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Works Councils and Collective Bargaining in Germany: A Simple but Crucial Theoretical Extension

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A Simple but Crucial Theoretical Extension

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Abstract: A model by Huebler and Jirjahn (2003) suggests that rent-seeking activities of works councils are more limited in establishments covered by collective bargaining. The model predicts that works councils should have a stronger productivity effect and a weaker wage effect in covered than in uncovered establishments. While empirical studies have provided supporting evidence for the predicted productivity effects, the results on the wage effects of works councils in covered and uncovered establishments are very mixed. This article extends Huebler and Jirjahn's model to reconcile the empirical findings. The extended model takes into account that collective bargaining coverage not only limits the opportunities for rent-seeking activities but also strengthens the effectiveness of performance-enhancing work practices negotiated between employers and works councils. The latter influence of collective bargaining coverage can result in a higher wage effect of works councils in covered establishments.

JEL: J24, J31, J51, J53.

Keywords: Works Council, Collective Bargaining Coverage, Productivity, Wages.

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1. Introduction

German works councils have attracted considerable attention as an alternative form of worker representation to promote industrial democracy and to improve both economic performance and the quality of working life. They provide a highly developed mechanism for establishment-level codetermination. While works councils play an important role in corporate governance in many West European countries, a unique feature of German works councils is that they have acquired quite extensive powers (Jenkins and Blyton 2008, Rogers and Streeck 1995).[1] These powers have even been strengthened by the actively debated 2001 amendment of the Works Constitution Act (WCA), the law that governs the works council system. German works councils have also received attention outside Europe. In the U.S., a discussion on mandating German-style works councils has been spurred by a sharp decline in union density and the growth of a 'representation gap' (Freeman and Rogers 1999). Furthermore, economists have shown a strong interest in works councils. This is documented by a remarkably increasing number of econometric studies on their consequences for establishment performance and worker well-being (see Addison 2009 and Jirjahn 2011 for surveys).

However, a more comprehensive understanding of the functioning of works councils requires that other parameters of the broader industrial relations system are taken into account. Huebler and Jirjahn (2003) have developed a model that analyzes the interaction of works councils with collective bargaining coverage. In Germany, collective agreements are usually negotiated between unions and employers' association on a broad industrial level. Employers are covered by a collective agreement if they are members of an employers' association.

Huebler and Jirjahn's (2003) model captures the idea that works councils have two faces. On the one hand, works councils can generate rents by playing a trust-building role. This trust-building role provides a mechanism for negotiating potentially productivity-enhancing works practices that otherwise cannot be implemented. On the other hand, works councils can use their codetermination rights for rent-seeking activities. They push through higher wages by threatening to hinder decisions. Huebler and Jirjahn argue that collective bargaining coverage influences whether the rent-generating or the rent-seeking face dominates. When substantial distributional conflicts are moderated by unions and employers' associations outside the establishments, works councils have less opportunity for rent seeking so that they are more likely to be engaged in rent-generating activities. Huebler and Jirjahn's empirical results conform to this hypothesis. Works councils are associated with increased productivity in covered but not in uncovered establishments. By contrast, works councils have a less strong wage effect in covered than in uncovered establishments.

A series of empirical follow-up studies have reexamined the interaction of works councils and collective bargaining. As to the interaction effect on productivity, most of those studies provide a remarkably clear pattern of results. They corroborate that collective bargaining coverage fosters positive productivity effects of works councils. Yet, as to the interaction effect on wages, the findings are very mixed. While some studies confirm a weaker wage effect of works councils in covered establishments, other studies obtain the result that the effect is stronger in covered establishments.

This paper extends the model by Huebler and Jirjahn in order to reconcile the conflicting empirical findings. The extended model takes into account that collective

bargaining can have two moderating influences. First, as in Huebler and Jirjahn's model, collective bargaining coverage limits the opportunities of a works council to engage in rent-seeking activities. Second, collective bargaining coverage increases the effectiveness of the work practices negotiated between works council and employer. Adding the second moderating influence to that considered by Huebler and Jirjahn has crucial implications. As to the productivity effect of works councils, the two moderating influences work in the same direction. They strengthen the positive productivity effect of works councils. However, as to the wage effect of works councils the two influences work in opposite directions. The first one lowers the wage effect of works councils. The second one increases the wage effect as more productive work practices imply a higher rent that can be shared by the employer and the workforce of an establishment.

Thus, the extended theoretical model predicts an unambiguous interaction effect of works councils and collective bargaining coverage on productivity and an ambiguous interaction effect on wages. While the productivity effect of works councils should be clearly stronger in covered establishments, the wage effect should depend on whether the first or the second moderating influence of collective bargaining coverage dominates. If collective bargaining coverage primarily limits the opportunities for rent seeking, works councils should have a weaker effect on wages in covered than in uncovered establishments. Yet, if collective bargaining coverage primarily improves the effectiveness of the negotiated work practices, works councils should have a stronger wage effect in covered establishments.

