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Are the firm owners really worse off with a works council?

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Abstract

As they are employee associations, it is typically presumed that works councils redistribute economic rents from firm owners to workers. And indeed, empirical literature suggests that works councils reduce profits although, at the same time, they increase productivity. Studies on the profitability effect of works councils, however, mainly use self-reported subjective profit evaluations of managers as the dependent variable. I additionally use objective measures to check the validity of these results. While negative effects are reproduced with the subjective measure, non-negative effects for the objective measures contradict previous results. With the objective measures, the works council effect on profit further increases if attempts are made to control for self-selection, and it is generally positive if the establishment is covered by a collective bargaining agreement. Further results indicate that the subjective profit measure is a poor measure of actual profits and that it is hardly appropriate as a dependent variable in a profit regression.

Keywords: worker participation, works council, profit, rent distribution

JEL Classification: J53

1 Introduction

Mandatory works councils are widely considered as employers' costly concessions to workers and to the society's political left wing. And indeed, if one assumes perfect markets, a legislation that creates powerful and mandatory works councils must cause efficiency losses and, *ceteris paribus*, reduce profits. Additionally, as works councils represent workers, it seems to be plausible to presume rent-seeking behavior and, as a result, a redistribution

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of economic rents from capital owners to workers, which implies a further reduction in profits.

In contrast to this view, recent empirical studies suggest that German works councils have a non-negative impact on establishment productivity (e.g. Addison et al. (2004), Mueller (2009)). This opens up four possibilities for the councils' effect on profits. First, if councils nevertheless reduce profits then they redistribute more than the additional rents they have created. Second, councils may confine themselves to redistribute only the additional rents and, thus, leave profits unaffected. Third, they do not influence the income shares of capital and labor and are therefore positively related to establishment profits. Fourth, if they are unable to increase wages as strongly as they increase productivity (both in percentages), labor's share shrinks while profits absolutely increase.

Empirical studies support the first possibility and find a negative association of works councils and establishments' profits (e.g., Addison and Wagner (1997), Addison et al. (2001)). Hence, in Germany works councils appear as efficiency-increasing institutions that redistribute economic rents from capital owners to workers. This result is in line with theoretical predictions (Freeman and Lazear (1995)) and explains why powerful works councils do not evolve without a legal mandate.

While the productivity impact of works councils is examined frequently, the literature on its profitability effects is comparatively sparse and dated. Moreover, studies use very different concepts of profitability. The majority uses self-reported subjective evaluations of current profits by the establishments' managers and finds negative council effects (e.g., Addison et al. (2001), Dilger (2002; 2003)). Others construct objective measures from value added and costs (Hübler and Jirjahn (2001)) and some use accounting information (Addison and Wagner (1997)). An establishment's work force decides on the existence or non-existence of a works council. Only few studies address the endogeneity of works council existence (Addison and Wagner (1997), Hübler and Jirjahn (2001)), which may arise from this self-selection mechanism.

In order to obtain a more comprehensive and up to date picture of the councils' impact on profits, I construct several profit measures from the LIAB¹ and use data on medium-sized establishments from manufacturing and service sectors for the years 1996 to 2006. I estimate the direction of potential endogeneity biases and add the establishment's capital stock as an explanatory variable. As the extent of rent-seeking and productivity-enhancing activities of works councils is likely to depend on whether wages are deter-

¹ The Linked Employer-Employee panel data set of the Institute for Employment Research (IAB) in Nuremberg.

mined inside or outside the establishment (see Freeman and Lazear (1995) or Hübler and Jirjahn (2003)), it is explicitly controlled for whether the council's effect changes if the establishment is also covered by an industry-wide collective wage bargaining agreement.

The results vary with the profitability concept used. While councils' impact on the managers' evaluation of the current profit situation is negative (as reported in previous studies), utilizing objective profit measures yields more positive results. Works councils do not influence whether there is an actual (objective) profit or a loss. They are positively associated with the establishments' quasi rents, i.e. with the difference between value added and labor costs. For both objective measures, the presence of a collective bargaining agreement positively influences the impact of works councils on establishment profits. Furthermore, the results for the objective measures become more positive if potentially endogenous council existence is controlled for. I present evidence that the subjective profit measure is not a reliable proxy for actual profits and conclude that works council existence is unrelated to profits in case of no collective wage bargaining and positively related otherwise.

Given higher wages in council establishments (as, for instance, reported in Addison et al. (2001) and Addison et al. (2009)), the positive results for the objective measure indicate that additional rents due to the councils' productivity gains are shared by firm owners and workers. The opposing results from the subjective profit measure could reflect managers' dissatisfaction with works council existence and not works councils' effect on actual profits.

