.
Working hours	Typical weekly working hours including overtime hours.

N = 1221. \* N = 1127.

**Appendix Table 2:** Descriptive statistics on the individual-level.

Variable name	mean	sd
Organisational justice	3.61	0.80
Distributional justice	3.51	1.16
Procedural justice	3.41	1.00
Relational justice	3.92	0.95
Works council	0.82	0.39
Collective agreement	0.71	0.45
Age <sup>#</sup>	44.36	0.10
Male <sup>#</sup>	0.75	0.43
Partner <sup>#</sup>	0.84	0.36
Kids <sup>#</sup>	0.38	0.75
University <sup>#</sup>	0.29	0.45
German <sup>#</sup>	0.98	0.15
Permanent <sup>#</sup>	0.95	0.21
Manager <sup>#</sup>	0.30	0.46
Working hours <sup>#</sup>	40.81	0.84
Salary <sup>#</sup>	2404.02	1865.68
Agreeableness <sup>#</sup>	4,04	0.58
Conscientiousness <sup>#</sup>	4,36	0.49
Neuroticism <sup>#</sup>	2,70	0.77
Openness <sup>#</sup>	3.65	0.63
Extraversion <sup>#</sup>	3,66	0.74
Health <sup>#</sup>	3.65	0.94
Well-being <sup>#</sup>	4.11	1.02
Available <sup>#</sup>	2.05	1.14
Autonomy <sup>#</sup>	3.98	1.00
Task variety <sup>#</sup>	4.21	0.93
Interdependence1 <sup>#</sup>	3.79	1.22
Interdependence2 <sup>#</sup>	3.38	1.27
Physical <sup>#</sup>	2.35	1.44
Staff involvement committee	0.17	0.37
Firm size	4301.31	14288.08
Capital	14.46	3.19
Female	0.26	0.20
High-skilled	0.14	0.14
Medium-skilled	0.63	0.22
Apprentices	0.04	0.03
Part-time	0.10	0.15
Owner-manager	0.22	0.41
Modern technology	0.77	0.42
High-Competition	0.57	0.50
Limited	0.94	0.23
Foreign-owned	0.18	0.39
Single-site	0.47	0.50
HR director	0.42	0.49

N = 10312; <sup>#</sup>N = 8395; variable definitions in Table A1.

**Appendix Table 3:** Detailed regression results at the establishment-level.

	Organisational justice	Distributional justice	Procedural justice	Relational justice	Productivity
Works council	0.005 (0.11)	0.075 (1.16)	-0.035 (0.76)	-0.026 (0.64)	0.158*** (2.85)
Collective agreement	0.147*** (4.24)	0.295*** (5.61)	0.131*** (3.33)	0.016 (0.48)	0.103** (2.16)
Organisational justice					0.150*** (3.16)
Staff involvement committee	0.038 (0.96)	0.034 (0.56)	0.031 (0.68)	0.050 (1.20)	-0.025 (0.41)
Firm size	0.000 (0.55)	0.000 (1.02)	0.000 (0.20)	0.000 (0.04)	-0.000 (0.52)
Capital	0.014* (1.72)	0.024* (1.95)	0.008 (0.96)	0.009* (1.62)	0.030** (2.59)
Female	-0.166 (1.59)	-0.172 (1.17)	-0.061 (0.50)	-0.265*** (2.73)	0.082 (0.55)
High-skilled	0.677*** (6.11)	1.193*** (6.80)	0.348** (2.63)	0.490*** (4.43)	1.133*** (6.91)
Medium-skilled	0.276*** (3.49)	0.454*** (3.93)	0.264*** (3.03)	0.110 (1.45)	0.378*** (3.51)
Apprentices	0.170 (0.43)	-0.354 (0.58)	0.959** (2.15)	-0.094 (0.23)	-0.177 (0.27)
Part-time	0.264* (1.84)	0.139 (0.66)	0.341** (2.18)	0.311** (2.35)	-1.0005*** (5.10)
Owner-manager	-0.054 (1.46)	-0.075 (1.32)	-0.052 (1.20)	-0.037 (1.02)	-0.100** (2.01)
Modern technology	0.053 (1.62)	0.104** (2.08)	0.001 (0.04)	0.054* (1.78)	0.063 (1.45)
High-Competition	-0.107*** (3.74)	-0.171*** (3.95)	-0.095*** (2.91)	-0.055** (1.99)	-0.040 (1.00)
Limited	-0.156** (2.17)	-0.176** (1.96)	-0.142 (1.54)	0.149** (2.05)	-0.072 (0.76)
Foreign-owned	0.010 (0.24)	0.046 (0.77)	-0.041 (0.88)	0.024 (0.63)	0.056 (0.88)
Single-site	-0.020 (0.62)	-0.076 (1.54)	0.019 (0.51)	0.003 (0.10)	-0.072 (1.54)
HR director	0.008 (0.28)	-0.011 (0.26)	0.006 (0.19)	0.028 (1.05)	-0.085** (2.28)
Constant	2.930*** (15.36)	2.307*** (8.39)	2.871*** (13.79)	3.612*** (19.75)	9.758*** (31.77)
Stratification variables	yes	yes	yes	yes	yes
R squared	0.183	0.288	0.086	0.089	0.413
Observations	1221	1221	1221	1221	1221

Dependent variables in first line; OLS regressions with standard errors clustered at the establishment level; t-values in parentheses; \* p < 0.1; \*\* p < 0.05; \*\*\* p < 0.01, Source: LPP 2012-2018.