The predictions of the extended theoretical model can help explain why empirical studies have produced mixed results as to the wage effects of works councils in covered

and uncovered establishments. Those studies often differ in the industries or in the time period considered in the analysis. To the extent the relative weights of the two moderating influences of collective bargaining coverage vary across industries or have changed over time, it makes sense that some studies find a weaker and others a stronger wage effect of works councils in covered establishments.

The extended theoretical model can also explain why empirical studies have produced mixed results only as to the wage effects but not as to the productivity effects of works councils in covered and uncovered establishments. The two moderating influences of collective bargaining coverage work in the same direction with respect to the productivity effects. Hence, it does not matter whether the first or the second influence dominates. This conforms to the fact that studies considering different time periods or industries have found a remarkably clear pattern of results. The productivity effect of works councils is stronger in covered than in uncovered establishments.

The rest of the paper is organized as follows. The next section sets the context by describing the institutional framework and discussing past research. That section also provides a rationale for the two moderating influences taken into account in the theoretical model. The third section introduces the assumptions of the model. The fourth section derives the outcome of the negotiations between employer and works council. The fifth section compares the wage and productivity effects of works councils in covered and uncovered establishments. The sixth section concludes.

2. Institutional Framework and Past Research

Industrial relations in Germany are characterized by a dual structure of employee representation with both works councils and unions. Collective bargaining agreements

are usually negotiated between unions and employers' associations on a broad industrial level. They regulate wage rates and general aspects of the employment contract. Typically, establishments are covered by a collective bargaining agreement if they are members of an employers' association. The share of establishments covered by firm-level agreements is very small.

Works councils provide a highly developed mechanism for establishment-level codetermination. Their rights are defined in the WCA. The creation of a works council depends on the initiative of the establishment's employees. Hence, councils are not present in all eligible establishments. Works councils negotiate over a bundle of interrelated establishment policies. 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 coequal participation in the design and implementation of policy. The functions of works councils are distinct from those of unions. Works councils do not have the right to strike. If council and management fail to reach an agreement, they may appeal to an internal arbitration board or to the labor court. Moreover, the WCA does not allow wage negotiations. The aim is to restrict distributional conflicts on the establishment level. Rather works councils are designed to increase joint establishment surplus. Council representatives are required by law to cooperate with management "in a spirit of mutual trust … for the good of the employees and of the establishment."

There are two major explanations as to why works councils may play the intended role in cooperatively realizing mutual gains for the employees and the employer. First, many working conditions are workplace public goods (Freeman and Medoff 1984). A works council as a collective voice institution can aggregate worker preferences and

communicate those preferences to management, helping to optimize the provision of workplace public goods and to implement an effective personnel management (Frick and Sadowski 1995). Second, employees will withhold effort and cooperation when an employer cannot credibly commit to take into account their interests. For example, workers fearing job loss due to organizational change may try to sabotage a management-initiated restructuring of production. Worker representation is one way to protect the interests of the workforce (Freeman and Lazear 1995, Hogan 2001, Kaufman and Levine 2000, Smith 1991, 2006). The consultation rights of the works council help reduce information asymmetries between management and workers so that employees can better evaluate the employer's behavior. Moreover, the codetermination rights help the council prevent the employer from unilaterally taking action without considering workers' interests. Thus, a works council helps create binding commitments of the employer. This in turn increases workers' trust and fosters their cooperation with the implementation of performance-enhancing work practices.

However, works councils may not only have a rent-generating but also a rent-seeking face (Addison et al. 2001, Freeman and Lazear 1995). Even though the WCA aims at reducing distributional conflicts at the establishment level, a works council may engage in informal wage negotiations with the employer. The council can use its codetermination rights to obtain employer concessions on issues where it has no legal powers (Mueller-Jentsch 1995). If employer and works council fail to reach an agreement in the informal wage negotiations, the council can threaten to hinder decisions in areas where its consent is necessary. Moreover, the increased bargaining power makes the impact of the works council on work practices ambiguous. On the one hand, the council

fosters the trust that is necessary for implementing performance-enhancing work practices. On the other hand, the council may use its bargaining power to negotiate less productive work practices that require lower effort of the employees.