2 Institutional Background

The Works Constitution Act (*Betriebsverfassungsgesetz*) is the legal base for German works councils. It codifies the rules for council elections and regulates the rights of the council. A works council is a board of workers who are elected by their colleagues for a period of four years. Councils can be elected in establishments with five or more permanent employees of which at least three have to be eligible for election. A worker is eligible for election if she is with the company for at least six months. Firms that have more than one establishment, additionally have central works councils which consist of members of establishment-level councils.²

German works councils are mandatory because workers have the legal right to establish councils. However, councils do not exist automatically but depend on the initiative of the employees. As the number of employees rises,

² For a more in depth treatment of Germany's works council legislation see, for instance, Müller-Jentsch (1995).

the probability of works council existence increases. There are only few small businesses that have a council, while nearly each establishment with more than 300 employees has one.

In general, councils have information rights, consultations rights, veto rights, and co-determination rights. With respect to remuneration, the Works Constitution Act gives councils co-determination rights in the introduction of new payment methods, the regulation of overtime, changes of pay groups and transfers. Additionally, councils may use their veto and co-determination rights in other areas to enforce higher remuneration.

Works councils have no right to organize strikes and the exclusive right of industry-wide collective bargaining remains with unions. Hence, the German system of industrial relations consists of two parts. While unions operate at the industry level, works councils represent *all* workers in a specific plant or establishment, regardless whether they are union members or not or whether their establishment is covered by collective bargaining. Although works councils and unions are formally independent, both are closely linked in reality: most works councillors are union members and often actively recruit new union members while unions devote expertise and financial resources to councils (Behrens (2009)).

3 Theory and Literature

Freeman and Lazear (1995) developed a useful framework to model works councils' effects on profits. They assume that the economic rent (R) generated by an organization depends on the rights (x) attributed to the workers. They further assume that $R(x)$ has an inverted U-Shape. This means that some power in the hands of workers increase total rents but too much power decreases it. The parameter τ with $0 < \tau < 1$ is the share in (R) that is given to the workers and $1 - \tau$ is the share of the firm owners. Workers are supposed to use increasing power to achieve a higher share in total revenue, i.e. $\tau'(x) > 0$. Hence, whether profits increase or decrease depends on how strongly $R(x)$ increases (due to increased productivity) *and* on how strongly firm owners' share in rents decreases.

As the number of council rights (x) is determined by law, $\tau(x)$ can only take two values: $\tau(1)$ in case of council presence and $\tau(0)$ in the other case.³

³ For simplicity I neglect the fact that council rights rise with the number of employees. As I will only consider establishments with more 20 and less than 300 workers, the difference in rights is moderate and this may justify the simplification. Further, the major difference in workers' rights depends on the existence or non-existence of a council and not on employment thresholds. Addison et al. (2001) provide information on employment thresholds and council rights.

If $\tau(1) = \tau(0)$ councils do not redistribute economic rents and increased profits are shared by workers and firm owners according to $\tau(0)$. As German works councils may have some rent-seeking power, $\tau(1) > \tau(0)$ is assumed by most researchers.⁴

According to Freeman and Lazear (1995) and empirically supported by Hübler and Jirjahn (2003), collective bargaining outside the establishment – e.g., at the industry level – reduces councils’ rent-seeking opportunities. Consequently, $\tau(1) - \tau(0)$ is expected to be smaller for establishments that are covered by such an agreement. Hübler and Jirjahn (2003) and other studies further show that collective bargaining raises $R'(x)$, i.e. increases the productivity effect of councils. Both effects of collective agreements point into the same direction and hence, as a first hypothesis, I expect the works councils’ effect on profits to be more positive in the presence of collective bargaining.

A second testable hypothesis refers to the potential endogeneity of works councils due to self-selection. Self-selection exists because the workers have the right to establish a council. Workers will do this if the utility they gain from having the council exceeds the costs they face. If there are unobserved factors that influence both workers’ utility and establishments’ profits, works councils are endogenous and the estimated council coefficient is biased. Jirjahn (2009) finds that works councils are introduced for rent-protection purposes in times of poor establishment performance, and Mueller (2009) draws a similar conclusion. Hence, as a second hypothesis, it is expected that correcting for self-selection leads to more positive council coefficients.

Previous studies using a self-reported subjective evaluation of profitability as the dependent variable (e.g., Addison and Wagner (1997), Addison et al. (2001), Dilger (2002; 2003)) find a negative relationship between works councils and profits. As the council coefficient in Addison and Wagner (1997) becomes more positive when the works council dummy is instrumented, this result supports my second hypothesis. However, an obvious drawback of the subjective profit measure is its dependence on some unknown reference point of the respondent. I will argue that this measure is not a good measure for actual profits and present evidence for this view at the end of this paper. Hübler and Jirjahn (2001) compute an objective profit measure by taking the difference between value added and labor costs as the dependent variable. They find that works council existence is not associated with this so called ‘quasi rent’. Their results seem to support my first hypothesis but give mixed results with respect to the second one.

⁴ Addison et al. (2001) and Addison et al. (2009) find higher wages in establishments with a works council.

