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RESEARCH ARTICLE

Management practices and productivity: Does employee representation play a moderating role?

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Abstract

Bloom and Van Reenen (2007) have suggested an index of best management practices capturing three broad areas: monitoring, targets and incentives. However, it is an open question whether the functioning of these practices depends on contextual factors. From a theoretical viewpoint, the management practices involve both productive and dysfunctional effects. We hypothesize that the relative strength of these effects depends on the industrial relations climate. Works councils help management practices live up to their potential by building long-term employer-employee cooperation. Our empirical analysis uses panel data from the German Management and Organizational Practices survey to examine this hypothesis. Applying a reformulated version of the Mundlak estimator, we disentangle short-term and sustaining productivity effects of the management practices. Our results show that the incidence of a works council specifically strengthens the sustaining productivity effect of the practices.

KEYWORDS

incentives, monitoring, productivity, targets, works council

1 | INTRODUCTION

The debate over best management practices has a long tradition. This debate has been revived by an influential study by Bloom and Van Reenen (2007). The study aims at identifying management practices that generally increase

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Practitioner notes

What is currently known?

- Bloom and Van Reenen (2007) have suggested an index of best management practices capturing three broad areas: monitoring, targets and incentives.
- The practices captured by the index can be seen as typical US management practices.
- Studies for the US and other countries have shown that firms scoring high on the index have substantially higher productivity.
- Nonetheless it is an open question whether the functioning of the practices depends on contextual factors.

What this paper adds?

- We theorize that nonunion worker representation improves the functioning of the management practices by building trustful and cooperative employment relations.
- Using panel data from Germany, we apply a new estimation method to disentangle short-term and sustaining productivity effects of the practices.
- The sustaining effect of the management practices is much stronger in firms where employees are represented by a works council.

Implications for practitioners

- The functioning of the practices can be better understood under a pluralist than under a unitarist management perspective.
- Typical US management practices and a typical European institution of nonunion employee representation complement each other.
- The adoption of US-style management practices by firms in Europe does not undermine works councils, but instead increases their position.
- Overcoming the representation gap in the US by implementing works councils may increase productivity by improving the functioning of management practices used by American firms.

productivity regardless of a firm's environment. It presents an index of best management practices capturing three broad areas: (1) *Monitoring* (2) *Targets* (3) *Incentives*. The management index has been used in a series of important follow-up studies covering several tens of thousands of organizations across more than 20 countries (Bender et al., 2018; Bloom et al., 2011, 2012, 2013a, 2014, 2019; Bloom & Van Reenen, 2010; Broszeit et al., 2019; Cornwell et al., 2021). While Bloom and Van Reenen initially focused on the manufacturing sector, recent studies have expanded the focus to analyze management practices, among others, also in schools and hospitals (Bloom et al., 2015a, 2015b).

Bloom and Van Reenen's management index has received considerable attention in the literature and their articles are widely cited.¹ Remarkably, the index has remained largely unquestioned.² Economists appear to be fascinated by the idea that productivity differences between firms within and across countries cannot only be attributed to technological factors or international trade, but also to differences in the use of management practices (Syverson, 2011). Management scholars have used Bloom and Van Reenen's approach to advocate for a practice-based view of strategy that considers specific and generally applicable management techniques (Bromiley & Rau, 2014). However, it is an open question of whether the effects of the management practices are indeed not contingent on the firm's situation. Bloom and Van Reenen's approach appears to be driven by what Cooke (2018) calls a decontextualisation in HRM research. This applies to their initial study as well as to almost all of the follow-up studies.

Our study provides a systematic in-depth analysis showing that contextual factors can play an important role in the functioning of management practices. From a theoretical viewpoint, the practices identified by Bloom and Van Reenen not only involve productive, but also dysfunctional effects. Excessive monitoring, overflowing targets,

high pressure to perform, and variable pay entailing high earnings risk produce disincentives if they lead to increased distrust, violate norms of fairness or undermine intrinsic motivation. Contextual factors and particularly factors contributing to information sharing, cooperation and trust should influence the relative strength of the productive and the dysfunctional effects implying that the link between management practices and firm performance depends on circumstances and type of firm. Against this background, we hypothesize that worker representation has the potential to mitigate disincentives and to strengthen productive effects by improving information sharing between management and workforce, increasing transparency of management practices and ensuring that management does not use the practices unfairly against employees' interests.

We test this hypothesis by examining whether the best practices identified by Bloom and Van Reenen work best with or without works councils. The question of a moderating role of works councils is not only important in a European context where works councils play a role in the corporate governance of firms in many countries (Mohrenweiser, 2022). The question is also relevant for countries outside Europe. In the United States, the interest in nonunion employee representation has been spurred by a sharp decline in union density and the growth of a substantial representation gap in the workforce (Hertel-Fernandez et al., 2022). The political decision to implement nonunion employee representation may depend on how employee representation interacts with firms' management practices.

Our study examines the productivity effects of management practices for firms with and without works councils in Germany. Compared to their counterparts in other European countries, German works councils have acquired relatively extensive powers. They provide a highly developed mechanism for firm-level participation in decision-making (Freeman & Lazear, 1995; Jirjahn & Smith, 2018). In Germany, the creation of a works council depends on the initiative of the firm's workforce. Hence, works councils are not present in all eligible firms. This allows us to conduct a within-country study by comparing firms with and without a works council. Previous research has shown that works councils substantially shape the personnel policy of firms. Firms with works councils make greater use of various human resource management policies and are particularly more likely to use performance appraisals and various types of performance-related pay (Grund et al., 2020; Heywood et al., 2017; Heywood and Jirjahn, 2002, 2014). This gives rise to the question of whether works councils also influence how management practices impact firm performance.

