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# Works Councils and Employer Attitudes toward the Incentive Effects of HRM Practices

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**Abstract:** A growing number of econometric examinations show that works councils substantially shape the personnel policy of firms in Germany. Firms with works councils make greater use of various HRM practices. This gives rise to the question of whether employers view the shaping of personnel policy positively or negatively. Using data from manufacturing establishments, this study finds that the incidence of a works council increases the probability that the employer has positive attitudes toward the incentive effects of performance pay, profit sharing, promotions, further training, and worker involvement in decision-making. It decreases the probability of a positive attitude toward the incentive effects of a high-wage policy. The pattern of results also holds when accounting for the issue of endogeneity by applying a recursive multivariate probit model. The results suggest that works councils play a redistribution role in wages and a trust-building role in the other HRM practices.

**JEL Classification:** J33, J50, M52, M53.

**Keywords:** Non-union worker representation, management attitude, further training, performance pay, profit sharing, promotions, employee involvement, high wages, recursive multivariate probit model.

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## 1. Introduction

Works councils provide a highly developed mechanism for non-union worker representation substantially shaping the personnel policy of firms in Germany. A growing number of econometric studies suggest that firms with works councils pay higher wages, have larger internal labor markets, provide more training, and are more likely to adopt performance pay, family friendly practices and flexible working time arrangements. This gives rise to the question of whether the shaping of personnel policy is positively or negatively valued by employers. Do employers consider the increased adoption of human resource management (HRM) practices fostered by works councils as performance-enhancing or do they consider it as useless or even counterproductive?

Addressing this question yields deeper insights into the nature of the relationship between works councils and HRM practices. On the one hand, works councils can contribute to trustful industrial relations within firms. Trustful industrial relations increase workers' cooperativeness so that HRM practices can be more effectively and successfully implemented. This should result in positive employer attitudes toward these practices. On the other hand, works councils may engage in redistribution activities. They may use their bargaining power to push through practices that help workers enjoy a quiet life or primarily increase their share in the surplus of firms. In that case, employers should have negative attitudes toward the practices fostered by works councils. Thus, analyzing employer attitudes toward the various HRM practices helps clarify whether the influence of works councils on those practices is driven by their trust-building or by their redistributive role.

This study uses data from manufacturing firms in Germany to analyze the link between the incidence of a works council and the employer's attitude toward the incentive effects of a series of key HRM practices. Multivariate probit estimates show a sharp difference between the attitude toward a high-wage policy and the attitudes toward other HRM practices. The incidence of a works council is associated with a greater probability that the employer regards performance pay, profit sharing, promotions, further training and increased involvement in decision making as suitable incentives to motivate workers. In contrast, it is associated with a lower probability that paying wages above the collectively agreed-upon level is regarded as suitable for motivating workers. The pattern of results also holds true in a recursive multivariate probit approach that accounts for the possible endogeneity of the incidence of a works council.

Thus, with the exception of wages, works councils appear to contribute to an increased effectiveness of HRM practices so that these practices are more favorably viewed by employers. The works councils' role in wages may be rather characterized by redistribution of firm surplus. As a consequence, employers regard it as more difficult to provide incentives through wages if there is a works council (informally) involved in wage setting.

Our study complements examinations focusing on the formal presence of HRM practices. Works councils not only have an influence on the formal presence of HRM practices, they also shape employers' attitudes toward the practices. While examining the determinants of the presence of HRM practices deserves interest in its own right, there are two potential limitations of focusing solely on formal presence. On the one hand, HRM practices may exist in name only (Arthur and Boyles 2007, Budd 2010, Eaton

2003). The formal presence of a practice does not necessarily mean that the practice is effectively used and in fact plays a productive role in the firm's personnel policy. On the other hand, a firm may informally use HRM practices even though the practices have not been formally adopted (Mohr and Zoghi 2008, Yanadori and van Jaarsveld 2013). To the extent employer attitudes are important for the effective use of formal or informal HRM practices, our study helps mitigate these limitations. It provides insights into the question of whether or not works councils influence employers' support for the various practices. This support can be important for the effective use of the practices, regardless of whether they are of formal or informal nature.

The rest of the paper is organized as follows. Section 2 provides the background discussion. Section 3 describes the data, variables and methodology. Section 4 presents the empirical results, while Section 5 concludes.

## 2. Background Discussion

### *2.1 Shaping the Personnel Policy of Firms*

Industrial relations in Germany are characterized by a dual structure of worker representation with both works councils and unions. While collective bargaining agreements are usually negotiated between unions and employers' associations on a broad industrial level, works councils provide a highly developed mechanism for establishment-level participation (Behrens 2009, 2013, Keller 2004, Mueller-Jentsch 1995). Their rights are defined in the Works Constitution Act (WCA). Workers in establishments with five or more employees may elect council members, but the creation

of a council depends on the initiative of the workers. Hence, councils are not present in all eligible establishments.

On some issues, works councils have the right to information and consultation, on others a veto power over management initiatives, and on still others the right to codetermination in the design and implementation of policy. Their rights are strongest in social and personnel matters, including the introduction of payment methods, the allocation of working hours, the introduction of devices designed to monitor worker performance, and up- and down-grading. Works councils have functions distinct from those of unions. The WCA does not allow wage negotiations. Moreover, 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. Works council and employer are obliged by the law to cooperate "in a spirit of mutual trust … for the good of the employees and of the establishment".

The extensive participation rights provided by the WCA suggest that works councils have substantial power to shape the personnel policy of firms. Works councils may even informally extend their influence to issues that are nowhere covered by the WCA (Jirjahn and Smith 2006, Jirjahn et al. 2011). A series of empirical studies confirm that works councils indeed have a far reaching influence on the personnel policy of firms. Firms with a works council pay higher wages and have lower wage inequality (Addison et al. 2001, Addison et al. 2010, Heinze and Wolf 2010, Huebler and Meyer 2001, Jirjahn and Kraft 2010). They are more likely to adopt performance-related payment schemes such piece rates and profit sharing (Heywood et al. 1998, Heywood and Jirjahn 2002, 2014). These firms also provide more further training for employees (Gerlach and Jirjahn

2001, Huebler 2003, Zwick 2005) and have a higher probability of implementing family friendly practices (Beblo and Wolf 2004, Heywood and Jirjahn 2009) and flexible working time arrangements (Ellguth and Promberger 2004). Furthermore, firms with works councils appear to have larger internal labor markets. They are characterized by increased employee retention (Frick 1996, Frick and Moeller 2003, Heywood et al. 2010, Jirjahn 2016a, Pfeifer 2011) and a higher tendency to pay seniority wages (Zwick 2011).

At issue is whether this shaping of personnel policy is positively or negatively viewed by the employers. On the one hand, a works council can play a trust-building role (Askildsen et al. 2006, Freeman and Lazear 1995, Jirjahn 2009, Kaufman and Levine 2000, Smith 1991, 2006). The consultation rights of the council help reduce information asymmetries between management and workers so that workers can better observe and evaluate the employer's behavior. Moreover, the codetermination rights help the council prevent the employer from unilaterally taking action without considering workers' interests. Thus, worker representation helps create binding commitments of the employer and contributes to trustful employer-employee relationships. Trustful employer-employee relationships increase workers' cooperativeness and, hence, improve the effectiveness of HRM practices. As a consequence, the employer has an increased interest in implementing the practices when a works council is present. The employer may even ask the council to participate widely in the design, implementation and operation of HRM practices in order to strengthen workers' support and cooperation (Jirjahn and Smith 2006). In this case, the works council plays a co-managerial role contributing to a more positive employer attitude toward the HRM practices.