Although capital stock is a potentially important omitted variable in all studies mentioned, its omission may be most problematic in Hübler and Jirjahn (2001) because the quasi rent quantifies the income of firm owners and foreign capital lenders jointly.⁵ Hence, if capital is not controlled for, the council parameter estimates the councils' effect on the sum of firm owners' and capital lenders' income and not the desired effect on firm owners' profits.

To purge the drawbacks of the approach by Hübler and Jirjahn (2001), I approximate capital stock following the method proposed by Mueller (2008) and use it as a control variable. Much more observations than in any existing study are used, attempts are made to control for the self-selection into the observed council regime, and the interaction with collective bargaining is taken into account. Additionally, I run regressions that are based on the self-reported measure (the same as used by the aforementioned studies) and on two objective profit measures, respectively. In order to discuss the appropriateness of the three measures, I compare the plausibility of their results.

4 Data and Descriptive Evidence

This analysis is based on twelve annual waves (1996–2007) of the Linked Employer Employee Panel data set (LIAB) of the Institute for Employment Research (IAB). The survey unit is the establishment or local production unit, rather than the legal and commercial entity of the company. Information on employees is provided for June 30 each year.

As works councils in establishments with less than 21 employees have few legal rights and because very small establishments may operate systematically different from larger ones, I exclude them from the sample. Nearly all establishments with more than 300 workers have a works council. To not estimate unobservable size effects instead of works council effects, those establishments are also excluded. Furthermore, only profit-oriented manufacturing and service sectors are considered.⁶ I exclude the real estate sector, because capital stock is the predominant input factor in that sector and is difficult to interpret there. As value added, capital stock, and other variables have a different meaning in banks and insurance companies than in other sectors, these two sectors are also dropped, and I end up with 6,500 establishment-year observations.

⁵ There are studies with direct information on profits and capital stock (see Addison et al. (1993); FitzRoy and Kraft (1985)). However, these studies are based on very small samples.

⁶ This leads to the exclusion of the following industries: health and social work, sports, culture, entertainment, educational services, sewage, refuse disposal, sanitation, and the unspecified group of "other services".

I estimate regressions in which the dependent variable is a self-reported ordinal profit measure: establishments are asked to classify their profit situation into the categories ‘very good’, ‘good’, ‘satisfying’, ‘sufficient’, and ‘insufficient’. This is transformed into a binary variable that is one if the establishment is at least in a good profit situation (35.8 percent of observations) and zero otherwise. Note that the respondents are not asked to compare the profit situation of their firm to the profit situation of firms of similar size, region, or industry.

The difference between value added and labor costs in 1,000 Euros, divided by the number of workers is used as an objective profit measure. Following Hübler and Jirjahn (2001), the difference is called the quasi rent. Value added is total sales minus the costs of intermediate goods and services bought to produce output. Labor costs consist of gross wages and non-wage labor costs. Non-wage labor costs contain employers’ compulsory contributions to the social security insurance system and accident insurance as well as other costs that may differ by establishments and sectors. As the data contain no information on non-wage labor costs, the latter has to be approximated. I used information about gross income per worker and total labor costs per worker by sector from the national accounts (see Statistisches Bundesamt (2008)) in order to compute the average non-wage cost as a percentage of gross income per worker. This percentage is then added to the LIAB information on gross wages to approximate total labor costs.

As an additional objective measure, the 2007 wave of the panel contains information on whether the establishment experienced a profit, a loss, or a balanced result in the year 2006. Profit is here defined as revenue minus costs which is the pre-tax profit. However, it is not explicitly asked for pre-tax profits. The variable is recoded as a binary variable. As more than 80 percent of the establishments report a profit, the variable is 1 if there is a profit and 0 otherwise.

One drawback of this measure, compared to the quasi rent, may arise from the imprecise survey question. If respondents view taxes as costs and therefore report after-tax profits, the objective binary measure is only loosely related to actual profits since establishments optimize their tax burden over time. If the optimizing behavior is randomly distributed over establishments and time, the binary objective profit measure is a noisy but still unbiased measure of actual profits in the year 2006. By contrast, if tax optimization is not randomly distributed over establishments and time, then some establishments, for example the establishments with a works council, may move tax burdens to other periods and report lower profits in 2006 than they actually had. In this example, the estimated council coefficient would be biased downwards.

The profit variables are regressed on a works council dummy and a set of control variables as described in Table 7. Capital stock is approximated using the approach proposed by Mueller (2008). The collective bargaining dummy is 1 if the establishment is covered by an industry-wide collective bargaining agreement or an establishment-level collective agreement which is negotiated between a single employer and an industry-wide union and 0 otherwise.