Our empirical analysis uses panel data from the German Management and Organizational Practices Survey (GMOP) to examine the influence of Bloom and Van Reenen's management practices on productivity. We apply a reformulated version of the Mundlak (1978) approach (Bell et al., 2019; Bell & Jones, 2015; Booth et al., 2017). This brings an important methodological innovation to the research on management practices as it allows distinguishing between a within-firm effect capturing changes in practices and a between-firm effect capturing the average level of practices.

Our results show that the practices have a significantly positive within-firm effect on productivity. This within-firm effect is of similar magnitude in firms with and in firms without a works council. The management practices also have a significantly positive between-firm effect on productivity. In contrast to the within-firm effect, the between-firm effect depends on the incidence of a works council. The between-firm effect is much stronger in firms with than in firms without a works council. One interpretation of our findings is that the management practices have short-term effects regardless of the presence of a works council. By contrast, employee representation is required to ensure that the practices have a stronger long-lasting effect and quickly live up to their potential. Thus, the results suggest that the productivity consequences of the management practices identified by Bloom and Van Reenen depend on contextual factors—in particular when sustaining effects of the practices are considered. They support the hypothesis that management practices work better under a pluralist than under a unitarist management perspective.

Our study makes two important contributions to the literature. First, we show theoretically and empirically that nonunion employee representation plays a moderating role in the productivity effects of Bloom and Van Reenen's management practices. This questions the claim that the practices are not contingent on circumstances. Second, we stress that it is important to consider the dynamic dimension of the management practices and, hence, to distinguish between their short-term and long-term effects.

2 | MANAGEMENT PRACTICES AND EMPLOYEE REPRESENTATION

Bloom and Van Reenen do not provide a theoretical discussion of their management practices. In what follows, we set the stage by providing a theoretical placement of the practices and discussing their functional and dysfunctional effects. We proceed with a theoretical discussion on how works councils can improve the functioning of the practices.

2.1 | Productive and counterproductive incentive effects of management practices

In their initial study, Bloom and Van Reenen (2007) collect data from manufacturing firms in Britain, France, Germany, and the United States to identify three dimensions of best management practices: (1) *Monitoring*—how well does the firm track the performance of employees, review performance (e.g., through regular appraisals) and use this for continuous improvement? (2) *Targets*—does the firm set appropriate targets, track closely aligned outcomes and take appropriate action if the two are inconsistent? (3) *Incentives*—does the firm fix or fire low performers and does it reward high performers with performance pay and promotions? Bloom and Van Reenen use a combined index of the various practices to show that firms scoring high on the index are characterized by higher productivity. Subsequent studies confirm a positive link between management practices and firm performance for a broader set of sectors and countries (Bloom et al., 2014; Bloom & Van Reenen, 2010).

The practices match quite well with classical incentive theories. Efficiency wage theory assumes that monitoring employees and firing low performers is a measure to sort out low-ability individuals who are not well suited for their jobs and induces employees to put in the required minimum level of effort (Kwon, 2005; Shapiro & Stiglitz, 1984). Tournament theory suggests that putting employees in a contest and promoting those with outstanding performance to well-paid positions provides incentives to exert high effort (Lazear & Rosen, 1981). Finally, principal-agent theory shows that employers can provide effort incentives and attract high-ability applicants by tying employees' pay to their output (Holmstrom & Milgrom, 1987; Lazear, 2000). Of course, employees may only engage in those activities that are rewarded (Holmstrom & Milgrom, 1991; Kerr, 1975). Therefore, a broad set of targets and a correspondingly comprehensive monitoring of the various performance dimensions are required. Performance appraisals based on subjective evaluations by superiors can provide a comprehensive measurement of individual performance (Jirjahn & Poutsma, 2013; Prendergast, 1999). Furthermore, employers may use a balanced scorecard to measure multiple dimensions of group performance (Budde, 2007; Griffith & Neely, 2009).

However, the management practices also entail a series of dysfunctional incentives. Performance pay involves an income risk for employees and may fail to provide incentives if the employer does not properly consider employees' risk preferences (Cadsby et al., 2016). Moreover, adding too many targets and metrics makes the incentive system intransparent and too complicated for employees to understand. In particular, it may not provide sufficient information on how employees should trade off different objectives and, thus, how to allocate their efforts to the various tasks (Jensen, 2001). Insufficient communication between employer and employees is one factor contributing to the intransparency of incentive systems and a design that does not sufficiently account for employees' preferences.

Dysfunctional incentives also arise when employer-employee relations are characterized by distrust. One example is the ratchet effect (Charness et al., 2011). Workers, receiving variable pay, withhold effort when they fear that the employer will increase performance standards after a period of good performance. In addition, subjective performance appraisals involve a high degree of discretion which can result in arbitrary measurement. The employer may underreport workers' performance to save firm resources. The discretion also implies that superiors' prejudices and preferences toward subordinates enter the process of performance evaluation (MacLeod, 2003; Prendergast & Topel, 1996). The resulting arbitrary inequality can lead to conflicts among employees and induces unproductive influence activities (Milgrom & Roberts, 1988).

Furthermore, behavioral economics suggests that excessive monitoring and punishments tend to be perceived by employees as an expression of coercion and hostility (Fehr & Falk, 2002; Heinz et al., 2020). This runs counter

to building a situation of mutual trust and reciprocal gift exchange where employees voluntarily provide effort and cooperation to the employer. Finally, financial incentives may crowd out intrinsic motivation (Benabou & Tirole, 2003; Gneezy et al., 2011). This is particularly the case if financial incentives are perceived by employees as controllers of their behavior and undermine feelings of autonomy, competence, self-worth and pride (Deci et al., 1999; Gagne & Deci, 2005).