On the other hand, the increased influence of works councils on the personnel policy of firms may rather reflect redistribution activities (Addison et al. 2001, Freeman and Lazear 1995). A council may use its codetermination rights to obtain employer concessions on a wide range of issues. If employer and works council fail to reach an agreement in (informal) negotiations, the council can threaten to hinder decisions in areas where its consent is necessary. In that case, the council uses its bargaining power to push through practices that help workers enjoy a quiet life or primarily increase their share in the surplus of the firm. As a consequence, the employer should have a more negative attitude toward the practices fostered by the works council.

*2.2 HRM Practices*

In what follows we analyze the influence of works councils on employer attitudes toward the incentive effects of a series of key HRM practices, namely performance pay, profit sharing, high wages, promotions, further training, and workers' involvement in decision-making. In principle, works councils can play a trust-building or a redistributive role in each of these practices. This gives rise to the question of whether or not the role of works councils and, hence, their influence on employers' attitudes differs between the various practices.

At their best, performance pay schemes such as piece rates or bonuses provide incentives to exert effort by aligning workers' interests with those of the employer. However, performance pay can also entail a series of dysfunctional incentives that are more likely when employer-employee relations are characterized by distrust (Heywood and Jirjahn 2006). A well-know example is the ratchet effect (Charness et al. 2011).

Workers, receiving performance pay, withhold effort when they fear that the employer will increase performance standards after a period of good performance. Moreover, performance pay may entail disincentives if workers assume that the measurement of their performance is rather arbitrary. A works council may increase workers' trust. The codetermination rights of the council help prevent the employer from unilaterally altering the payment terms. The council can also contribute to procedural fairness by helping set clear performance standards and make performance measurement more transparent. This should improve the productive incentive effects of performance pay schemes and, hence, should result in a more positive employer attitude toward performance pay. However, the works council may also use its codetermination rights to push through schemes that primarily redistribute firm surplus in favor of the workers. In that case, the council supports variable pay components that are just paid on top of the base wage without being effectively linked to workers' performance.[1] As this entails higher labor cost, but no sufficient increase in worker productivity, the incidence of the works council should result in a more negative employer attitude toward performance pay.

Profit sharing has the potential to provide incentives for cooperation and helping on the job (Drago and Turnbull 1988, Heywood et al. 2005, Rotemberg 1994). However, profit sharing may entail disincentives if workers do not trust the accounting of profit or fear that management does not pursue complementary investments designed to increase financial performance of the firm (Kurtulus et al. 2011). A works council playing a trust-building role can increase the effectiveness of profit sharing by monitoring the accounting of profit and participating in decisions that influence the financial performance of the firm. Yet, a council primarily engaged in redistribution may support

profit sharing as an additional pay component that automatically ensures that workers participate in the firm's profit. The council may even influence the design of the sharing scheme in such a way that workers participate in profits but not in losses.

Not only the method of pay but also the level of pay can provide incentives. Efficiency wage theory suggests that the employer can induce effort by paying high wages and threatening to dismiss workers who are caught shirking (Shapiro and Stiglitz 1984). However, the incentive effects of high wages are undermined if workers fear that they might be dismissed arbitrarily. A works council playing a trust-building role can improve the incentive effects by helping the employer implement a credible just-cause employment policy. The improved incentive effects should have a positive influence on the employer's attitude toward paying high wages and, thus, should increase the propensity to use this motivation tool. Yet, if the redistributive role of codetermination dominates, the council will use its codetermination rights primarily for informal wage negotiations regardless of the incentive effects. 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 (Addison et al. 2001, Mueller-Jentsch 1995). The council may hold up decisions on staff movements or overtime to obtain wage concessions by the employer. In this case, the influence of codetermination on wages does not mainly reflect incentive issues, but rather rent sharing. Hence, the employer should have a less positive attitude toward high wages if a works council is present in the firm.

Promotions are an important feature of the internal labor markets of firms (Gibbons and Waldman 1999, Lazear and Oyer 2004). On the one hand, a works council

may improve the functioning of the internal labor market by ensuring that the employer's promises are kept and workers are rewarded for good performance by being promoted (Jirjahn 2009). On the other hand, the works council may primarily support internal labor markets to increase workers' insider power in order to capture a larger part of the firm's surplus (Addison and Siebert 1991).

Employer provided further training does not only increase the workers' skills and knowledge. It also has an influence on the incentives to exert effort (Hinerasky and Fahr 2015, Tharenou et al. 2007). Increased skills and knowledge help workers get better job assignments and improve their career opportunities. Moreover, training often involves feedback to workers influencing the self-assessment of abilities and, hence, the subjective expectation of being successful in the job. Whether or not a works council fosters productive incentive effects of training again depends on the trust-building or redistributive role of codetermination. On the one hand, the council may improve the incentive effects of training by ensuring that training programs are offered that take into account workers' preferences and career concerns. On the other hand, the council may push through training courses that primarily have an entertainment value to workers or, alternatively, increase their outside options by providing skills and qualifications largely transferable to other firms.

Giving workers greater scope for decisions by delegating responsibilities to lower layers of hierarchy or directly involving workers in management's decision-making implies that their interests and perspectives are taken into account to a larger extent. This, in turn, can increase their incentives to exert effort (Aghion and Tirole 1997). Nonetheless distrust may undermine the incentive effects of a participatory HRM policy.

Workers may fear that their decisions or proposals will be simply overruled when these decisions and proposals appear not to be in the employer's interest (Baker et al. 1999). Moreover, the employer may use information obtained from the workers against their interests, for example for innovations which entail job loss. A works council can help build trust by ensuring that decisions are implemented as agreed upon. However, if the council is concerned that alternative forms of worker participation are substitutes for codetermination and, hence, weaken its bargaining power, the council will refuse to support direct worker involvement.[2]

## 3. Data, Variables and Methodology

### *3.1 Data Set*

Our empirical investigation is based on the Hannover Panel, a four-wave panel (1994-1997) with data from manufacturing establishments in the federal state of Lower Saxony (Gerlach et al. 2003). Investigating the determinants of employer attitudes in the manufacturing sector is interesting for several reasons. First, a relatively high percentage of economic activity in comparative context is still concentrated in manufacturing in Germany (Vitols 2005). The importance of traditional branches, such as the automobile industry, appears to even have increased within manufacturing as a whole. Second, the dual system of employee representation with establishment-level codetermination and industry-level collective bargaining is common in the manufacturing sector. Industrial relations in this sector can be seen as the institutional benchmark (Addison et al. 2007). Third, the focus on manufacturing helps avoiding a bias due to heterogeneity across industries (Doucouliagos and Laroche 2003).

The data set is unique in that it contains information on both works councils and managers' attitudes toward HRM practices.[3] Note that our study aims at examining the general influence of works councils on managers' attitudes in order to obtain deeper insights into the functioning of establishment-level codetermination. Thus, the Hannover Panel provides a solid basis for the empirical analysis even though it is from the 1990s.

The population of the survey consists of all manufacturing establishments with five or more employees. The sample is stratified according to firm size and industry, with an oversampling of larger establishments. The sample was designed in such a way that a sufficient number of cell entries remained after four waves despite sample attrition. In the first wave of interviews (1994), 51 percent of the establishments in the sample agreed to participate. In spite of this non-response rate the difference between the planned and realized stratification is so small that the data are representative of the manufacturing establishments in Lower Saxony in 1994 and in the subsequent waves. The net sample of the first wave was used as the basis for the following waves.