Huebler and Jirjahn (2003) have developed a bargaining model that captures both the rent-generating and the rent-seeking face of works councils. On the one hand, the presence of a works council allows to negotiate work practices that otherwise cannot be implemented. On the other hand, the works council may redistribute economic rents in favor of the employees. Huebler and Jirjahn argue that the opportunities for rent seeking are more limited when substantial distributional conflicts are moderated on a central level by unions and employers' associations.[2] Employers' associations support the managers of establishments with expertise in case that there are lawsuits. Therefore, the opportunities for a council to obtain employer concessions on issues where it has no legal powers are more restricted. Moreover, not only employers' associations but also unions may use their influence to prevent works councils from rent-seeking activities. First, establishment-level negotiations between works councils and managers may undermine the unions' power and status and contribute to dispersed earnings across firms. Second, the unions' interests transcend those of the workforce in an individual establishment. Because of the centralized system of collective bargaining, unions are interested in the industry- or even nation-wide employment level.[3]

Huebler and Jirjahn's model predicts that a works council should have a more substantial impact on productivity and a less intense impact on wages if the establishment is covered by a collective bargaining agreement. These predictions have been tested by a series of empirical studies. The studies have used two different data sets. The first one is

the Hannover Firm Panel (Gerlach et al. 2003). The data of the Hannover Firm Panel were collected in the 1990s. They cover a sample manufacturing establishments in the West German federal state of Lower Saxony. The second one is the IAB Establishment Panel (Fischer et al. 2009). The collection of the data started in the 1990s and is still continued on a yearly basis. The IAB Establishment Panel is a sample of establishments from all sectors in the German economy.[4]

Table 1 provides a survey of studies that have examined the productivity effects of works councils in covered and uncovered establishments. Those studies often differ in the method used. They also differ in the time period or the industries considered in the analysis. Nonetheless they show a clear pattern of results: Works councils have a stronger impact on productivity in covered than in uncovered establishments. Thus, as to the productivity effects of works councils, the empirical findings conform to the predictions of Huebler and Jirjahn's model.

As summarized in Table 2, a related pattern of results is even found when alternative indicators of establishment performance are considered. Works councils are more effective in reducing personnel turnover in covered establishments. They appear to be better able to negotiate performance pay arrangements and other HRM practices when the establishment is covered by collective bargaining. There is even evidence that works councils and collective bargaining coverage have a positive interaction effect on the innovation success and the profitability of establishments.

However, the empirical literature is inconclusive as to the wage effects of works councils in covered and uncovered establishments. Table 3 provides a summary of the findings. While some studies confirm that the wage effect of works councils is less strong

in covered establishments, other studies obtain the opposite result. Gerlach and Meyer (2010) hypothesize that this reflects an enduring decrease in the functionality of industry-level collective bargaining in Germany. However, if this would be the appropriate explanation, we should also observe an attenuation of the moderating influence collective bargaining has on the productivity effect of works councils. The available studies provide no evidence for such attenuation.

Our theoretical model suggests an alternative explanation to reconcile the empirical findings. It adds a second moderating influence to the one considered by Huebler and Jirjahn. Collective bargaining coverage not only limits the rent-seeking activities of works councils. It also strengthens the effectiveness of the work practices negotiated by works councils and employers. Collective bargaining coverage of an establishment is associated with a stronger influence of unions (Klodt and Meyer 1998). Unions usually support works councils with expertise and training (Mueller-Jentsch 1995, Behrens 2009).[5] While they have little interest in supporting rent-seeking activities of works councils, unions are likely to provide support to strengthen the trust-building role of works councils. The support by unions can help works councils create binding commitments of the employer and protect the interests of the workforce. This in turn increases workers' willingness to cooperate with the implementation of performance-enhancing work practices and, hence, results in a greater effectiveness of the practices.

As to the wage effect of works councils, the two moderating influences of collective bargaining coverage work in opposite directions. The moderating influence considered by Huebler and Jirjahn lowers the wage effect of a works council as it implies a reduction of the council's bargaining power. The additional moderating influence

introduced in our theoretical extension increases the wage effect of a works council as it leads to a higher rent that can be shared by the employer and the employees of the establishment. Thus, the interaction effect of collective bargaining and works councils is ambiguous. Depending on which moderating influence dominates, we may observe a weaker or a stronger wage effect of works councils in covered establishments.

This can explain why empirical studies provide mixed results on the wage effects of works councils in covered and uncovered establishments. The studies often differ in the industries and in the time period considered in the analysis. To the extent the relative weights of the two moderating influences vary across industries or have changed over time, it seems natural that studies using different data obtain mixed results. Table 3 shows that studies with the Hannover Firm Panel usually find a weaker wage effect of works councils in covered than in uncovered establishments. By contrast, studies with the IAB Establishment Panel often obtain a stronger wage effect in covered establishments. As the IAB Establishment Panel covers more recent years and is not restricted to manufacturing sector, one may conclude that the relative strength of the additional moderating influence considered in our theoretical extension has grown over time or is more pronounced in industries other than manufacturing.

Our theoretical extension can also explain why empirical examinations considering different time periods or industries have produced a remarkably clear pattern of results as to the productivity effect of works councils in covered and uncovered establishments. The two moderating influences of collective bargaining coverage work in the same direction with respect to the productivity effect. Thus, it does not matter which moderating influence dominates. As a consequence, studies using different data should

indeed find the same pattern of results: The productivity effect of works councils is stronger in covered than in uncovered establishments.