Of course, the incentive effects of management practices can have a dynamic dimension. One scenario is that employees from the beginning have distrust in the practices so newly implemented practices only have limited positive incentive effects. If this distrust is self-reinforcing, long-term positive effects will also be weak. However, behavioral studies show that people often take a trusting stance at the beginning (Korsgaard et al., 2018; Ostrom, 2003). Thus, a second scenario is that employees show some initial trust. This can lead to a process of mutual trust building between workforce and management resulting in a long-term growth of cooperation. In this scenario, management practices already have some positive incentive effects when implemented. These productive effects further increase in the course of time. A repeated games mechanism may induce employees and management to behave cooperatively and, hence, makes implicit contracts self-enforcing (Baker et al., 1994). While employees provide effort, management treats them fairly and with respect. However, repeated games are inherently imperfect and can fail. This brings us to a third scenario. Employees may initially have trust in the management practices, but the trust is not sustainable and decreases in the end (Fehr, 2009; McKnight et al., 1998; Nicols et al., 2009). This scenario implies that the management practices have positive incentive effects in the short run, but cannot fully live up to their potential in the long run. One reason for the fragility of trust can be that management's lack of trustworthiness does not support employees' initial high level of trust. Management initially may behave cooperatively to elicit employee effort, but after some time breaks its promises to save labor costs. Another reason can be lack of clarity and transparency (Gibbons & Henderson, 2012). Employees may not have enough information to verify whether management behaves honestly and wrongly perceive management's behavior as defection.

2.2 | The moderating role of employee representation

Altogether, from a theoretical viewpoint, the management practices identified by Bloom and Van Reenen involve both productive and dysfunctional incentive effects. Productive incentives should be more likely to dominate if there is sufficient information sharing and employees are confident that the management practices accord with procedural fairness norms and that promises will be kept. Hence, institutions contributing to communication and trustful employer-employee relations should play a positive moderating role in the relationship between management practices and firm performance. In what follows, we argue that works councils in Germany are such institution.

Works councils provide a highly developed mechanism for establishment-level codetermination. The rights of councils are defined in the Works Constitution Act (WCA). Workers in establishments with five or more employees may elect council members but the creation of the council depends on the initiative of the establishment's employees.³ On some issues they have the right to information and consultation, on others a veto power over management initiatives and on still others the right to co-equal participation in the design and implementation of policy. Crucially, their rights are strongest in social and personnel matters including the *introduction and change of payment methods* as well as the allocation of working hours and the *introduction of devices designed to monitor employee performance*. Works councils are institutionalized bodies of employee representation that have functions distinct from those of unions. They do not have the right to strike. If council and management fail to reach an agreement, they may appeal to an internal arbitration board. This shall restrict distributional conflicts so that works councils can help increase joint establishment surplus. The WCA makes clear that the aim is cooperation "in a spirit of mutual trust...for the good of the employees and of the establishment."

Theoretical analyses suggest that a works council can improve firm performance for at least three reasons (Freeman & Lazear, 1995; Jirjahn & Smith, 2018; Mohrenweiser, 2022). First, the works council is a collective voice

institution improving the information flow between employees and employer. The employer learns more about employees' preferences and specific circumstances within departments. This helps optimize personnel policy. Second, the works council can play a trust-building role by mitigating the employer's commitment problems. The consultation rights of the council help reduce information asymmetries between management and workforce so that employees can better observe and evaluate the employer's behavior. Moreover, the codetermination requirements help the council in preventing the employer from unilaterally taking action without considering workers' interests. Employee representation thus helps create credible commitments by the employer. It may also help reduce supervisor opportunism within the hierarchy as it provides communication between employees and top managers that is not filtered by immediate superiors (Kaufman & Levine, 2000; Smith, 1991). Third, employee representation transforms hierarchical relationships within the firm which are otherwise characterized by conformity to organizational rules and obedience to authority (Ryan & Turner, 2021). Having a say in the firm's policy can give employees a sense of efficacy, self-determination, self-esteem and dignity (Budd, 2014; Green, 2021). This not only has a value in itself, but also increases employees' willingness to provide effort and cooperation (Ahmed et al., 2021).

Against this background, we hypothesize that a works council improves the operation of management practices. Information sharing enables the employer to take employees' preferences into account when setting targets and implementing incentive and monitoring systems. The employer also obtains information about problems with the transparency and functioning of the management practices. This allows to improve and optimize the practices and to set clear performance standards. Moreover, the works council is a channel for the employer to explain the practices to the workforce and, hence, to make the practices more transparent and effective.

A works council also helps ensure that management practices are implemented and operated as agreed upon. The codetermination rights of the council help prevent the employer from unilaterally altering performance standards or payment terms. Moreover, worker representatives can monitor the process of performance evaluation and, hence, contribute to the procedural fairness of this process. Altogether, a works council can increase the trust workers have in the management practices. Increased trust in turn mitigates the dysfunctional and strengthens the productive incentive effects of management practices.

Finally, worker representation may help avoid that management practices crowd out intrinsic motivation. Management practices are implemented and operated in a work environment that gives employees a greater sense of efficacy, autonomy and self-determination. This may even strengthen intrinsic motivation as providing performance feedback and rewarding good performance can meet the need for feeling competent (Heywood et al., 2017; Kuhnén & Tymula, 2012; Peiss, 2017).