The Hannover Panel was financed by the Volkswagen foundation. Interviews were conducted by Infratest Sozialforschung, a professional survey and opinion research institute. The data were collected on the basis of a questionnaire in personal interviews with the top manager of the establishment. The questionnaire covered various aspects of establishment structure, establishment behavior and establishment performance with an emphasis on issues relating to personnel. A nucleus of themes was addressed annually. Different additional topics were sampled in consecutive waves. Information on managers' attitudes toward HRM practices is available from wave 1 and wave 4 of the survey. Thus, the analysis is based on pooled data for the years 1994 and 1997.

*3.2 Dependent Variables*

The survey asks managers to assess the long-term incentive effects of a series of HRM practices on a four-point Likert scale (1 = the practice not suitable at all; 2 = the practice is not that suitable; 3 = the practice is well suited; 4 = the practice is very well suited).[4] Our main dependent variables are dummy variables for positive management attitudes toward the various HRM practices. The dummy variable for a particular HRM practice is equal to 1 if management regards the practice as well suited or very well suited to motivate workers. The dummy is equal to 0 if management regards the practice as not that suitable or not suitable at all. In order to check the robustness of our results, we also present regressions that use the four-point ordered variables as dependent variables.

Table 1 provides the variable definitions and descriptive statistics.[5] The survey provides information on employer attitudes toward performance pay, profit sharing and promotions. These are three classical incentive schemes widely considered in the literature (e.g., Kruse et al. 2010, Lazear 2000, Lazear and Rosen 1981). Moreover, perceived incentive effects of the level of pay are taken into account by employer attitudes toward paying wages above the level specified in collective bargaining agreements. Note that this variable is available for both establishments covered and establishments not covered by collective agreements. In Germany, even uncovered establishments typically use collective agreements as a reference point when deciding about their remuneration policy. Furthermore, the survey provides information on the employer attitude toward further training. Finally, perceived incentive effects of a

participatory HRM policy are captured by the attitude toward providing more scope for decision-making to workers.

Employers most frequently have positive attitudes toward providing scope for decision-making (80%) and toward performance pay (79%). These practices are followed by further training (67%), promotions (66%), high wages (62%) and profit sharing (59%).

*3.3 Explanatory Variables*

The data provide a rich set of explanatory variables. The explanatory variable of primary interest is a dichotomous indicator of whether or not the establishment has a works council. As discussed, works councils may have a trust-building role or a redistribution role. If the trust-building role dominates, there should be a positive influence on the employer's attitude toward the respective HRM practice. Yet, if the redistribution role dominates, there should be a negative effect.

Furthermore, industrial relations are captured by a dummy variable for the coverage by a collective bargaining agreement. Collective bargaining agreements are often thought to impose restrictions on the flexibility of firms (Lindbeck and Snower 2001). Such restrictions on flexibility may limit the incentive effects of HRM practices and, hence, may have a negative influence on managers' attitudes toward the practices.

Whether or not a specific HRM practice is regarded as suited is very likely to depend on whether the practice fits in with the establishment's strategy (Arthur 1992). Thus, variables for a research-based, a quality-based and an expansive market strategy are included in the regressions. The managerial environment is taken into account by variables for the presence of owner-managers and the use of profit sharing for executives.

Profit sharing provides incentives for managers to take steps to increase firm performance.[6] This may result in a more positive view of HRM practices that motivate workers.

The incentive effects of HRM practices and, hence, managers' views toward these practices should also depend on the types of workers employed in the establishment. Thus, the structure of the workforce is controlled for by variables for the shares of university graduates, blue-collar workers, skilled blue-collar workers, apprentices, women, and part-time workers.

Furthermore, a series of variables control for general establishment characteristics. These variables capture establishment size, subsidiary status, vintage of production technology, and industry affiliation within the manufacturing sector. Finally, a dummy for the year of observation is included.

*3.4 Estimation Strategy*

Using the dummy dependent variables for positive attitudes toward the HRM practices, we start the analysis with a multivariate probit estimation.[7] The multivariate probit model is a generalization of the bivariate model (Greene 2003: 931–933).[8] Similar to the bivariate model, the multivariate probit model allows for correlated error terms between the various probit equations. However, the estimation procedure is more complicated.

Let the dummy variable $HRM_{im}$ denote employer *i*'s attitude toward HRM practice *m* (*m* = 1, …, 6). The attitude depends on a latent variable $HRM^{*}_{im}$: $HRM_{im} = 1$ if $HRM^{*}_{im} \geq 0$, and $HRM_{im} = 0$ otherwise. Thus, in our case, the multivariate probit estimation is based on six equations:

$$HRM_{i1}^{*} = \delta_1 Woco_i + \boldsymbol{\beta}_1' \boldsymbol{x}_i + \varepsilon_{i1}, \quad (1)$$

$$\vdots \qquad\qquad \vdots$$

$$HRM_{i6}^{*} = \delta_6 Woco_i + \boldsymbol{\beta}_6' \boldsymbol{x}_i + \varepsilon_{i6}, \quad (6)$$

where $Woco_i$ is a dummy variable for the incidence of a works council, $\delta_m$ its coefficient, $\boldsymbol{x}_i$ the vector of establishment characteristics, $\boldsymbol{\beta}_m$ the vector of coefficients and $\varepsilon_{im}$ the error term. The error terms are assumed to be jointly six-variate normally distributed, each with a mean of 0 and a variance normalized equal to 1. In order to account for a possible correlation of the error terms, the equations are jointly estimated by a specific maximum simulated likelihood approach. The practical obstacle in estimating a multivariate probit model is the evaluation of high-order multivariate normal integrals. Therefore, the multivariate standard normal distribution is evaluated by using a method based on the Geweke-Hajivassiliou-Keane simulator (Boersch-Supan and Hajivassiliou 1993, Hajivassiliou and Ruud 1994, Keane 1994). This method exploits the fact that a multivariate normal distribution function can be expressed as the product of sequentially conditioned univariate normal distribution functions, which can be evaluated more easily.

In the next step, we address the issue of endogeneity. The incidence of a works council may be endogenous for two reasons. First, there may be reverse causation. Second, there may be omitted variables associated with both the incidence of a works council and the attitudes toward the HRM practices. These two cases would imply that the error terms in equations (1)–(6) are correlated with the dummy variable for works council incidence. As a consequence the estimated coefficients on that variable would be inconsistent and biased.

The multivariate probit model allows addressing the endogeneity of dummy explanatory variables by applying a recursive approach (Balia and Jones 2008, Jones 2007).[9] The recursive multivariate probit model is an extension of the recursive bivarate model (Greene 1998). Let us assume that the dummy for the presence of a works council depends on a latent variable $Woco_i^*$: $Woco_i = 1$ if $Woco_i^* \geq 0$, and $Woco_i = 0$ otherwise. Thus, we add a seventh equation to the multivariate probit model:

$$Woco_i^* = \boldsymbol{\gamma}'\boldsymbol{z}_i + \boldsymbol{\beta}_7'\boldsymbol{x}_i + \varepsilon_{i7}, \tag{7}$$

where $\boldsymbol{z}_i$ is the vector of establishment characteristics influencing works council incidence, but not employer attitudes. The corresponding vector of coefficients is given by $\boldsymbol{\gamma}$. The error terms are now assumed to be seven-variate normally distributed. The recursive system of the multivariate probit consists of equations (1)–(7). The equations are jointly estimated by the maximum simulated likelihood approach described above. The model is called recursive as the works council dummy enters equations (1)–(6) while the variables for the employer's attitudes do not enter equation (7). Equation (7) can be considered as a reduced form equation and equations (1)–(6) as structural equations.