3. The Model

Let us consider an establishment with a fixed number of N identical workers. If no works council is present, the establishment produces an output $F(N)$ and each worker receives a wage $\overline{w}$. We distinguish between coverage (c) and no coverage (nc) by a collective bargaining agreement. If the establishment is covered by a collective bargaining agreement, the wage is $\overline{w} = \overline{w}_c$. If the establishment is not covered, the wage is $\overline{w} = \overline{w}_{nc}$. In light of the empirical evidence (e.g., Stephan and Gerlach 2005), one may assume that $\overline{w}_c > \overline{w}_{nc}$. However, this assumption is not crucial for analyzing the moderating role collective bargaining plays in the economic effects of works councils.

If a works council is present, establishment-level bargaining over both work practices e and wages w takes place. In this case, the production function of the establishment is given by:

$$Q(e, N) = \begin{cases} (1 + \beta e)F(N) & \text{if there is an agreement,} \\ \alpha F(N) & \text{if there is a conflict,} \end{cases} \qquad (1)$$

where β is the effectiveness of the work practices and α an inverse measure of the council's opportunities to hinder decisions.[6] The production function captures the rent-generating and the rent-seeking face of works councils.

Works councils have a rent-generating face as codetermination provides a mechanism for negotiating work practices that otherwise cannot be implemented.[7] Without a works council, workers will not cooperate with the introduction of new work

practices because they fear employer opportunism. Therefore, *e* is equal to zero. By contrast, the presence of a works council fosters trust and cooperation so that the introduction of new work practices can be negotiated. In this case, *e* may be non-zero. If *e* is positive, this term represents productivity-enhancing work practices. For example, performance-related pay may be implemented (Heywood and Jirjahn 2002). We also allow for the case that *e* is negative. In this case, the establishment implements work practices that result in lower productivity. For example, employees may prefer work practices that improve occupational health or reduce environmental pollution affecting their families (Askildsen et al. 2006).

Our theoretical extension takes into account that the effectiveness β of the work practices may depend on collective bargaining coverage. As discussed, unions usually provide works councils with support and expertise to strengthen their position. The strengthened position enables a works council to more effectively prevent the employer from reneging on promises made to the employees. This, in turn, leads to increased trust and to a stronger willingness of the workforce to cooperate with the implementation of work practices. Thus, the effectiveness of the negotiated work practices is higher if the establishment is covered by collective bargaining:

$$0 \leq \beta_{nc} < \beta_{c}, \tag{2}$$

where β_{c} denotes the effectiveness of work practices in case of collective bargaining coverage and β_{nc} their effectiveness in case of no coverage.

However, works councils can also have a rent-seeking face as codetermination rights provide opportunities to hinder decisions if no agreement with the employer can be reached. Or put differently, codetermination increases workers' bargaining power by

weakening the employer's position in case of a disagreement. This is captured by α.[8] We assume $0 \leq \alpha < 1$ to take into account that a conflict between works council and employer results in lower output. A small α represents a situation where the works council has a strong power to disrupt production. The arguments, discussed in Section 2, suggest that this power is more limited in establishments covered by collective bargaining. Employers' associations can support managers with expertise in case there is a conflict with the works council. Moreover, unions may prevent works councils from rent seeking activities if those activities undermine the functioning of centralized collective bargaining. Thus, we assume:

$$0 \leq \alpha_{nc} < \alpha_c < 1, \tag{3}$$

where α_c is the inverse measure of the council's bargaining power in case of collective bargaining coverage and α_{nc} the inverse measure of its bargaining power in case of no coverage. If no works council is present in the establishment, we normalize α to be equal to one. This means that the workforce of the individual establishment is assumed to have no bargaining power in the absence of a works council.

Each worker's utility function has the Stone-Geary form:

$$u(e, w) = (\theta - e)(w - \overline{w}). \tag{4}$$

This utility function captures the idea that each worker compares his or her wage with a reference point. The worker's wage *w* only yields positive utility if it is greater than the reference wage. We assume that the reference wage is given by $\overline{w}$, the wage the worker receives in the absence of a works council. Furthermore, utility depends on work practices. A negative value of *e* increases utility due, for example, to an improvement in occupational health. A positive value of *e* decreases utility because productivity-

enhancing work practices require more effort. The parameter θ is the reference level for productivity-enhancing work practices above which the worker does not wish to work. Favorable conditions for investing in work practices are represented by a large θ.

In case of a conflict, the establishment employs the workers by paying them the wage $\overline{w}$. Thus, if there is a disagreement between works council and employer, each worker has a utility $\overline{u} = 0$ and the establishment's profit is:

$$\overline{\pi} = \alpha F(N) - \overline{w}N . \tag{5}$$

If there is an agreement, the profit is:

$$\pi(e, w) = (1 + \beta e)F(N) - wN . \tag{6}$$

4. Bargaining

In case that no works council is present, new work practices cannot be negotiated due to the lack of trust and cooperation. Moreover, workers cannot push through higher wages as they have no opportunity to hinder decisions, i.e. $\alpha = 1$. Hence, this situation is a no bargaining situation characterized by $e^* = 0$ and $w^* = \overline{w}$.