In order to provide a first grasp of the relationship between $R(1) - R(0)$, $\tau(1) - \tau(0)$,⁷ and collective wage bargaining agreements, in Table 1 total factor productivity (TFP) and labor's share in value added are compared by collective bargaining agreement for establishments with and without a works council. TFP is calculated for the whole sample of approximately 6,500 establishment-year observations from OLS regression of log value added on the full set of regressors in Table 7 omitting the variables works council and bargain. From this regression, log value added is predicted for the establishments in each group of Table 1, respectively, and subtracted from observed log value added. Hence, TFP estimates the percentage advantage/disadvantage in productivity of the average establishment in the respective group, compared to the average establishment in the sample. Labor's share is the total wage bill (including non-wage labor costs as described in Section 4) divided by value added.

TFP of group I establishments, i.e. of establishments with both a works council and collective bargaining, is 6.8 percent higher than that of the average establishment in the sample while TFP in group II, where establishments have a collective agreement but no works council, is 7.8 percent lower than in the average establishment. $R(1) - R(0)$ is positive and highest in group I. As labor's share is lowest in that group, establishments that have both a works council and are covered by collective wage bargaining are expected to have the highest profits.

Comparing TFP and labor's share between the two groups without collective bargaining (i.e. cells III and IV) yields the results that one would expect from the Freeman and Lazear (1995) model and previous empirical studies: while TFP is somewhat higher in case of council existence, labor's share is also higher. This indicates some rent-seeking behavior of councils but leaves open the sign of the profitability effect.

Comparing labor's share between the two groups with collective bargaining gives $\tau(1) - \tau(0) < 0$, which indicates redistribution of economic rents towards firm owners. This does, of course, not mean that wages are absolutely lower in the council group – it reflects that the percentage increase

⁷ $R(x)$ and $\tau(x)$ are introduced in Section 3.

Tab. 1: Total Factor Productivity and Labor's Share

	Works Council	No Works Council
Collective Bargaining	I TFP: 6.8 Labor's share: 62.7 Observations: 2339	II TFP: -7.8 Labor's share: 65.5 Observations: 1467
No Collective Bargaining	III TFP: -1.1 Labor's share: 68.3 Observations: 786	IV TFP: -1.7 Labor's share: 65.3 Observations: 2044

Notes: Total factor productivity (TFP) and labor's share in percentages. TFP measures the productivity difference of the average establishment in the respective group to the average establishment in the sample. It is calculated from OLS regression of log value added on the full set of regressors in Table 7 omitting the variables works council and bargain (PDImin and PDImax are also excluded because they are not observed each year). From this regression, log value added is predicted for the establishments in each group, respectively and subtracted from observed log value added. Labor's share is the total wage bill (including non-wage labor costs as described in Section 4) divided by value added.

in productivity dominates the increase in wages. Consequently, in case of collective agreements, if total wage costs in council establishments are higher by some percentage, than this percentage is lower than the relative productivity advantage of council establishments. Presumably, this is the case because wages are to a considerable extent exogenously determined at the industry level and are therefore not fully adjusted to productivity changes within a group of establishments in that industry that is covered by such an agreement (i.e. the council establishments). Assuming that workers cannot influence whether they are covered by such an agreement and because other firms with similar productivity in that industry are also covered by a collective agreement, workers have few or no higher-wage outside options, and a stable situation with wages below productivity is possible.⁸

The descriptive evidence in Table 1 indicates that, in case of collective bargaining, the amount of rights given to the workers by the German works council legislation leads to a situation where both productivity and profits

⁸ As Freeman and Lazear (1995) implicitly assume that a rise in labor productivity translates into an equivalent rise in wages, the situation $\tau(1) - \tau(0) < 0$ is not considered in their model. In the absence of a collective agreement, the figures in Table 1 do not conflict with their assumption of $\tau(1) - \tau(0) > 0$.

are higher than in the situation without councils. This supports my first hypothesis from Section 3 and challenges the hypothesis of works councils' rent-seeking, redistributive, and profit-decreasing nature. As the latter hypothesis is confirmed by previous studies that are based on the subjective profit measure, the results in Table 1 also call the appropriateness of this measure into question.

5 Methods

The model to estimate is

$$profit_i = \alpha + \beta W_i + \pi X_i + \eta_i \quad (1)$$

where *profit* is a profit measure, *W* is a dummy indicating works council presence, β is the parameter of interest, *X* is a vector with the control variables described in Table 7 and η is an error term.⁹

The parameter β cannot be consistently estimated with ordinary least squares techniques (OLS) if W_i is correlated with η_i . This is the case if unobserved mechanisms influence both the probability of works council existence and the profit measure. A correlation between W_i and η_i exists if the workers' decision to erect or maintain a works council depends on the profit situation. It is assumed that workers erect or maintain a council if the (latent) utility they obtain from doing so (i.e. the difference between benefits and costs) is greater than zero. The latent utility for the workers in establishment *i*, W_i^* , can be described as

$$W_i^* = \gamma Z_i + u_i \quad (2)$$

where Z_i contains the regressors X_i from equation (1) and, not necessarily, external instruments, γ is the corresponding coefficient vector and u_i is a random error. The observed works council regimes *W* are

$$\begin{aligned} W &= 1 & \text{if } W^* > 0 \\ W &= 0 & \text{if } W^* \leq 0. \end{aligned}$$

A model where agents endogenously choose the regime ($W = 1$ or $W = 0$) is an endogenous switching regression model. Endogenous switching regression models can be estimated consistently employing the logic of the Heckman

⁹ I do not exploit the panel character of the data because the works council dummy is nearly time-invariant and fixed effects estimators would therefore yield imprecise estimates of β . However, fixed effects results and a solution to the time-invariance problem are presented at the end of this section.