The vector $\boldsymbol{z}_i$ captures the exclusion restrictions. In principle, identification of the recursive multivariate probit model is ensured by its inherent nonlinearity (Wilde 2000). However, to avoid identification relying solely on the functional form, exclusion restrictions are usually imposed to improve identification (Monfardini and Radice 2008). Thus, we add an exclusion restriction to our estimation. We discuss the exact specification when we introduce the estimates in the next section.

A test of the exogeneity of the works council variable is based on the correlation $Corr(\varepsilon_{i7}, \varepsilon_{im})$ of the error term $\varepsilon_{i7}$ in the works council equation with the error term $\varepsilon_{im}$

in HRM equation $m$. If $Corr(\varepsilon_{i7}, \varepsilon_{im}) = 0$, the works council equation is independent of the HRM equation and the null hypothesis of exogeneity is not rejected. If $Corr(\varepsilon_{i7}, \varepsilon_{im}) \neq 0$, the null hypothesis is rejected and the works council variable is considered as endogenous. In that case, the recursive model has to be preferred as it takes endogeneity into account.

## 4. Estimation Results

### *4.1 Initial Estimates*

Table 2 provides the initial multivariate probit estimation. Nine out of the fifteen estimated correlations of the error terms are significantly positive. This suggests that unobserved random factors influence the attitudes toward the various HRM practices in the same direction.

Many of the coefficients on the control variables are also significant. Establishment size is associated with a higher probability that the employer views promotions, further training and employee involvement in decision-making positively. Subsidiary status increases the likelihood of a positive attitude toward promotions, further training and a high-wage policy.

Furthermore, the results confirm that the establishment's business strategy and managerial incentives play an important role. Employers with a quality-based business strategy are more likely to have a positive view of profit sharing, promotions, training and increased employee involvement in decision-making. Moreover, employers are more likely to have a positive attitude toward promotions, training, employee involvement and a high-wage policy if they pursue an expansive market strategy. R&D increases the

probability of positive attitudes toward performance pay and promotions. However, the vintage of production technology appears to have rather mixed effects. Executive profit sharing is associated with a positive view of performance pay, employee profit sharing, promotions and employee involvement.

Conforming to the notion that the incentive effects of HRM practices and, hence, employer attitudes toward these practices also depend on the different types of workers, the estimates show that the structure of the workforce plays a role. Employers with a high share of blue-collar workers tend to have a positive attitude toward performance pay and negative attitudes toward profit sharing, employee involvement in decision-making and further training. The negative influence of blue-collar workers on the attitude toward training is, however, less pronounced if the blue-collar workers are skilled. Temporary workers are also associated with a higher likelihood that the employer regards further training as unsuitable to motivate workers. The share of apprentices increases the likelihood that further training and employee involvement in decision-making are viewed positively. A high share of university graduates is associated with a positive attitude toward employee involvement in decision-making. The share of part-time employees increases the probability of positive attitudes toward profit sharing and employee involvement in decision-making.

Turning to industrial relations, collective bargaining coverage for the most part does not emerge with significant coefficients. One exception is the influence on the employer's attitude toward profit sharing. Employers covered by collective bargaining agreements tend to regard profit sharing as unsuitable to motivate workers. This result

complements studies showing that collective bargaining coverage is negatively associated with the use of profit sharing.[10]

Most importantly, the works council variable takes significant coefficients in all equations. The estimates show a striking pattern of results. The incidence of a works council is associated with a negative attitude toward a high-wage policy and with positive attitudes toward all of the other HRM practices. These findings suggest that works council mostly increase the effectiveness of HRM practices through their trust-building role so that the practices are more favorably viewed by employers. However, with respect to the pay level, the redistributive role of works councils appears to dominate. If works councils use their bargaining power to increase workers' share in the establishment's surplus rather than to improve the functioning of efficiency wages, employers are less likely to have a positive attitude toward a high-wage policy.

The estimated effects of works council incidence are not only statistically significant, but also economically meaningful. Considering the positive effects, the strongest influences are on attitudes toward further training and promotions. Other things being equal, the incidence of a works council increases the probability of a positive attitude toward further training by 11.7 percentage points and the probability of a positive attitude toward promotions by 11.3 percentage points. These HRM practices are followed by profit sharing with 7.7 percentage points, employee involvement in decision-making with 5.3 percentage points, and performance pay with 4.9 percentage points. Considering the negative effect on the attitude toward a high-wage policy, the incidence of a works council is associated with a 7.0 percentage point lower probability that the employer regards high wages as a suitable incentive to motivate workers.

So far our analysis is based on dummy dependent variables for positive employer attitudes. In order to check the robustness of results, we have also used the underlying four-point ordered variables as dependent variables. Appendix Table A2 provides the results of a series of random effects ordered probit regressions. The table only reports the results on the key explanatory variable. All the other explanatory variables are included in the regression but are suppressed to save space. The random effects ordered probit estimations confirm the basic pattern of results obtained by the multivariate probit estimation. The incidence of a works council has a negative influence on the employer's attitude toward a high-wage policy and a positive influence on the attitudes toward the other HRM practices. Even the estimated magnitudes are very similar to those of the multivariate probit estimation. All in all, our findings are robust to using more detailed dependent variables.

*4.2 The Issue of Endogeneity*

In what follows we return to our dummy dependent variables and estimate a recursive multivariate probit model to account for the potential endogeneity of the incidence of a works council. As discussed in Section 3, the model is in principle identified by its inherent nonlinearity. Nonetheless in order to avoid that identification relies solely on the functional form, we additionally impose an exclusion restriction by assuming that establishment age influences works council incidence but not managers' attitudes toward HRM practices. Establishment age is captured by a dummy variable for a foundation before the year 1960.

Previous research has shown a strong positive link between the age of the establishment and the incidence of a works council (e.g., Jirjahn and Smith 2006). The older an establishment, the higher the likelihood that there have been situations at some time in the past that have led workers to adopt a works council. Of course, age may be associated with other characteristics of the establishment such as vintage of production technology. These establishment characteristics, in turn, may influence managers' attitudes toward HRM practices. However, to the extent that we control for critical establishment characteristics, we do not expect a direct effect of establishment age on managers' attitudes. Thus, we assume that establishment age influences managers' attitudes only indirectly through the incidence of a works council but not directly and independently of the incidence of the works council.

In order to check whether or not establishment age is directly associated with managers' attitudes, we included the age variable as an additional explanatory variable in the initial multivariate probit estimation. While this is no formal test of the validity of the identifying variable, it offers a clear sense of the patterns in the data and provides useful indications (Evans and Schwab 1995). Appendix Table A3 shows the results. Establishment age does not emerge with significant coefficients and the estimated coefficients appear to be small. This supports the assumption that there is no direct link between establishment age and managers' attitudes. Moreover, the pattern of results for the works council variable is not affected by including the age variable.