In contrast, if a works council is present, we have a bargaining situation. First, the works council can threaten to hinder decisions in case of a conflict. Second, works council and employer can negotiate both wages and work practices. The Nash product is:

$$\Omega(e, w) = [Nu(e, w) - N\overline{u}]^{0.5}[\pi(e, w) - \overline{\pi}]^{0.5} . \tag{7}$$

Taking equations (4), (5) and (6) into account we obtain:

$$\Omega(e, w) = [N(\theta - e)(w - \overline{w})]^{0.5}[(1 + \beta e)F(N) - wN - (\alpha F(N) - \overline{w}N)]^{0.5} . \tag{8}$$

The Nash product is maximized by choosing *w* and *e*. This yields:

$$w^{**} = \overline{w} + \frac{1}{3}(\theta\beta + 1 - \alpha)\frac{F(N)}{N} , \tag{9}$$

$$e^{**} = \frac{1}{3}[2\theta - \frac{1}{\beta}(1-\alpha)]. \quad (10)$$

The impact of the works council on work practices is ambiguous. If $\theta\beta \leq 0.5(1-\alpha)$, we obtain $e^{**} \leq 0$. If $\theta\beta > 0.5(1-\alpha)$, we obtain $e^{**} > 0$.

The expression e^{**} for work practices is increasing in β. This implies that the work practices negotiated between works council and employer are more likely to be productivity-enhancing if the effectiveness of the practices is high. The wage w^{**} is also increasing in β. Thus, the works council has an effect on wages due to potentially increased establishment performance. Even if codetermination would have no impact on the workers' bargaining power, we would observe an influence on wages because the works council can help implement productivity-enhancing work practices.

However, codetermination increases workers' bargaining power. The term $(1-\alpha)$ captures this effect. The higher bargaining power has implications for both wages and work practices. While w^{**} is increasing in $(1-\alpha)$, e^{**} is decreasing in $(1-\alpha)$. Thus, the impact of codetermination on wages is stronger and its impact on performance-enhancing work practices is less strong if the works council has more opportunities to hinder decisions.

5. Works Council Effects and Collective Bargaining Coverage

It is now straightforward to derive the works council effect on productivity. From equations (1) and (10) we obtain the establishment's productivity when a works council is present:

$$\frac{Q^{**}}{N} = [1 + \frac{1}{3}(2\theta\beta - (1-\alpha))]\frac{F(N)}{N}. \quad (11)$$

In the absence of a works council, the establishment's productivity is $Q^*/N = F(N)/N$. Thus, the works council effect on productivity is:

$$\Delta q = \frac{Q^{**}}{N} - \frac{Q^*}{N} = \frac{1}{3}[2\theta\beta - (1-\alpha)]\frac{F(N)}{N}. \quad (12)$$

As both the effectiveness of the negotiated work practices and the opportunities to hinder decisions depend on collective bargaining coverage, we can write:

$$\Delta q_c = \frac{1}{3}[2\theta\beta_c - (1-\alpha_c)]\frac{F(N)}{N}, \quad (13)$$

$$\Delta q_{nc} = \frac{1}{3}[2\theta\beta_{nc} - (1-\alpha_{nc})]\frac{F(N)}{N}, \quad (14)$$

where Δq_c is the effect on productivity in case of collective bargaining coverage and Δq_{nc} the effect in the absence of collective bargaining coverage. Taking (2) and (3) into account, it follows immediately that $\Delta q_c > \Delta q_{nc}$. Proposition 1 summarizes this result.

Proposition 1. The works council effect on productivity is greater if the establishment is covered by a collective bargaining agreement.

For two reasons, collective bargaining coverage exerts a positive moderating influence on the relationship between works council presence and productivity. First, the opportunities of the works council to hinder decisions are more restricted if the establishment is covered by a collective bargaining agreement. Thus, the works council has less power to push through work practices that require only low effort or primarily serve to increase workers' utility. Second, the effectiveness of the negotiated work practices is higher if the establishment is covered by a collective bargaining agreement. As a consequence, the employer and the works council tend to negotiate a higher amount of productivity-

enhancing work practices.

The works council effect on each worker's wage is:

$$\Delta w = w^{**} - w^{*} = \frac{1}{3}(\theta\beta + 1 - \alpha)\frac{F(N)}{N}. \tag{15}$$

The strength of this effect also depends on collective bargaining coverage:

$$\Delta w_c = \frac{1}{3}(\theta\beta_c + 1 - \alpha_c)\frac{F(N)}{N}, \tag{16}$$

$$\Delta w_{nc} = \frac{1}{3}(\theta\beta_{nc} + 1 - \alpha_{nc})\frac{F(N)}{N}. \tag{17}$$

We immediately obtain Proposition 2.