Considering the dynamic dimension of management practices, our reasoning suggests that a works council contributes to a sustaining positive productivity effect of management practices by building long-term trust and cooperation. More transparency and information about management decisions reduces ambiguity and allows employees to verify whether management behaves honestly. The veto and codetermination rights of the works council make it less likely that management is able to break its promises and to take opportunistic actions against the interests of the employees. A works council may also reduce management's incentive to break promises as the council can coordinate employees' responses resulting in a more effective punishment of management opportunism (Hogan, 2001). Clearly, to the extent a works council strengthens employees' initial trust, the council may also increase the incentive effects of newly implemented practices. However, as discussed above, employees may in general tend to take an initial trusting stance. Thus, to the extent employees take this initial trusting stance even without a works council, the council may not be required to ensure positive short-term effects of newly implemented management practices. To summarize, while we expect that works councils have the potential to strengthen long-term sustaining productivity effects of management practice, we have less clear expectations regarding their role in the short-term effects of newly implemented practices. This role depends on whether or not employees are generally willing to take an initial trusting stance toward newly implemented management practices.

3 | DATA, VARIABLES AND METHODOLOGY

3.1 | Dataset

Our empirical analysis uses panel data from the GMOP (Broszeit et al., 2019). The GMOP survey design as well as the questionnaire are closely related to the Management and Organizational Practice Survey (MOPS) carried out by the US Census Bureau (Bloom et al., 2019). The MOPS is a follow-up study for manufacturing firms in the US that leans on Bloom and Van Reenen's (2007) initial World Management Survey.

The GMOP survey was carried out from November 2014 to May 2015 by the Kiel Institute for the World Economy (IfW) and the Institute for Employment Research (IAB). The Institute for Applied Social Sciences (infas), a professional survey and opinion institute, conducted the interviews. Financial support was provided by the Leibniz Association.

The target population of the survey consisted of manufacturing firms with at least 25 employees in Germany. The sample was drawn from administrative data of the Employment History Panel (BHP). 1927 firms participated in the survey. Broszeit and Laible (2017) show that firms in the survey and firms of the entire target population in the administrative data are very similar with respect to firm size, employment development, wages, gender composition of the workforce, and employees' qualification and age. They conclude that the survey data can be considered as representative.

The data were collected on the basis of a questionnaire in paper-pencil or online interviews with top managers. Most of the questions were asked for the years 2008 and 2013. Thus, a two-wave panel can be constructed. Information on some firm characteristics which usually do not change within a few years were only asked for the year 2013. These variables can be used with suitable caution as time-invariant variables.

3.2 | The score of management practices

Building from Bloom and Van Reenen (2007) and Bloom et al. (2019), we use an aggregated management index that is based on 16 questions capturing three areas: monitoring, targets and incentives. The questions on management practices were asked for both years 2008 and 2013. Appendix Table A1 provides the details.

The monitoring questions ask interviewees about the collection and use of information to monitor and improve the production process. For example, the survey asks, "How frequently were performance indicators tracked at the firm?" The response options range from "never" to "hourly or more frequently." The targets questions ask about the design, integration, and realism of production targets. For example, the survey asks, "What was the time frame of production targets?" The answers range from "no production targets" to "combination of short-term and long-term production targets." The incentives questions cover managerial and non-managerial bonuses, promotions, and reassignment/dismissal practices. For example, the survey asks, "What is the share of non-managerial employees receiving a performance bonus?" Interviewees respond on a Likert scale ranging from "0%" to "100%."

The results from the 16 questions are aggregated into a single score of management practices. The aggregated management score is the unweighted average of the scores for each of the questions, where the responses to each item are first scored to be on a 0–1 scale. Thus, the aggregated index ranges from 0 (management practices are barely structured around monitoring, targets, and incentives) to 1 (management practices have a highly structured focus on monitoring targets, and incentives).

3.3 | Variables

Table 1 shows definitions and descriptive statistics of the key variables. Our dependent variable is the natural logarithm of productivity with productivity being defined as value added per employee. Information on productivity is

TABLE 1 Variable definitions and descriptive statistics of key variables.

Variable	Definition (mean; standard deviation)
Ln (productivity)	Natural logarithm of value added (in Euros) per employee (11.221; 0.623).
Works council	Dummy variable equal to 1 if a works council is present in the firm (0.419; 0.494).
Management score	Score of 16 management practices ranging from 0 to 1 (0.563; 0.156). See Table A1 for details.
Works council share	Share of firms with works councils calculated for three detailed manufacturing industries and three firm-size classes as an instrumental variable (0.483; 0.281).

Note: $N = 1604$.

available for the years 2008 and 2013. Critically, the survey provides information on whether or not a works council is present in the firm. The survey asks the question on works council presence for the year 2013. However, a works council is a relatively stable institution within a firm; that is, firms only rarely change their works council status (Ellguth, 2009). Thus, we consider works council presence as a time-invariant variable.

The data allows controlling for a rich set of firm characteristics. Definitions and descriptive statistics of the control variables are shown in Table A2. We include time-varying control variables for firm size, capital intensity, export activities, subsidiaries abroad, intensity of product market competition, and qualification of managerial and non-managerial employees. The time-invariant control variables capture foreign ownership, family ownership, single site status, region of location, industry, and collective bargaining coverage. The latter variable is included to disentangle the influences of works councils and unions.