Table 3 presents the results of the recursive multivariate probit model that jointly estimates the determinants of works council incidence and the determinants of employer attitudes toward HRM practices. Establishment age is only included in the works council

equation but not in the HRM equations. The estimates show that our identifying variable is significantly associated with the incidence of a works council. Establishments founded before the year 1960 have a 10.4 percentage point higher probability that a works council is present. Furthermore, collective bargaining coverage, establishment size and executive profit sharing are positive covariates of works council incidence. Owner-managers, a modern production technology, and the shares of apprentices, part-timers and temporary workers are negative covariates.

The error term of the works council equation is significantly correlated with the error terms of the equations for positive attitudes toward promotions, further training, and employee involvement in decision-making. Thus, the hypothesis of exogeneity is rejected and the works council variable has to be considered as endogenous in these equations.

Most importantly, the recursive multivariate probit model confirms the pattern of results on the works council variable. Compared to the initial estimation, the magnitudes of the estimated coefficients and marginal effects of our key explanatory variable even increase. This is particularly pronounced for the three HRM equations in which the works council variable has to be considered as endogenous. The recursive model suggests that the incidence of a works council raises the probabilities of positive attitudes toward promotions, further training and employee involvement by 30.5, 27.0 and 14.4 percentage points, respectively. The estimated magnitudes also increase, albeit to a lesser extent, in the other HRM equations. Works council incidence is associated with a 13.3 percentage point higher probability of a positive attitude toward profit sharing and an 8.2 percentage point higher probability of a positive attitude toward performance pay. Finally, it reduces the likelihood of a positive attitude toward a high-wage policy by 10.7 percentage points.

Altogether, the recursive multivariate probit estimation provides no evidence that the pattern of results is driven by reverse causation or an omitted variable basis. Quite the contrary, taken the issue of endogeneity into account yields an even stronger pattern of results. With the exception of wages, works councils contribute to positive employer attitudes toward all of the other HRM practices.

## 5. Conclusions

Previous econometric studies have shown that the incidence of a works council is associated with an increased use of various HRM practices. However, the formal use of HRM practices does not necessarily mean that these practices are valued by the employer. From a theoretical point view, the interpretation of the empirical findings is ambiguous. The link between works councils and HRM practices may reflect a redistributive or a trust-building function of codetermination. Against this background, our study examines whether or not works councils contribute to positive attitudes toward a series of HRM practices.

The estimates yield a robust pattern of results that even holds true when accounting for the potential issue of endogeneity. The incidence of a works council increases the probability that the employer has a positive attitude toward the incentive effects of performance pay, profit sharing, promotions, further training, and workers' involvement in decision-making. The results suggest that works councils not only increase the formal use of HRM practices, but also the employer's support of these practices. This conforms to the hypothesis that the works council contributes to trustful

employer-employee relationships increasing the effectiveness of the HRM practices and, hence, resulting in positive employer attitudes toward the practices.

However, there is one notable exception. The estimates provide evidence that employers are less likely to hold a positive attitude toward paying high wages if a works council is present. This indicates that the influence of works councils on wages reflects a redistribution of rents rather than an increased effectiveness of efficiency wages. Even though the law does not allow wage negotiations, the council can use its codetermination rights for informal negotiations. The works council can threaten to hinder decisions in order to obtain wage concessions by the employer.

There is a need for continued research within this theme. Future research could fruitfully examine the interaction effects of formal HRM practices and employer attitudes on indicators of firm performance such productivity, profitability and innovativeness. To the extent the effectiveness of the practices depends on a supportive managerial environment, we should observe positive interaction effects.

Moreover, it would be interesting to examine the interaction effects of works councils and employer attitudes on firm performance. Previous research on the interaction effects of works councils and HRM practices remains in its infancy. The scarce number of studies on this topic have only examined the interaction of works councils with the formal use of HRM practices.[11] Informal HRM practices have not been considered. To the extent positive employer attitudes are not only associated with an increased use of formal, but also with an increased use of informal HRM practices, examining the interaction of works councils and employer attitudes could yield deeper insights into the interplay between codetermination and HRM practices.

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**Table 1:** Variable Definitions and Descriptive Statistics

| *Variable* | *Definition* | *Mean* |
|---|---|---|
| Positive attitude toward performance pay | Dummy variable equal to 1 if management regards performance pay as well suited or very well suited to motivate workers. | 0.790 |
| Positive attitude toward profit sharing | Dummy variable equal to 1 if management regards profit sharing as well suited or very well suited to motivate workers. | 0.591 |
| Positive attitude toward promotions | Dummy variable equal to 1 if management regards promotions as well suited or very well suited to motivate workers. | 0.655 |
| Positive attitude toward further training | Dummy variable equal to 1 if management regards further training as well suited or very well suited to motivate workers. | 0.667 |
| Positive attitude toward scope for decision-making | Dummy variable equal to 1 if management regards the provision of greater scope for decision-making as well suited or very well suited to motivate workers. | 0.804 |
| Positive attitude toward high wages | Dummy variable equal to 1 if management regards is as well suited or very well suited to motivate workers by paying wages above the level specified in collective bargaining agreements. | 0.620 |
| Works council | Dummy variable equal to 1 if a works council is present in the establishment. | 0.579 |
| Collective bargaining | Dummy variable equal to 1 if the establishment is covered by a collective bargaining agreement. | 0.654 |
| Size | Total employees in the establishment. | 162.02 |
| Size squared | Total employees in the establishment squared. | --- |
| Subsidiary | Dummy variable equal to 1 if the establishment is a subsidiary. | 0.123 |
| Executive profit sharing | Dummy variable equal to 1 if the executive managers have a profit sharing plan. | 0.439 |
| Owner-manager | Dummy variable equal to 1 if an owner-manager is present in the establishment. | 0.632 |
| Research | Dummy variable equal to 1 if research and development is at the heart of the establishment's strategy. | 0.155 |
| Quality | Dummy variable equal to 1 if improving product quality is at the heart of the establishment's strategy. | 0.617 |
| Expansion | Dummy variable equal to 1 if expanding the market share is at the heart of the establishment's strategy. | 0.551 |
| Technology | Ordered variable for the vintage of production technology used (1 = very old, …, 4 = state of the art technology). | 2.997 |
| Apprentices | Apprentices as a proportion of all employees. | 0.045 |
| Blue-collar workers | Blue-collar workers as a proportion of all employees. | 0.624 |
| Skilled blue-collar workers | Skilled blue-collar workers as a proportion of all employees. | 0.393 |
| University graduates | University graduates as a proportion of all employees. | 0.036 |
| Women | Women as a proportion of all employees. | 0.286 |
| Part-time workers | Part-time employees as a proportion of all employees. | 0.076 |
| Establishment age | Dummy variable equal to 1 if the establishment was created before 1960. | 0.652 |
| 1994 | Dummy variable for the year 1994. | 0.618 |
| Industry dummies | Three broad defined dummies for industrial sectors in manufacturing. | --- |