Proposition 2. If $\alpha_c - \alpha_{nc} > \theta(\beta_c - \beta_{nc})$*, the works council effect on wages is smaller in case of collective bargaining coverage than in case of no coverage. If* $\alpha_c - \alpha_{nc} < \theta(\beta_c - \beta_{nc})$*, the works council effect on wages is greater in case of coverage than in case of no coverage. If* $\alpha_c - \alpha_{nc} = \theta(\beta_c - \beta_{nc})$*, the works council effect on wages is the same in case of coverage and in case of no coverage.*

As to the wage effect of codetermination, the two moderating influences of collective bargaining coverage work in opposite directions. On the one hand, collective bargaining coverage limits the council's opportunities to engage in rent seeking. This decreases the wage effect of the work council. On the other hand, collective bargaining coverage improves the effectiveness of work practices negotiated between works council and employer. This increases the establishment surplus shared with the workforce through higher wages. Depending on whether the first or the second moderating influence dominates, collective bargaining coverage weakens or strengthens the wage effect of the

works council. If collective bargaining coverage primarily limits the council's opportunities for rent seeking, the wage effect of the works council is weakened. By contrast, if collective bargaining coverage primarily improves the effectiveness of the work practices, the wage effect of the council is strengthened. Altogether, our simple theoretical extension provides an explanation as to why the wage effect of a works council can be weaker or stronger in a covered establishment.

6. Conclusions

This paper extends Huebler and Jirjahn's (2003) theoretical analysis by considering a second moderating influence of collective bargaining coverage. Collective bargaining coverage not only limits the opportunities of works councils to engage in rent-seeking activities. It also strengthens the trust-building role of works councils and, hence, enables employers and works councils to implement more effective work practices. As to the productivity effect of works councils the two moderating influences work in the same direction implying a stronger effect in covered establishments. However, as to the wage effect of works councils they work in opposite directions so that depending on the relative strength of the two moderating influences the wage effect can be weaker or stronger in covered establishments.

The empirical evidence conforms to these predictions. While most studies find a stronger productivity effect in covered establishment, empirical research is inconclusive as to the wage effect of works councils in covered and uncovered establishments. The studies often differ in the industries or in the time period considered in the analysis. It seems natural that there may be variations in the relative weights of the two moderating influences across industries or time periods. Our theoretical analysis suggests that these

variations play little role in studies examining the productivity effects of works councils. As the two moderating influences of collective bargaining coverage work in the same direction, those studies should find a stronger productivity effect in covered establishments regardless of which moderating influence dominates. Yet, variations in the relative weights of the two moderating influences should play a decisive role in studies examining the wage effects of works councils. If collective bargaining coverage primarily limits rent-seeking activities of works councils, we should find a weaker wage effect in covered establishments. Yet, if collective bargaining coverage primarily improves the effectiveness of the work practices negotiated by works councils and employers, we should find a stronger wage effect in covered establishments.

Our theoretical analysis has implications for future empirical research. First, it suggests performing separate analyses by industry. If the relative weights of the two moderating influences vary across industries, this would allow identifying industries where collective bargaining coverage weakens the wage effects of works councils and industries where is strengthens the wage effects. Second, it would be interesting to perform separate analyses for different time periods. If the relative weights of the two moderating influences have changed over time, we may identify time periods characterized by weaker and time periods characterized by stronger wage effects of works councils in covered than in uncovered establishments. The analyses for different time periods may provide important indications of changes in the functioning of centralized collective bargaining in Germany.

Table 1: Works councils, collective bargaining coverage and productivity

Study	*Data*	*Dependent variable(s)*	*Method*	*Findings*
Huebler and Jirjahn (2003)	Hannover Firm Panel. Waves 1994 and 1996.	Value added per worker	Double-selection approach to take into account the possible endogeneity of works council presence and collective bargaining coverage.	Significantly positive effect of works councils on productivity in establishments covered by collective bargaining agreements, but not in uncovered establishments.
Huebler (2003)	Hannover Firm Panel. Waves 1994 and 1996.	Value added per worker	As above. Estimates for a subsample of establishments with 100–300 employees.	Significantly positive effect of works councils on productivity in covered but not in uncovered establishments.
Jirjahn (2003a)	Hannover Firm Panel. Waves 1994–1997.	Value added per worker	Random effects model. Estimates for all establishments and for a subsample of establishments with 21–100 employees.	Significantly positive effect of works councils on productivity in covered, but not in uncovered establishments.
Wagner et al. (2006)	1994 wave of the Hannover Firm Panel. 2000 wave of the IAB Establishment Panel.	Logarithm of value added per worker	OLS and quantile regression estimates. Separate estimates for manufacturing and service establishments in West and East Germany.	Significantly positive effect of works councils on productivity only in covered manufacturing establishments in West and East Germany.
Renaud (2008)	IAB Establishment Panel. Waves 2000–2003.	Logarithm of sales and logarithm of value added	OLS estimates	Significantly positive effect of works councils on productivity in covered and uncovered establishments with the effect being stronger in covered establishments.
Wagner (2008)	Hannover Firm Panel. Wave 1994.	Value added per worker	Kolmogorov-Smirnov test for first order stochastic dominance. Analysis for a subsample of establishments with 21–100 employees.	Significantly positive effect of works councils on productivity in covered, but not in uncovered establishments.
Braendle (2013)	IAB Establishment Panel. Waves 2005–2008.	Logarithm of value added per worker	Double-selection approach to take into account the possible endogeneity of works council presence and collective bargaining coverage.	Significantly positive effect of works councils on productivity in covered and uncovered establishments with the effect being stronger in establishments covered by industry-level collective bargaining.
Jirjahn and Mueller (2014)	IAB Establishment Panel. Waves 2001–2006.	Logarithm of sales per worker and logarithm of	Random effects model. Estimates for all establishments and for a subsample	Positive interaction effect of works council presence and coverage by industry-level collective bargaining. The