Two Step estimator (see Heckman (1979)). The basic idea in the Heckman Two Step estimator is to add the inverse Mills Ratio as a regressor in the profit equation in order to control for selectivity. However, as endogenous switching regression models estimate one profit regression for establishments with a council and one profit regression for establishments without a council, no council parameter will be estimated. In this situation, an estimate of the council's effect on profits can be obtained from an Oaxaca-Blinder decomposition (Oaxaca (1973), Blinder (1973)) of the mean difference in profits between both works council regimes. However, the Oaxaca-Blinder decomposition yields inconsistent estimates of the council effect as long as the self-selection problem is not explicitly addressed.¹⁰

Alternatively, the approach by Vella and Verbeek (1999) is suitable and will be applied in this study. Vella and Verbeek (1999) argue that an endogenous switching regression model can be estimated with a single output equation containing the regressor of interest and the inverse Mills Ratios which are interacted with the treatment dummy. The profit equation is then

$$\begin{aligned} profit_i = & \alpha + \beta W_i + \pi X_i + W \cdot \sigma_1 \left(\frac{\phi(\hat{\gamma}Z_i)}{\Phi(\hat{\gamma}Z_i)} \right) \\ & + (1 - W) \cdot \sigma_2 \left(-\frac{\phi(\hat{\gamma}Z_i)}{1 - \Phi(\hat{\gamma}Z_i)} \right) + \epsilon_i \end{aligned} \quad (3)$$

where $\hat{\gamma}Z_i$ is the predicted works council probability from equation (2). Evaluating the density function $\phi(\cdot)$ and the cumulative distribution function $\Phi(\cdot)$ of the standard normal distribution at $\hat{\gamma}Z_i$ gives the inverse Mills Ratios (in large parentheses).¹¹ In equation (3), σ_1 is the coefficient of the inverse Mills Ratio for the establishments that have a council. The coefficient measures the covariance between the error in the selection equation (2) and the error in the profit equation (3). On the other hand, σ_2 refers to the establishments that have no council. Both coefficients can be used to describe the selectivity mechanisms.

Although the Heckman Two Step estimator is identified by nonlinearities, valid instruments in the selection equation improve the stability of the results. The instrument has to be exogenous to the council state but correlated with it, and it is allowed to influence profits via works councils, exclusively. I use the industry share of establishments with a works council and the within-establishment standard deviation of workers' age – both instruments are computed from the sample that is used for regression. While

¹⁰ How to correct for self-selection within the framework of an Oaxaca-Blinder decomposition is described below.

¹¹ For consistency one has to assume that the errors in the selection equation and the outcome equation follow a bivariate normal distribution.

the first instrument is a standard technical instrument, the latter mirrors work force heterogeneity within establishments. I assume that a homogeneous workforce is more likely to successfully organize a council election and to maintain the council. On the other hand, the dispersion of workers' age within an establishment is assumed to be uncorrelated with the profit situation. The hypothesis that the coefficients of both instruments are jointly zero is rejected with $\chi^2(2) = 49.96$ and a corresponding p-value $p = 0.000$.

Unobserved time-invariant heterogeneity that is correlated with right-hand side variables may bias the results regardless of whether it is controlled for self-selection into the council regime or not. Unobserved heterogeneity can, for instance, be a difference in the quality of management or in the establishments' worker-management relations. In case of continuous dependent variables (here quasi rent per worker) and panel data, a fixed effects estimator can be used to deal with unobserved heterogeneity. A fixed effects within-estimator uses deviations from within-establishment averages to identify parameters. Hence, time-invariant unobserved heterogeneity is removed from the error term. As this principle applies to all right-hand side variables, the effects of (nearly) time-invariant regressors like works council or collective bargaining cannot be estimated (precisely).

In order to obtain estimates for time-invariant regressors and to control for potential correlations between time-variant regressors and time-invariant unobserved heterogeneity, a fixed-effects profit regression for all time-varying regressors is estimated in a first step. Then the within-establishment average of the residual from that regression is computed and these average residuals are used as dependent variables in a second step OLS regression with the time-invariant regressors.¹²

In that approach, the first step equation is

$$quasi_{it} - \overline{quasi}_i = \pi(X_{it} - \overline{X}_i) + error_{it} \quad (4)$$

where $quasi_{it}$ is the quasi rent of establishment i in year t , $error_{it}$ is a zero mean white noise error term, and an upper bar denotes the within-establishment average. The influence of W and the influences of other time-invariant regressors in X on profits are now part of the establishment-specific fixed effect.¹³ The establishment-specific fixed effect is, in expectation, equal

¹² See Black and Lynch (2001) for a very similar approach.