Number of observations = 1,493

**Table 2:** Initial Multivariate Probit Estimation

| | *(1)* *Positive attitude toward performance pay* | *(2)* *Positive attitude toward profit sharing* | *(3)* *Positive attitude toward promotions* | *(4)* *Positive attitude toward further training* | *(5)* *Positive attitude toward scope for decision-making* | *(6)* *Positive attitude toward high wages* |
|---|---|---|---|---|---|---|
| Works council | 0.1758 [0.049] (1.88)* | 0.2078 [0.077] (2.45)** | 0.3257 [0.113] (3.67)*** | 0.3441 [0.117] (3.91)*** | 0.2022 [0.053] (2.12)** | -0.1888 [-0.070] (2.24)** |
| Collective bargaining | 0.1392 [0.039] (1.59) | -0.1737 [-0.063] (2.18)** | 0.0035 [0.001] (0.04) | 0.0510 [0.017] (0.65) | -0.0032 [-0.001] (0.04) | -0.0086 [-0.003] (0.11) |
| Size | 0.0001 [$2x10^{-5}$] (0.38) | 0.0003 [$1x10^{-4}$] (1.42) | 0.0013 [$4x10^{-4}$] (3.61)*** | 0.0009 [$3x10^{-4}$] (2.89)*** | 0.0009 [$2x10^{-4}$] (2.80)*** | -0.0001 [$-4x10^{-5}$] (0.60) |
| Size squared | $6x10^{-9}$ [$1x10^{-9}$] (0.20) | $-1x10^{-8}$ [$-3x10^{-9}$] (0.72) | $-7x10^{-8}$ [$-2x10^{-8}$] (3.40)*** | $-5x10^{-8}$ [$-1x10^{-8}$] (2.54)** | $-6x10^{-8}$ [$-1x10^{-8}$] (2.96)*** | $-4x10^{-9}$ [$-5x10^{-9}$] (0.47) |
| Subsidiary | -0.0318 [-0.008] (0.25) | 0.0909 [0.033] (0.77) | 0.3776 [0.120] (2.96)*** | 0.2360 [0.075] (1.85)* | -0.0624 [-0.016] (0.47) | 0.2404 [0.087] (2.04)** |
| Executive profit sharing | 0.1422 [0.039] (1.81)* | 0.2984 [0.110] (4.27)*** | 0.1923 [0.065] (2.66)*** | 0.0193 [0.006] (0.26) | 0.1564 [0.039] (1.91)* | 0.0056 [0.002] (0.08) |
| Owner-manager | 0.0485 [0.013] (0.51) | -0.1037 [-0.038] (1.24) | 0.0837 [0.028] (0.96) | -0.0784 [-0.026] (0.91) | -0.0568 [-0.014] (0.57) | 0.0105 [0.004] (0.13) |
| Research | 0.2836 [0.072] (2.40)** | 0.124 [0.045] (1.25) | 0.2537 [0.083] (2.44)** | 0.0906 [0.030] (0.89) | 0.1256 [0.031] (1.06) | -0.0617 [-0.023] (0.64) |
| Quality | 0.0450 [0.013] (0.58) | 0.1994 [0.074] (2.86)*** | 0.1582 [0.054] (2.18)** | 0.3030 [0.102] (4.16)*** | 0.2855 [0.075] (3.65)*** | 0.0582 [0.022] (0.83) |
| Expansion | 0.0887 [0.025] (1.16) | 0.0916 [0.034] (1.32) | 0.1552 [0.052] (2.19)** | 0.1611 [0.054] (2.24)** | 0.1997 [0.052] (2.50)** | 0.1234 [0.046] (1.78)* |
| Technology | -0.0208 [-0.006] (0.48) | -0.0874 [-0.032] (2.26)** | 0.0524 [0.017] (1.31) | -0.0030 [-0.001] (0.08) | -0.0807 [-0.021] (1.82)* | 0.1107 [0.040] (2.90)*** |
| Apprentices | -0.2628 [-0.080] (0.39) | -0.1509 [-0.056] (0.23) | -0.2008 [-0.069] (0.30) | 1.3447 [0.285] (1.95)* | 1.3897 [0.180] (1.74)* | 0.6623 [0.210] (1.03) |
| Blue-collar workers | 0.6210 [0.130] (2.49)** | -0.5342 [-0.199] (2.35)** | -0.0078 [-0.003] (0.03) | -0.8539 [-0.301] (3.68)*** | -0.4866 [-0.146] (1.68)* | 0.3639 [0.126] (1.62) |
| Skilled blue-collar workers | 0.1630 [0.042] (0.98) | -0.1485 [-0.055] (0.98) | -0.2202 [-0.076] (1.42) | 0.3542 [0.108] (2.27)** | 0.1138 [0.028] (0.67) | 0.0419 [0.016] (0.28) |
| University graduates | 0.2736 [0.068] (0.38) | -0.8028 [-0.292] (1.14) | -0.6764 [-0.240] (0.95) | 1.0335 [0.249] (1.40) | 2.4494 [0.195] (2.54)** | 0.1265 [0.046] (0.53) |

| | | | | | | |
|---|---|---|---|---|---|---|
| Women | 0.0815 [0.022]<br>(0.43) | 0.1585 [0.057]<br>(0.87) | -0.3437 [-0.120]<br>(1.87)* | -0.1773 [-0.060]<br>(0.95) | -0.0295 [-0.008]<br>(0.15) | -0.0933 [-0.035]<br>(0.53) |
| Part-time workers | 0.5728 [0.123]<br>(1.50) | 0.8558 [0.260]<br>(2.28)** | 0.0801 [0.026]<br>(0.23) | 0.1443 [0.046]<br>(0.40) | 0.8396 [0.145]<br>(1.98)** | 0.3067 [0.108]<br>(0.85) |
| Temporary workers | 0.0527 [0.014]<br>(0.10) | -0.5539 [-0.206]<br>(1.07) | -0.3381 [-0.118]<br>(0.69) | -0.9954 [-0.347]<br>(2.00)** | -0.1753 [-0.048]<br>(0.32) | -0.1450 [-0.055]<br>(0.30) |
| 1994 | -0.2764 [-0.075]<br>(3.52)*** | -0.1242 [-0.046]<br>(1.79)* | -0.1851 [-0.062]<br>(2.56)** | 0.0912 [0.030]<br>(1.27) | -0.0329 [-0.008]<br>(0.41) | 0.0331 [0.012]<br>(0.48) |
| Constant | 0.0241<br>(0.08) | 0.5436<br>(2.01)** | -0.2242<br>(0.80) | 0.2932<br>(1.04) | 0.7449<br>(2.34)** | -0.3098<br>(1.17) |
| Industry dummies | Included | Included | Included | Included | Included | Included |
| Log likelihood | -5012.80 | | | | | |
| Correlation of error terms | Rho21 = 0.1223 (2.64)***, Rho31 = 0.0203 (0.42), Rho41 = 0.0585 (1.27), Rho51 = 0.0928 (1.83)*, Rho61 = 0.0165 (0.37), Rho32 = 0.1340 (3.13)***, Rho42 = 0.1028 (2.34)**, Rho52 = 0.1933 (4.08)***, Rho62 = 0.0189 (0.45), Rho43 = 0.2714 (6.37)***, Rho53 = 0.3374 (7.68)***, Rho63 = 0.0669 (1.58), Rho54 = 0.2742 (5.98)***, Rho64 = 0.0953 (2.23)**, Rho65 = -0.0318 (0.70) | | | | | |
| Number of observations | 1,493 | | | | | |

The table shows the estimated coefficients. Robust z-statistics are in parentheses. Average marginal effects are in square brackets. $Rho_{jk}$ is the correlation between the error terms of equation *j* and equation *k*. *Statistically significant at the 10% level; ** at the 5% level; *** at the 1% level.