3.4 | Estimation method

Our estimations are based on a reformulated version of Mundlak's (1978) approach. This allows to differentiate between within-firm and between-firm effects. The estimation equation for Mundlak's approach is:

$$\ln y_{it} = \beta_0 + \beta_1' \mathbf{x}_{it} + \beta_2' \bar{\mathbf{x}}_i + \beta_3' \mathbf{z}_i + u_i + \varepsilon_{it}, \quad (1)$$

where $\ln y_{it}$ is the log of productivity of firm i in year t ($t = 2008, 2013$), \mathbf{x}_{it} a vector of time-varying variables, $\bar{\mathbf{x}}_i$ the vector of firm-specific averages for each of these variables, \mathbf{z}_i a vector of time-invariant variables, u_i the firm-specific random effects and ε_{it} the time-variant error term. The intercept and the respective vectors of coefficients are given by β_0 , β_1 , β_2 and β_3 . Equation (1) is estimated by using a random effects model. It is important to note that β_1 shows the within-firm effects as the between-firm effects are controlled for by $\bar{\mathbf{x}}_i$. However, the interpretation of β_2 is inconvenient as this reflects the difference between the within and the between effects.

A more straightforward interpretation can be obtained by centering the time-variant variables on their firm-specific averages, $\mathbf{x}_{it} - \bar{\mathbf{x}}_i$ (Bell et al., 2019; Bell & Jones, 2015; Booth et al., 2017). The estimation equation is now given by:

$$y_{it} = \beta_0 + \beta_1' (\mathbf{x}_{it} - \bar{\mathbf{x}}_i) + \beta_4' \bar{\mathbf{x}}_i + \beta_3' \mathbf{z}_i + u_i + \varepsilon_{it}. \quad (2)$$

Here β_4 shows the between-firm effects. The within-firm effects are still given by β_1 . These within-firm effects are equivalent to those obtained from a fixed effects model. However, the fixed effects model throws away all the information contained in the between variation in the data. By contrast, Equation (2) allows to estimate also between-firm effects. Altogether, the reformulated version enables us to estimate both within-firm effects capturing the influence of changes in the time-variant variables and between-firm effects capturing the influence of the average levels of these variables. Importantly, this approach takes into account that within-firm and between-firm effects can differ.

4 | RESULTS

4.1 | Basic estimates

Table 2 shows the key results of our productivity regressions with a balanced panel of firms. Control variables are included in the regressions, but are suppressed to save space (see Table A3 for full results). For the score of management practices, the table provides both the within-firm and the between-firm effect. As explained above, the within-firm effect reflects the influence of a change in the score of management practices over the 5-year period. The between-firm effect shows the influence of the average score of management practices. Since the within-firm effect controls for changes in the score, we can interpret the between-firm effect as the long-run, sustaining influence of management practices on productivity.

Our initial regression (1) shows a significantly positive within-firm and significantly positive between-firm effect of management practices with the between-firm effect being much higher than the within-firm effect. These findings suggest that the long-term effects of management practices are stronger than the effects of newly adopted practices. Newly implemented practices already have some positive influence on productivity, but the practices need time to fully live up to their potential. This can be illustrated by considering two scenarios.

In the first scenario, a firm uses none of the management practices in the year 2008 and implements management practices between 2008 and 2013. This scenario shows the influence of management practices newly implemented over the 5-year period. Let us consider an increase in the management score by 0.2 points. This is roughly a one standard deviation of the score. Taking Equation (2) into account, the 0.2 increase in the management score over the 5-year period implies an approximately 9% higher productivity in the year 2013 ($0.295 \times (0.2 - 0.1) + 0.628 \times 0.1 = 0.0923$).⁴

In the second scenario, a firm with initially no management practices implements the management practices before the year 2008. Let us again consider an increase in the management score by 0.2 points. This implies a 0.2 point higher management score for the subsequent years. While the firms in both scenarios have the same management score in the year 2013, the two scenarios show two different situations. Scenario 1 reflects the impact of practices newly implemented between 2008 and 2013. By contrast, scenario 2 shows the long-lasting impact of practices which had been implemented before 2008 and, hence, had more time to live up to their potential. These management practices imply an almost 13% higher productivity in the year 2013 ($0.295 \times (0.2 - 0.2) + 0.628 \times 0.2 = 0.1256$). Hence, comparing scenario 2 and scenario 1, the long-lasting productivity influence of management practices is indeed stronger than the influence of newly implemented practices.

TABLE 2 Productivity regressions.

Variables	(1)		(2)	
	Within	Between	Within	Between
Management score	0.295 (3.02)***	0.628 (4.14)***	0.352 (2.41)**	0.411 (2.24)**
Works council	-----	0.244 (4.40)***	-----	-0.096 (0.55)
Management score x works council	-----	-----	-0.107 (0.68)	0.611 (2.10)**
Controls	Included		Included	
Overall R ²	0.178		0.182	
Number of observations	1604		1604	
Number of firms	802		802	

Note: Dependent variable: Ln(productivity). Method: Reformulated Mundlak approach. The table shows the estimated coefficients. Z-values in parentheses are based on standard errors clustered at the firm level.

*** $p < 0.01$, ** $p < 0.05$.

The variable for works council incidence is time-invariant. Thus, we only estimate the between-firm effect. The variable takes a significantly positive coefficient of a quite substantial magnitude.⁵ The incidence of a works council is associated with a roughly 24% higher productivity. This estimated influence is in line with the findings of other recent studies on works councils and productivity (Mohrenweiser, 2022).⁶ It confirms the importance of nonunion employee representation for firm performance.

At issue is now whether works councils play a moderating role and influence the impact of management practices on productivity. Thus, in regression (2), we add a variable for the interaction of works councils and management practices. Considering the within-firm effects, the interaction variable does not take a significant coefficient while the variable for management practices retains a significantly positive coefficient. Thus, we find no evidence that works councils play a moderating role in the within-firm effect of the management practices. By contrast, the estimate provides clear evidence that the between-effect of the management practices depends on the incidence of a works council. Both the variable for management practices and the variable for the interaction of management practices with works councils take significantly positive coefficients. Thus, the between-firm effect of management practices is much stronger when a works council is present in the firm. The between-firm effect is 1.022 in a firm with a works council and 0.411 in a firm without a works council.