		value added per worker	of establishments with 21–100 employees.	interaction effect is statistically significant in the estimates for all establishments, but not in the estimates for establishments with 21–100 employees.

The population of the Hannover Firm Panel is all manufacturing establishments with at least five employees in the federal state of Lower Saxony (Gerlach et al. 2003). The population of the IAB Establishment Panel is all establishments with at least one employee covered by social insurance in all sectors in Germany (Fischer et al. 2009).

Table 2: Alternative measures of establishment performance

Study	*Data*	*Dependent variable(s)*	*Method*	*Findings*
HRM practices				
Heywood et al. (1998)	Hannover Firm Panel. Wave 1994.	Use of piece rates and use of profit sharing.	Probit	Significantly positive effect of works councils on the use of piece rates and profit sharing in covered, but not in uncovered establishments.
Heywood and Jirjahn (2002)	Hannover Firm Panel. Waves 1994 and 1996.	Use of various types of performance pay.	Probit	Significantly positive effect of works councils on the use of various types of performance pay in covered, but not in uncovered establishments.
Jirjahn (2002)	Hannover Firm Panel. Wave 1996.	Use of various types of HRM systems.	Multinomial logit	Works councils in covered establishments exert a significantly positive impact on the use of a innovative HRM system relying on group incentives, teams, and training.
Heywood and Jirjahn (2009)	IAB Establishment Panel. Wave 2002.	Provision of various types of family friendly practices by the establishment.	Probit	Share of female employees is positively associated with the provision of family friendly practices, specifically if there is a works council and the establishment is covered by collective bargaining.
Personnel turnover				
Frick and Moeller (2003)	IAB Establishment Panel. Wave 2000.	Log odds of personnel turnover	OLS estimates. Estimates for all establishments and separate estimates for the manufacturing and the service sector in West and East Germany.	Works councils significantly reduce personnel turnover with the effect being more pronounced in covered establishments.
Pfeifer (2011)	IAB Establishment Panel. Wave 2003.	Logarithm of voluntary quits by employees	Tobit. Estimates for all establishments and for a subsample of establishments with 21–100 employees.	Works councils significantly reduce quits only in establishments covered by industry-level collective bargaining.
Heywood et al. (2010)	IAB Establishment Panel. Wave 2002.	Employing older workers and hiring older workers.	Probit. Estimates for a subsample of establishments in the federal state of Lower Saxony.	Positive interaction effect of works councils and collective bargaining coverage on employing older workers. Negative interaction effect on hiring older workers.
Innovation				
Jirjahn (2012)	Hannover Firm Panel. Wave 1995.	Innovation success (share of the establishment's sales generated by new products)	Tobit	Positive interaction effect of works council incidence and collective bargaining coverage on innovation success.

Profit				
Huebler (2003)	Hannover Firm Panel. Waves 1994 and 1996.	Profit (value added minus wages) per employee	Double-selection approach to take into account the possible endogeneity of works council presence and collective bargaining coverage. Estimates for a subsample of establishments with 100–300 employees.	Significantly positive effect of works councils on profitability in covered but not in uncovered establishments.
Mueller (2011)	IAB Establishment Panel. Waves 1996–2007.	Profit (value added minus wages) per employee	Treatment effects model to account for the possible endogeneity of works council presence. Estimates for a subsample of establishments with 21–300 employees.	Significantly positive effect of works councils on profitability in covered but not in uncovered establishments.

The population of the Hannover Firm Panel is all manufacturing establishments with at least five employees in the federal state of Lower Saxony (Gerlach et al. 2003). The population of the IAB Establishment Panel is all establishments with at least one employee covered by social insurance in all sectors in Germany (Fischer et al. 2009).