**Table 3:** Recursive Multivariate Probit Estimation

| | *(1)* *Positive attitude toward performance pay* | *(2)* *Positive attitude toward profit sharing* | *(3)* *Positive attitude toward promotions* | *(4)* *Positive attitude toward further training* | *(5)* *Positive attitude toward scope for decision-making* | *(6)* *Positive attitude toward high wages* | *(7)* *Works council* |
|---|---|---|---|---|---|---|---|
| Works council | 0.2895 [0.082] (1.96)* | 0.3590 [0.133] (2.42)** | 0.8684 [0.305] (5.94)*** | 0.7867 [0.270] (5.30)*** | 0.5392 [0.144] (2.97)*** | -0.2882 [-0.107] (1.98)** | --- |
| Establishment age | --- | --- | --- | --- | --- | --- | 0.4624 [0.104] (5.12)*** |
| Collective bargaining | 0.1024 [0.028] (1.08) | -0.2207 [-0.080] (2.42)** | -0.1725 [-0.054] (1.84)* | -0.0996 [-0.032] (1.12) | -0.1174 [-0.030] (1.14) | 0.0240 [0.008] (0.27) | 1.0048 [0.241] (10.80)*** |
| Size | $2x10^{-5}$ [$7x10^{-6}$] (0.10) | 0.0002 [$8x10^{-5}$] (1.05) | 0.0008 [$2x10^{-4}$] (2.70)*** | 0.0006 [$2x10^{-4}$] (2.12)** | 0.0007 [$1x10^{-4}$] (2.28)** | -0.0001 [$-2x10^{-5}$] (0.29) | 0.0096 [0.002] (7.03)*** |
| Size squared | $2x10^{-8}$ [$5x10^{-9}$] (0.43) | $-3x10^{-9}$ [$-1x10^{-9}$] (0.23) | $-4x10^{-8}$ [$-1x10^{-8}$] (2.33)** | $-3x10^{-8}$ [$-1x10^{-8}$] (1.65)* | $-4x10^{-8}$ [$-1x10^{-8}$] (2.46)** | $-2x10^{-8}$ [$-9x10^{-9}$] (0.73) | $-6x10^{-7}$ [$-1x10^{-7}$] (7.01)*** |
| Subsidiary | -0.0311 [-0.009] (0.24) | 0.0820 [0.030] (0.70) | 0.3595 [0.110] (2.81)*** | 0.2272 [0.071] (1.81)* | -0.0692 [-0.018] (0.52) | 0.2421 [0.087] (2.06)** | 0.0682 [0.015] (0.40) |
| Executive profit sharing | 0.1287 [0.035] (1.62) | 0.2772 [0.102] (3.89)*** | 0.1299 [0.042] (1.77)* | -0.0313 [-0.010] (0.42) | 0.1143 [0.029] (1.36) | 0.0188 [0.007] (0.26) | 0.2143 [0.048] (2.29)** |
| Owner-manager | 0.0706 [0.020] (0.73) | -0.0726 [-0.027] (0.83) | 0.1755 [0.056] (1.95)* | 0.0083 [0.003] (0.09) | 0.0122 [0.003] (0.12) | -0.0059 [-0.002] (0.07) | -0.6606 [-0.152] (6.25)*** |
| Research | 0.2768 [0.071] (2.35)** | 0.1152 [0.042] (1.16) | 0.2216 [0.070] (2.12)** | 0.0725 [0.023] (0.72) | 0.1089 [0.027] (0.91) | -0.0554 [-0.021] (0.58) | 0.1943 [0.032] (1.17) |
| Quality | 0.0403 [0.011] (0.52) | 0.1930 [0.071] (2.77)*** | 0.1326 [0.043] (1.86)* | 0.2801 [0.092] (3.85)*** | 0.2688 [0.071] (3.44)*** | 0.0597 [0.022] (0.85) | 0.0213 [0.005] (0.25) |
| Expansion | 0.0840 [0.023] (1.09) | 0.0880 [0.032] (1.26) | 0.1273 [0.041] (1.80)* | 0.1362 [0.044] (1.88)* | 0.1779 [0.046] (2.22)** | 0.1252 [0.047] (1.80)* | 0.0151 [0.003] (0.18) |
| Technology | -0.0198 [-0.006] (0.46) | -0.0868 [-0.032] (2.25)** | 0.0572 [0.018] (1.44) | 0.0035 [0.001] (0.09) | -0.0719 [-0.019] (1.63) | 0.1115 [0.041] (2.93)*** | -0.1120 [-0.025] (2.23)** |
| Apprentices | -0.2000 [-0.059] (0.29) | -0.1097 [-0.040] (0.17) | -0.0120 [-0.004] (0.02) | 1.4257 [0.291] (2.09)** | 1.3685 [0.183] (1.75)* | 0.6155 [0.197] (0.95) | -1.6889 [-0.316] (2.15)** |
| Blue-collar workers | 0.6116 [0.129] (2.44)** | -0.5568 [-0.206] (2.44)** | -0.0830 [-0.027] (0.34) | -0.9114 [-0.311] (3.91)*** | -0.5503 [-0.167] (1.89)* | 0.3851 [0.132] (1.70)* | 0.4057 [0.088] (1.41) |
| Skilled blue-collar workers | 0.1710 [0.044] (1.03) | -0.1360 [-0.050] (0.90) | -0.1712 [-0.056] (1.10) | 0.4086 [0.119] (2.66)*** | 0.1641 [0.039] (0.97) | 0.0324 [0.012] (0.22) | 0.0143 [0.003] (0.08) |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| University graduates | 0.2402 [0.060] (0.34) | -0.8044 [-0.291] (1.17) | -0.7790 [-0.261] (1.09) | 0.8837 [0.222] (1.22) | 2.3905 [0.200] (2.48)** | 0.1613 [0.058] (0.24) | 1.2363 [0.248] (1.54) |
| Women | 0.0766 [0.021] (0.40) | 0.1484 [0.053] (0.82) | -0.3631 [-0.122] (2.00)** | -0.1853 [-0.122] (1.00) | -0.0417 [-0.011] (0.21) | -0.0904 [-0.034] (0.51) | 0.1593 [0.035] (0.71) |
| Part-time workers | 0.6016 [0.127] (1.57) | 0.8877 [0.266] (2.44)** | 0.2053 [0.064] (0.60) | 0.2460 [0.075] (0.67) | 0.9051 [0.153] (2.13)** | 0.2664 [0.094] (0.73) | -1.2453 [-0.249] (2.50)** |
| Temporary workers | 0.1026 [0.027] (0.19) | -0.4876 [-0.181] (0.93) | -0.1221 [-0.040] (0.25) | -0.8153 [-0.279] (1.63) | -0.0499 [-0.013] (0.09) | -0.1660 [-0.063] (0.34) | -1.6412 [-0.309] (2.04)** |
| 1994 | -0.2754 [-0.074] (3.50)*** | -0.1141 [-0.042] (1.65) | -0.1722 [-0.055] (2.40)** | 0.0955 [0.031] (1.33) | -0.0318 [-0.008] (0.40) | 0.0285 [0.011] (0.41) | -0.1123 [-0.025] (1.28) |
| Constant | 0.0017 (0.01) | 0.5240 (1.93)* | -0.2816 (1.01) | 0.2185 (0.77) | 0.6902 (2.18)** | -0.3085 (1.17) | -1.7185 (5.10)*** |
| Industry dummies | Included | Included | Included | Included | Included | Included | Included |
| Log likelihood | -5571.92 | | | | | | |
| Correlation between the error term of the works council equation and the error terms of the HRM equations | Rho71 = -0.0847 (1.05), Rho72 = -0.109 (1.21), Rho73 = -0.401 (4.35)***, Rho74 = -0.329 (3.61)***, Rho75 = -0.242 (2.11)**, Rho76 = 0.074 (0.86) | | | | | | |
| Correlation between the error terms of the HRM equations | Rho21 = 0.1381 (3.06)***, Rho31 = 0.0467 (0.97), Rho41 = 0.0596 (1.26), Rho51 = 0.0829 (1.60), Rho61 = 0.0133 (0.29), Rho32 = 0.1454 (3.28)***, Rho42 = 0.1289 (2.88)***, Rho52 = 0.1984 (4.28)***, Rho62 = 0.0115 (0.28), Rho43 = 0.3045 (6.90)***, Rho53 = 0.3502 (7.54)***, Rho63 = 0.0537 (1.21), Rho54 = 0.3139 (6.52)***, Rho64 = 0.0724 (1.67), Rho65 = -0.0559 (1.20) | | | | | | |
| Number of observations | 1,493 | | | | | | |

The table shows the estimated coefficients. Robust z-statistics are in parentheses. Average marginal effects are in square brackets. $Rho_{jk}$ is the correlation between the error terms of equation *j* and equation *k*. *Statistically significant at the 10% level; ** at the 5% level; *** at the 1% level.