The results of regression (2) can be interpreted in light of our theoretical considerations. Newly implemented management practices (reflected by the within-firm change in the management score) have a positive impact on productivity regardless of whether or not a works council is present. Employees may initially tend to take a positive and trusting stance toward new management practices even when no works council is present. By contrast, the incidence of a works council plays an important role when it comes to the sustaining impact of management practices (as shown by the impact of the average management score). A long-run impact on productivity is much stronger in firms with a works council. This conforms to the notion that works councils help management practices live up to their full potential by building long-term trust and cooperation.

For a quantitative illustration, let us again consider scenarios 1 and 2. We first discuss scenario 2 as this scenario isolates the long-run impact of management practices implemented before 2008. If no works council is present, a 0.2 point higher average management score is associated with an 8% higher productivity in the year 2013 ($0.352 \times (0.2 - 0.2) + 0.411 \times 0.2 + 0.611 \times 0 \times 0.2 = 0.0844$). The between-firm effect is much stronger when a works council is present. In a firm with a works council, a 0.2 point higher average management score implies a 20% higher productivity ($0.352 \times (0.2 - 0.2) + 0.411 \times 0.2 + 0.611 \times 1 \times 0.2 = 0.2044$).

Turning to scenario 1, the incidence of a works council has also an influence of the productivity effect of management practices newly implemented between 2008 and 2013. If no works council is present in the firm, a 0.2 increase in the management score over the 5-year period is associated with a roughly 8% higher productivity ($0.352 \times (0.2 - 0.1) + 0.411 \times 0.1 + 0.611 \times 0 \times 0.1 = 0.0763$). If a works council is present, it is associated with an approximately 14% higher productivity ($0.352 \times (0.2 - 0.1) + 0.411 \times 0.1 + 0.611 \times 1 \times 0.1 = 0.1374$). It is important to note that this stronger increase is not due to a higher within-firm effect of the newly implemented practices, but solely due to the strengthening of the between-firm effect that is also associated with these newly implemented practices. An interpretation of this result is that the incidence of a works council does not influence the short-term effect of the newly implemented practices, but increases the pace with which the practices live up to their potential.

Finally, note that the variable for works council incidence is no longer a significant determinant of productivity when the interaction with the management practices is taken into account. Thus, considering the significant interaction effect of management practices and works councils, one may conclude that works councils primarily contribute to productivity by strengthening the long-run incentive effects of management practices.

4.2 | Robustness checks

We performed a series of further estimations to check the robustness of results. At issue is whether the specification of the regressions influences our key results. Table A4 shows the results of regressions that only include time-varying, but no time-invariant controls. Confirming our key results, this exercise suggests that the findings are reasonably robust to different specifications.

Bloom et al. (2011) found that the management score is correlated with an index of family-friendly policies. Estimation (1) of Table A5 shows that including the index of family-friendly policies as an additional control does not change the key results. In estimation (2), we also account for a possible interaction of management practices and family-friendly policies. While the estimation indicates a negative long-run interaction of family-friendly policies and management practices, it confirms our key findings—particularly the positive long-run interaction of works councils and management practices. The pattern of results conforms to our background discussion. The potential dysfunctions of the management practices are primarily related to issues of transparency, trust and cooperation. Thus, a works council and not family-friendly policies improve the functioning of the practices.

In Table A6, we account for a possible interaction of the management practices with collective bargaining coverage to examine whether union representation plays a similar moderating role as nonunion representation. That interaction does not emerge as a significant determinant of productivity while the interaction effect of management practices and works councils still holds. On the one hand, these findings may reflect different functions of collective bargaining and firm-level codetermination. Collective bargaining is primarily concerned with distributional issues whereas firm-level codetermination aims at improving trust and cooperation. On the other hand, we have to take into account that collective bargaining in Germany typically occurs outside the firm at the industry level and, hence, may not have an immediate impact on firm performance.⁷

Works councils are much more likely to be present in larger firms. Thus, studies on works councils often check the robustness of results by restricting the estimation sample to medium-sized firms (Mohrenweiser, 2022). Against this background, in Table A7, we exclude firms with more than 300 employees. This robustness check also confirms our basic pattern of results.

In our analysis with the GMOP, we use the information on works council incidence as a time-invariant variable. This reflects the fact that changes in the works council status of firms are relatively rare (Ellguth, 2009). Nonetheless there might be a possible bias due to measurement error if the works council information is used as a time-invariant variable. To examine the issue in more detail, we consider an alternative dataset—the IAB Establishment Panel (Ellguth et al., 2014). While the IAB Establishment Panel does not contain information on the management index, it provides regular information on works council incidence. Thus, considering the productivity effects of works councils, we can examine if it makes a difference whether we use the works council variable as a time-varying or time-invariant variable. For a matter of comparability, we focus on panel data of manufacturing firms with at least 25 employees in the years 2008 and 2013. Our estimation sample shows that only 3.8% of the firms change their works council status between 2008 and 2013. Table A8 provides the key results of two productivity regressions. Regression (1) shows the estimated productivity effect of works council incidence when the information on works councils is used as a time-varying variable; that is, information on works council incidence in the years 2008 and 2013 is used. While the estimated within effect is insignificant, the estimated between effect of works council incidence is highly significant. Regression (2) shows the estimated productivity effect when the works council variable is used as a time-invariant variable; that is, information on works council incidence in the year 2013 is also used for the year 2008. This yields almost the same estimate for the between effect and confirms that a possible measurement error is very small and negligible.