¹³ As some variables are not fully time-invariant, they would appear in equation (4) although the basic idea of the applied two step approach is to estimate their coefficients in the second step. Consequently, I exclude the following variables that have no or very small within-establishment variation from equation (4): works council, bargain, exporter, single, east, size100, size200, industry affiliation, and old. As training, PDImin, and PDImax are observed only for some panel waves, these variables are also excluded from equation (4).

to the average establishment-specific residual from equation (4). To obtain the average residual, first, the predicted values for the quasi rent are subtracted from the observed values which gives the first-step residuals

$$quasi_{it} - (\widehat{quasi}_{it}) = \delta C_i + \nu_i + error_{it}. \quad (5)$$

where C_i are the regressors that have been excluded from equation (4) and ν_i is the remaining establishment-specific fixed effect. Next, I average the first-step residuals over the entire sample period for each establishment to get an estimate of the establishment-specific time-invariant component of the first step residual R_i with $R_i = \frac{1}{T} \sum_t quasi_{it} - [\widehat{quasi}_{it}]$. The second step equation is then

$$R_i = \delta C_i + \nu_i + \widetilde{error}_i. \quad (6)$$

This approach generates estimates for the time-invariant regressors while controlling for potential correlations between unobserved heterogeneity and time-variant regressors. Nevertheless, an estimation of equation (6) suffers from the same potential self-selection problem that arises if equation (1) is estimated directly. In order to control for the selectivity, the same procedure as applied to equation (1) can also be applied to equation (6). The only differences are that the dependent variable is now the average first-step residual R_i instead of the quasi rent, and that X_i is now C_i and contains only the time-invariant regressors, and that Z_i , additionally to C_i , contains the within-establishment averages of the two instruments described above.

An Oaxaca-Blinder decomposition (Oaxaca (1973), Blinder (1973)) reveals additional insights. It estimates the share in the total quasi rent difference between the two groups of establishments with and without a council that cannot be explained by different endowments. In order to estimate this and to use the advantages of the two step procedure, the Oaxaca-Blinder decomposition is applied to equation (6), too. Additionally, selectivity is controlled for by subtracting $\hat{\sigma}_1 \left(\frac{\phi(\hat{\gamma}Z_i)}{\Phi(\hat{\gamma}Z_i)} \right)$ from the quasi rent residuals of council establishments (i.e. R_{1i}) and $\hat{\sigma}_2 \left(-\frac{\phi(\hat{\gamma}Z_i)}{1-\Phi(\hat{\gamma}Z_i)} \right)$ from the quasi rent residuals of establishments without a council (i.e. R_{2i}) before carrying out the decomposition.¹⁴ Here, $\left(\frac{\phi(\hat{\gamma}Z_i)}{\Phi(\hat{\gamma}Z_i)} \right)$ and $\left(-\frac{\phi(\hat{\gamma}Z_i)}{1-\Phi(\hat{\gamma}Z_i)} \right)$ are computed from equation 2 where Z_i consists of C_i and the within-establishment averages of the two instruments described above. The $\hat{\sigma}_1$ and $\hat{\sigma}_2$ are obtained by estimating

¹⁴ See Mueller (2009) for a more in depth treatment of this issue.

$$R_{1i} = \alpha_1 + \delta_1 C_i + \sigma_1 \left(\frac{\phi(\hat{\gamma} Z_i)}{\Phi(\hat{\gamma} Z_i)} \right) + \epsilon_{1i} \quad \text{if } W = 1 \quad (7)$$

$$R_{2i} = \alpha_2 + \delta_2 C_i + \sigma_2 \left(-\frac{\phi(\hat{\gamma} Z_i)}{1 - \Phi(\hat{\gamma} Z_i)} \right) + \epsilon_{2i} \quad \text{if } W = 0. \quad (8)$$

As a result, the Oaxaca-Blinder decomposition decomposes the difference between the means of the selectivity adjusted average first-step residuals (which reflect the quasi rent) of the group with a council and the group without a council. Assuming valid instruments and that ϵ_{1i} , ϵ_{2i} , and the error of the selection equation are trivariate normally distributed, the selectivity-adjusted Oaxaca-Blinder decomposition gives a consistent estimate of the profitability effect of works councils. Acknowledging that these assumptions may not be completely fulfilled, I will only rely on the estimated sign of the effect and not on its magnitude.

6 Results

To estimate the effect of works councils on profits and to test the two hypotheses derived in Section 3, for each dependent variable four regressions are reported:

1. a baseline regression without the council–bargaining interaction and without selectivity control,
2. a regression without the interaction but with control for the endogeneity of the council dummy that may arise due to self-selection (tests the second hypothesis), and
3. two regressions with selectivity controls that are separated by the respective collective bargaining status (tests the first hypothesis).