## Appendix

**Table A1:** Distribution of Managers' Attitudes toward the Incentive Effects of HRM Practices (in %)

| | *Performance pay* | *Profit sharing* | *Promotions* | *Further training* | *Scope for decision-making* | *High wages* |
|---|---|---|---|---|---|---|
| Not suitable at all | 5.22 | 11.99 | 10.52 | 7.97 | 4.22 | 7.03 |
| Not that suitable | 15.81 | 28.94 | 23.98 | 25.32 | 15.41 | 30.94 |
| Well suited | 55.66 | 45.55 | 55.39 | 56.06 | 56.33 | 51.24 |
| Very well suited | 23.31 | 13.53 | 10.11 | 10.65 | 24.05 | 10.78 |
| Total | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Number of observations | 1,493 | 1,493 | 1,493 | 1,493 | 1,493 | 1,493 |

**Table A2:** Random Effects Ordered Probit Estimations

| | *(1)*<br>*Performance pay* | *(2)*<br>*Profit sharing* | *(3)*<br>*Promotions* | *(4)*<br>*Further training* | *(5)*<br>*Scope for decision-making* | *(6)*<br>*High wages* |
|---|---|---|---|---|---|---|
| Works council | 0.2116 [0.054]<br>(2.47)** | 0.1923 [0.070]<br>(2.27)** | 0.3496 [0.121]<br>(4.16)*** | 0.4242 [0.143]<br>(4.95)*** | 0.2841 [0.064]<br>(3.06)*** | -0.1923 [-0.069]<br>(2.09)** |
| Rho | 0.306<br>(3.51)*** | 0.326<br>(3.70)*** | 0.236<br>(2.99)*** | 0.268<br>(3.27)*** | 0.471<br>(4.27)*** | 0.498<br>(4.65)*** |
| Log Likelihood | -1614.97 | -1778.50 | -1607.67 | -1558.33 | -1530.02 | -1649.31 |
| Number of observations | 1,493 | 1,493 | 1,493 | 1,493 | 1,493 | 1,493 |

The estimations are based on the 4-point ordered variables for managers' attitudes toward the incentive effects of HRM practices. The table shows the estimated coefficients. Robust z-statistics are in parentheses. Average marginal effects on a positive attitude toward the respective HRM practice are in square brackets. Rho is the cross-period correlation of errors terms of the respective equation. *Statistically significant at the 10% level; ** at the 5% level; *** at the 1% level. Note that all of the other control variables listed in Table 2 are included but are suppressed to save space.

**Table A3:** Multivariate Probit Estimation with Establishment Age as Additional Explanatory Variable

| | *(1)* *Positive attitude toward performance pay* | *(2)* *Positive attitude toward profit sharing* | *(3)* *Positive attitude toward promotions* | *(4)* *Positive attitude toward further training* | *(5)* *Positive attitude toward scope for decision-making* | *(6)* *Positive attitude toward high wages* |
|---|---|---|---|---|---|---|
| Works council | 0.1803 [0.051] (1.90)* | 0.2173 [0.081] (2.53)** | 0.3236 [0.112] (3.59)*** | 0.3551 [0.121] (4.00)*** | 0.1944 [0.051] (2.01)** | -0.1882 [-0.070] (2.21)** |
| Establishment age | -0.030 [-0.008] (0.36) | -0.0579 [-0.021] (0.77) | 0.0118 [0.004] (0.15) | -0.0601 [-0.019] (0.77) | 0.0419 [0.011] (0.50) | -0.0043 [-0.002] (0.06) |
| Log likelihood | -5011.95 | | | | | |
| Correlation of error terms | Rho21 = 0.1218 (2.63)***, Rho31 = 0.0203 (0.42), Rho41 = 0.0578 (1.26), Rho51 = 0.0931 (1.84)*, Rho61 = 0.0164 (0.36), Rho32 = 0.1341 (3.14)***, Rho42 = 0.1022 (2.33)**, Rho52 = 0.1936 (4.09)***, Rho62 = 0.0192 (0.45), Rho43 = 0.2715 (6.37)***, Rho53 = 0.3375 (7.69)***, Rho63 = 0.0669 (1.57), Rho54 = 0.2747 (5.99)***, Rho64 = 0.0955 (2.24)**, Rho65 = -0.0324 (0.71) | | | | | |
| Number of observations | 1,493 | | | | | |

The table shows the estimated coefficients. Robust z-statistics are in parentheses. Average marginal effects are in square brackets. $Rho_{jk}$ is the correlation between the error terms of equation *j* and equation *k*. *Statistically significant at the 10% level; ** at the 5% level; *** at the 1% level. Note that all of the other control variables listed in Table 2 are included but are suppressed to save space.

**Endnotes**

[1] Of course, productive incentive effects of performance pay may require that it is coupled with sufficiently high rewards (Jirjahn 2016b). Yet, if performance pay is just used for redistribution, the "rewards" paid on top of the base wages are not related to workers' performance. This case is similar to that of CEOs setting their own performance pay on top of their base salaries (Bertrand and Mullanaithan 2000).

[2] The case of council substitution would be analogous to that of union substitution discussed in Anglo-Saxon studies (Belfield and Heywood 2004, Fiorito 2001, Fiorito 1987, Machin and Wood 2005).

[3] The IAB Establishment Panel provides no information on managers' attitudes toward HRM practices. It only contains some information of their views of personnel problems within their firms (Pfeifer 2014).

[4] The complete distribution of managers' attitudes toward the incentive effects of the HRM practices is shown in the appendix in Table A1.

[5] Descriptive statistics and regressions are not weighted. Stratification of the data is accounted for by including the stratification characteristics firm size and industry in the regressions instead of using sample weights (Winship and Radbill 1994). To relate descriptive statistics to regression results, they are also not weighted.

[6] Note that also establishments with an owner-manager may provide managerial profit sharing. While some establishments may be solely run by the owner, others are run by both the owner and hired managers (Jirjahn and Mohrenweiser 2016).

[7] The estimates were performed in STATA using a program written by Capellari and Jenkins (2003).

[8] See, e.g., Jirjahn and Kraft (2011) for an application of the multivariate probit model.

[9] See also Struewing (2016) for an application of the model.

[10] See Heywood et al. (1998) and Heywood and Jirjahn (2002).

[11] See, e.g., Frick and Moeller (2003), Jirjahn (1998) and Smith (2006).