4.3 | The issue of endogeneity

The incidence of a works council can be potentially endogenous. There might be the issue of reversed causation. Causality may at least partially run from productivity to works council incidence. Moreover, there might be the issue of omitted variable bias if there are unobserved factors correlated with both works council incidence and productivity. The managerial environment (Frege, 2002; Jirjahn & Mohrenweiser, 2016) or economic factors (Jirjahn, 2009) may influence both firm performance and employees' propensity to implement a works council.

In order to account for possible endogeneity, we run an *endogenous* switching regression model (Maddala, 1983). Running a switching regression model means that we provide separate regressions for firms with and without a works council. This yields insights into whether the impact of management practices on productivity depends on the presence of a works council. Thus, separate regressions can be viewed as an alternative way to examine the interaction of works councils and management practices.

For a matter of comparison, Table 3 shows the results of an *exogenous* switching regression model. This confirms our key insights. The within-firm effect of management practices is similar for firms with and without a works council while the between-firm effect is much stronger in firms with a works council.

Table 4 provides the key results of the *endogenous* switching regression model. In a first step, we estimate the determinants of works council incidence. Column (1) shows the key result of a probit regression. In the regression, we use the share of firms with works councils calculated for five detailed manufacturing industries, three size classes and both years as an instrumental variable (see Jirjahn & Mohrenweiser, 2021 and Jirjahn et al., 2022 for a related

TABLE 3 Separate productivity regressions; exogenous switching.

Variables	Firms with works council (1)		Firms without works council (2)	
	Within	Between	Within	Between
Management score	0.264 (2.02)**	1.159 (4.67)***	0.327 (2.09)**	0.366 (1.88)*
Controls	Included		Included	
Overall R ²	0.136		0.171	
Number of observations	672		932	
Number of firms	336		466	

Note: Dependent variable: Ln(productivity). Method: Reformulated Mundlak approach. The table shows the estimated coefficients. Z-values in parentheses are based on standard errors clustered at the firm level.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

TABLE 4 Separate productivity regressions; endogenous switching.

Variables	Works council (1)	Firms with works council (2)		Firms without works council (3)	
		Within	Between	Within	Between
Works council share	0.733 (1.74)*	-----	-----	-----	-----
Management score	-0.396 (1.26)	0.239 (1.80)*	1.085 (4.40)***	0.410 (2.49)**	0.411 (2.05)**
Inverse Mills ratio	-----	-----	0.361 (1.43)	-----	-0.697 (6.82)***
Controls	Included	Included		Included	
Number of observations	1604	672		932	
Number of firms	802	336		466	

Note: Dependent variables: Works council in regression (1) and Ln(productivity) in regressions (2) and (3). Methods: Probit in regressions (1) and reformulated Mundlak approach in regressions (2) and (3). The table shows the estimated coefficients. Z-values in parentheses are based on standard errors clustered at the firm level.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

aggregation identification strategy).⁸ This share reflects the general propensity within a narrowly defined industry that works councils are present. The probit regression shows that the share indeed has a positive influence on the individual firm's probability of having a works council.

The probit results are used to compute the inverse Mills ratio terms to be included in a second step in the separate productivity regressions for firms with and without a works council.⁹ Columns (2) and (3) show the results. The coefficient on the inverse Mills ratio is significantly negative for firms without a works councils, but not significant for firms with a works council. Most importantly, the key results of the endogenous switching model are similar to those of the exogenous switching model. Thus, even when accounting for the endogeneity of works council incidence, we find that the long-run influence of management practices on productivity is much stronger in firms with a works council.

We recognize that the issue of endogeneity might also apply to the management practices. On the one hand, from a theoretical viewpoint, these practices are not necessarily endogenous. As explained by Bloom and Van Reenen (2011, p. 1711), incomplete knowledge about the practices and heterogeneity in the costs of implementation can lead to exogenous variation in the use of management practices across firms. On the other, only empirical research can provide an answer to the endogeneity issue. However, we lack a convincing instrument. Thus, our estimations may not allow definite causal inferences to be drawn—a limitation we share with the other studies using the management index (Bloom & Van Reenen, 2011, p. 1729). Nonetheless we emphasize that our analysis provides an important step to show the so-called best management practices in a much more differentiated light. Moreover, we may take solace from Bloom et al.'s (2013b) field experiment examining similar management practices in Indian textile firms. That field experiment confirms a positive influence on firm performance.

4.4 | Nonlinearities and subindices

A further question is whether the moderating influence of works councils is stronger for smaller or larger values of the management score. To answer this question, we add the square of the management score to the specification. Table A9 shows the key results. Including the squared term in the regression for firms without a works council simply renders the coefficient on the management score insignificant. In the subsample of firms with a works council, the linear term of the management score retains a significantly positive coefficient and the squared term emerges with a significantly negative coefficient. This may indicate that the moderating influence of a works council is stronger for smaller values of the management score or it may just reflect decreasing returns to management practices.

Finally, in Table A10, we replace the composite score of management practices by the sub-indices for incentives, monitoring and targets. For each sub-index we include the linear and the squared term. The subindices do not emerge with significant between coefficients in the subsample of firms without a works council. In the regression for works council firms, the subindex for incentives takes a significantly positive and its square a significantly negative between coefficient. The indices for monitoring and targets do not emerge as significant determinants. Thus, conforming to our theoretical considerations, the results suggest that works councils particularly strengthen the incentive effects of management practices. Altogether, the exercises shown in Tables A9 and A10 corroborate our key finding. Works councils strengthen the long-run impact of management practices on productivity.