6.1 Subjective Profit Measure

The results for the estimations using the self reported measure are presented in Table 2. Just like, for instance, in Addison et al. (2001), works council presence is negatively correlated with this profit measure. Surprisingly, the negative effect is stronger after controlling for selectivity. Also unexpectedly, works councils have more negative effects on profits in case of collective bargaining. Hence, both hypotheses are rejected with the subjective measure.

The marginal effect of works councils is insignificant though, regardless of the specification.

According to the coefficient of the East/West dummy, East German managers are significantly more satisfied with the profit situation of their establishment than West German managers. Obviously, this does not reflect the actual profit situation of the establishments. My results for the objective measures in Table 3 and Table 4 show that East German establishments earn less. The same is true for the establishment size indicators: smaller establishments are more satisfied with their profit situation although, according to the results in Table 3, their quasi rent per worker is significantly lower.

The coefficients of the East/West dummy and the establishment size dummies reveal a fundamental problem with this self-reported measure: the researcher does not know the reference point of the respondent. Respondents may condition their answer, for example, on the general situation of their establishment, on the situation of their nearby competitors, on last years profits or on something else that is unknown to the researcher. Hence, an East German manager may report a good profit situation because the establishment earns more than other East German establishments and not because its earnings are really ‘good’ – whatever ‘good’ means. Because of these problems and the puzzling coefficients for the East/West and establishment-size dummies, and because the results of the selectivity control and the bargaining interaction are not in line with theoretical expectations, I conclude that the self-reported evaluation of the profit situation is a poor measure for the establishments’ real profit situation.¹⁵

6.2 Objective Profit Measures

Table 3 provides regression results for the quasi rent per worker as a measure of profitability. The quasi rent is that part of value added that is earned by capital owners, i.e. by the firm owners and by outside capital providers. Assuming the same costs per unit of capital for each establishment, the ceteris

¹⁵ Studies that compare subjective and objective measures of firm performance typically find a strong positive correlation between both types of measures and conclude that both are valid indicators for firm performance (see, for instance, Dess and Robinson (1984) or Wall et al. (2004)). Note that in these studies the survey questions that produce the subjective measures of firm performance dictate reference points to the respondent – questions typically ask for performance “in comparison to firms of similar size, region and industry”. Recall that these reference points are not given in the IAB establishment panel survey. I conjecture that the absence of reference points in the survey question is the main reason for the poor performance of the subjective profit measure in my study.

paribus effect of works councils on the quasi rent per worker is equal to the effect on establishment profits.¹⁶

The council effect is positive throughout all specifications. The effect is large and, except for column 4, statistically highly significant. As expected from theoretical considerations, the council coefficient is highest in the presence of a collective bargaining agreement.¹⁷ The selectivity control, as expected, considerably increases the positive main effect of councils.¹⁸ However, because of the well-known weaknesses of all non-experimental instrumental variable approaches, the magnitude of the estimates in columns 2 to 4 should not be taken too literally. What can be learned from these estimates is the unambiguous direction of the selectivity bias.

The results for the binary objective measure are presented in Table 4. The estimates are generally very imprecise. This may be caused by the small sample size or noise in the dependent variable. Such noise may come from tax optimizing behavior of establishments, e.g., from postponing or moving forward tax burdens as discussed in Section 4. In general, the results resemble those obtained from the quasi rent regressions: the works council effect increases if endogeneity issues are taken into account¹⁹ and works councils are more positively related to profits in case of collective wage bargaining.

6.3 Unobserved Heterogeneity

In the previous section it is argued that the subjective measure is not appropriate because, among other things, answers depend on unknown reference

¹⁶ Of course, the shares of borrowed capital and equity in total capital differ across establishments. One could argue that equity is priced differently than borrowed capital and object that the ceteris paribus effect of councils on quasi rent may therefore be a biased estimate of councils effect on profits as soon as the debt to equity ratio is systematically different for establishments with and without a council. However, the assumption of equal costs per unit of capital becomes less restrictive if equities are viewed as investments of firm owners that are priced with a competitive interest rate. In that view, the ceteris paribus effect of councils (i.e. holding capital fixed) measures the influence of councils on that part of profits that exceeds the revenues from competitively priced capital. Finally, assuming competitively priced borrowed capital, the ceteris paribus effect measures the councils' effect on that part of firm owners' surplus that goes beyond the revenue from competitively priced capital.

¹⁷ This also holds if separate regressions are performed for East and West Germany and for the subgroups of establishments with no more than 100 employees and with more than 100 employees, respectively.

¹⁸ The hypothesis that the coefficients of both instruments in the selection equation are jointly zero is rejected with $\chi^2 = 49.96$ and $p = 0.000$.