Table 3: Works councils, collective bargaining and wages

Study	*Data*	*Dependent variable(s)*	*Method*	*Findings*
Jirjahn and Klodt (1999)	Hannover Firm Panel. Waves 1994–1996.	Logarithm of wage per employee	Random effects estimates	Significantly positive effect of works councils on wages only in uncovered but not in covered establishments.
Huebler and Jirjahn (2003)	Hannover Firm Panel. Waves 1994 and 1996.	Wage per employee	Double-selection approach to take into account the possible endogeneity of works council presence and collective bargaining coverage.	Significantly positive effect of works councils on wages only in uncovered but not in covered establishments.
Huebler (2003)	Hannover Firm Panel. Waves 1994 and 1996.	Wage per employee	As above. Estimates for a subsample of establishments with 100–300 employees.	No significant effect of works councils on wages.
Jirjahn (2003b)	Hannover Firm Panel. Waves 1994–1996.	Logarithm of wage per employee	OLS. Estimates for a subsample of establishments with 21 – 100 employees.	Significantly positive effect of works councils on wages in covered and uncovered establishments with the effect being weaker in covered establishments.
Guertzgen (2009)	IAB Linked Employer-Employee Dataset. Waves 1995–2001.	Logarithm of the individual wage	First-differenced regressions. Estimates for a subsample of employees in manufacturing establishments.	Significantly positive effect of works councils on wages only in establishments covered by industry-level collective bargaining.
Addison et al. (2010)	IAB Linked Employer-Employee Dataset. Wave 2001.	Logarithm of the individual wage	Double-selection approach to take into account the possible endogeneity of works council presence and collective bargaining coverage.	Significantly positive effect of works councils on wages in covered and uncovered establishments with the effect being stronger in covered establishments.
Gerlach and Meyer (2010)	IAB Establishment Panel. Waves 2001 and 2005.	Wage per employee	As above. Estimates for a subsample of establishments in the federal state of Lower Saxony.	Significantly positive effect of works councils on wages only in covered but not in uncovered establishments.
Guertzgen (2010)	IAB Establishment Panel. Waves 1995–2002.	Logarithm of wage per employee	Selection approach to take into account the possible endogeneity of collective bargaining coverage. Estimates for a subsample of establishments from the manufacturing sector.	Significantly positive effect of works councils on wages only in establishments covered by industry-level or firm-level collective bargaining.
Jirjahn and Kraft (2010)	Hannover Firm Panel. Wave 1997.	Intra-establishment wage inequality (difference between the	Least absolute deviation regression.	Works councils reduce intra-establishment wage inequality with the effect being weaker in covered establishments.

		wages of skilled and unskilled workers)		
Blien et al. (2013)	IAB Linked Employer-Employee Dataset. Waves 1998–2006.	Logarithm of the individual wage	OLS. Estimates for a subsample of full-time employees in West German establishments.	Significantly positive effect of works councils on wages in covered and uncovered establishments with the effect being more pronounced in establishments covered by industry-level or firm-level collective bargaining.
Braendle (2013)	IAB Establishment Panel. Waves 2005–2008.	Logarithm of wage per employee	Double-selection approach to take into account the possible endogeneity of works council presence and collective bargaining coverage.	Significantly positive effect of works councils on wages with the effect being similar in covered and uncovered establishments.

The population of the Hannover Firm Panel is all manufacturing establishments with at least five employees in the federal state of Lower Saxony (Gerlach et al. 2003). The population of the IAB Establishment Panel is all establishments with at least one employee covered by social insurance in all sectors in Germany (Fischer et al. 2009). The IAB Linked Employer-Employee Dataset combines worker data from the Employment Statistics Register and establishment data from the IAB Establishment Panel (Alda et al. 2005).

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Endnotes

[1] Only establishment-level codetermination in the Netherlands and Austria comes close to that in Germany.

[2] The discussion on the economic effects of collective bargaining often centers on the claim that centralized collective bargaining is not sufficiently responsive to local conditions (Freeman and Gibbons 1995, Lindbeck and Snower 2001). The moderating influence considered by Huebler and Jirjahn sheds light on an indirect effect of centralized collective bargaining that may contribute to improved firm performance.

[3] Sevejnar (1982) goes so far as assuming that the unions' influence changes the objective function of works councils.

[4] However, studies on works councils often use only parts of the IAB Establishment Panel. Establishments from the finance and insurance sectors as well as establishments from the public sector are usually excluded from the analysis.

[5] Works councils in turn help unions recruit new members.

[6] In models of wage drift, α captures work-to-rule actions in case that employer and union fail to reach an agreement (Moene et al. 1993).

[7] This idea has been suggested by McCain (1980). Models of bargaining over work practices and wages have been used by Haskel (1991), Nickell et al. (1992) and Nickell and Nicolitsas (1997). These models do not consider the case that bargaining over specific work practices is only possible when there is some form of worker representation.

[8] It is well known that the disagreement point in Nash's bargaining solution should be identified with the impasse point of Rubinstein's alternating-offers model (see e.g. Muthoo 1999). In this sense, $\alpha F(N)$ is the employer's output obtained in case of perpetual disagreement.