5 | CONCLUSIONS

This study examines whether the productivity effect of the management practices identified by Bloom and Van Reenen is moderated by nonunion employee representation. Bloom and Van Reenen (2007, 2010) claim that their management practices are best practices which are largely not contingent on contextual factors. Using panel data from Germany, our results question this claim. They show that the magnitude of the productivity effect depends

on contextual factors. While we find a positive association between the management practices and productivity for both firms without and firms with a works council, the association is much stronger for the latter. This fits theoretical considerations. The management practices identified by Bloom and Van Reenen involve both incentives and disincentives. The relative strength of the incentives and disincentives depends on circumstances and particularly on the industrial relations climate. Works councils help improve the functioning of the management practices and, hence, strengthen their productivity effect. Applying a modified Mundlak approach, our results suggest that works councils particularly strengthen the long-run productivity effect. This conforms to the notion that works councils help build long-term trust and cooperation.

The management score used in this study comprises three broad areas: monitoring, targets and incentives. Bloom and Van Reenen (2010) show that, in international comparison, firms in the United States have the highest average management score. Thus, the practices captured by their score may be viewed as typical US management practices. Our results suggest that these practices do not interfere with a typical European institution of nonunion employee representation. This has two crucial implications. On the one hand, the adoption of US-style management practices by firms in Germany does not appear to undermine the functioning of works councils. Quite the contrary, it may strengthen the position of works councils as works councils help the practices live up to their potential.

On the other hand, the implementation of works councils in the United States would not undermine the effectiveness of management practices used by American firms. Quite the contrary, the implementation of works councils would even strengthen the effectiveness of the practices. Or put differently, our findings suggest that US-style management practices work better under a pluralist than under a unitarist management style. This is an important insight for the policy discussion on the representation gap in the United States. Overcoming the representation gap may not only benefit employees. It may also increase firm performance by improving the functioning of management practices.

Finally, we stress that our study is just a first step to provide a more differentiated view of Bloom and Van Reenen's management practices. Further steps are certainly required. First, it would be interesting to examine how Bloom and Van Reenen's management practices are related to those of the high involvement paradigm (Boxall & Macky, 2009; Burdin & Kato, 2021). While there might be a partial overlap, it is important to note that Bloom and Van Reenen's management score is essentially silent on practices such as training, development and direct worker participation. The focus on monitoring, targets and incentives suggests that the score rather corresponds to what Arthur (1994) calls a control human resource system. Second, the management score comprises many different practices such as dismissals, promotions, individual incentives, group incentives and profit sharing. Future research should pay more attention to the single practices and their interplay. It is an open question of whether or not complementarities exist the various incentive schemes (Barnes et al., 2011; Pendleton & Robinson, 2017).

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CONFLICT OF INTEREST STATEMENT

The authors declare that there is no conflict of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available at the IAB: <https://doku.iab.de/fdz/gmop>.

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ENDNOTES

- ¹ According to Google Scholar, Bloom and Van Reenen's (2007) initial study has received more than 4000 cites (as assessed on 10 April 2023).
- ² Waldman et al. (2012) provide a rare exception critically discussing Bloom and Van Reenen's management index. They point out a series of methodological problems and argue that inspiring and socially responsible leadership is more important for long-run success than targets, monitoring and incentives.
- ³ A works council as an institution can be implemented or dissolved at any point of time. Regular elections are held every 4 years to determine the works councilors in those firms that have a works council.
- ⁴ While our dependent variable is the natural log of productivity, our key explanatory variable—the management index and the works council dummy—are specified as levels. Thus, we have a log-level model. For a log-level model, we can use the approximation $\% \Delta y = 100 \beta \Delta x$ to illustrate the quantitative impact of our key explanatory variables (Wooldridge, 2009, pp. 43–46).
- ⁵ Note that our empirical analysis is based on data from manufacturing firms. One may ask if works council also have a positive influence on firm performance in other industries. While Wagner et al. (2006) find a significant influence of works councils on productivity only in the manufacturing sector, Frick and Moeller (2003) find a significantly positive influence in both the manufacturing and the service sector. In a similar vein, Jirjahn and Mohrenweiser (2021) obtain a significantly positive association between works councils and the use of family-friendly practices in both the manufacturing and in the service sector. Jirjahn et al. (2022) also find a significantly positive influence of works councils on workplace health promotion for firms in the manufacturing and in the service sector. Altogether, even though the results of the various studies are a little mixed, our reading of the literature is that positive performance effects of works councils are not confined to the manufacturing sector. Thus, our results based on data from manufacturing firms may also hold for other sectors.
- ⁶ However, we recognize that the estimated magnitude of the works council effect sometimes differs substantially across studies. For example, Mueller (2012) estimates a productivity effect of 6.4 percent. He writes that “that the 6.4% estimate of the productivity effect of works councils is underestimating the true effect” (p. 893). Thus, Mueller interprets his estimate as a lower bound. Estimates by Frick (2002) suggest that productivity is as much as 25–30 percent higher in firms with a council. An even larger productivity effect is estimated by Addison et al. (2000). They find that the incidence of a council is associated with an increase in productivity by 43,830 German marks (Table 6 in their article). Compared to the mean of 134,620 German marks (Table A2 in their article), this is an increase by about 33 percent. Estimates by Zwick (2004) imply an increase in productivity by even 84 percent.
- ⁷ As suggested by Hübler and Jirjahn (2003), the functioning of a works council may depend on the coverage by a collective agreement. Thus, we also experimented with specifications accounting for a possible interaction of works councils and collective bargaining and a triple interaction between works councils, collective bargaining and management practices. The interaction terms did not emerge with significant coefficients.
- ⁸ The variable has been calculated using the IAB Establishment Panel.
- ⁹ The inverse Mills ratio is the ratio of the probability density function to the complementary cumulative distribution function.

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