¹⁹ The hypothesis that the coefficients of both instruments in the selection equation are jointly zero is rejected with $\chi^2 = 13.91$ and $p = 0.001$.

points. To defend the results obtained by previous studies that used the subjective measure, one could argue that managers may, for instance, report to not be satisfied with actually good profits because they, for some reason, *know* that their establishment would perform better if there would be no council. This means that the unknown reference point for managers in council establishment might be the situation without a council. In that case, the subjective measure may reflect the causal effect of councils while any objective measure is biased upwards due to unobserved establishment characteristics that are related to works council existence and lead to higher productivity.

The following results are obtained after controlling for potential correlations between time-variant regressors and unobserved heterogeneity as described in Section 5. The second step results, which are based on equation (6), are presented in Table 5.²⁰ Supporting the results in Table 3, works council existence is positively associated with quasi rent per worker through all specifications. However, the effect is now insignificant. Similar to the results in the previous section, the interaction with collective bargaining is important, and the selectivity correction slightly increases the effect.

The results of the Oaxaca-Blinder decomposition of the unadjusted mean difference in the averaged first step residuals between the group of establishments with a council and the group of establishments without a council are presented in Table 6.²¹ The mean difference in the residual is approximately 9,100 Euro per worker in favor of establishments with a council and approximately 40 percent of that difference cannot be explained by different endowments. Hence, a quasi rent of approximately 3,800 Euro per worker can not be explained by the establishments' endowments and is therefore attributed to council existence.

Conducting the selectivity correction of the mean difference in the averaged first step residuals according to the procedure presented in the previous section leads to the results presented in the lower part of Table 6. I use the same instruments as before, and, as expected, the difference in the quasi rents increases (11,700 Euro). Now the unexplained part of the difference amounts to 13,300 Euro per worker. For the same reasons as in the previous section, I will not rely on the point estimates of the adjusted decomposition but on the direction of the bias. To sum up, the positive influence of councils on profits remains if unobserved heterogeneity and self-selectivity of establishments is

²⁰ Variables that do not appear in the table but appear in Tables 2, 3, and 4 are time-variant and therefore used in the first step fixed effects regression. As all variables in Table 5 are within-establishment averages, information on product innovation, which is available only for two waves of the panel, is included without loss of observations.

²¹ I apply the threefold decomposition following Daymont and Andrisani (1984).

taken into account.

I conclude that the sign of the council effect on the quasi rent and my conclusions with respect to the two hypotheses remain unchanged after both controlling for correlations between unobserved establishment characteristics and time-varying regressors and, at the same time, correcting for self-selection into the council regime.

7 Summarizing Discussion

Are the firm owners really worse off with a works council? Are works councils a rent-seeking and redistributive part of Germany's labor relations legislation?

Many researchers take the assumptions of Freeman and Lazaar's (1995) works council model and predict that councils may probably increase productivity but surely decrease profits. The latter prediction is supported from the observation of higher wages in council establishments and may also be inspired by the widespread notion that automatically links employee associations with rent-seeking behavior. But what if, on average, works councils *surely* increase productivity and *maybe* engage in rent-seeking activities? In that case, one would expect that councils increase the pie and leave the piece of the firm owners unaffected or even make it larger.

A further look at the Freeman and Lazaar (1995) model shows that the extent of rent-seeking very likely depends on whether distributional conflicts are solved inside or outside the establishment, e.g., at the industry level. If councils operate in an establishment that is covered by an industry-wide collective bargaining agreement, their profitability effect may be positive because in that case, wages are (to some extent) exogenous at the establishment level and councils have little rent-seeking possibilities. Additionally, their engagement in productivity-enhancing practices is increased (see Hübler and Jirjahn (2003)).

To shed light on the councils' effect on profits, I estimate regressions for three different profit measures as dependent variables. Further, I account for the self-selection with respect to works councils, unobserved heterogeneity, and the interaction with the existence of a collective bargaining agreement.

The first finding is that the widely used subjective profit evaluation by the establishments' managers is a poor measure of actual profits and hardly appropriate as a dependent variable in a profit regression. It yields clearly implausible results – for example, the estimated effect of being located in East Germany is positive and significant – and the *changes* in results that occur due to endogeneity corrections and the interaction with collective bargaining

differ diametrically from changes obtained with objective profit measures. This casts doubt on the results of previous studies in which this measure is applied and which are used to show the rent-seeking behavior of works councils.

Estimations with objective measures yield mainly non-negative coefficients for the councils' influence on profits, which strongly increases if the establishment is covered by a collective bargaining agreement. As expected from previous studies (Jirjahn (2009), Kraft and Lang (2008), Mueller (2009)), the correction for potential self-selection with respect to council existence further increases the positive council parameter.

The results of this study stand in contrast to the widespread notion according to which councils redistribute economic rents from firm owners to workers. I suggest an explanation for *why* previous studies found other results: it is plausible to assume that the subjective profit measure, applied in previous studies, is a bad measure for actual profits.

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8 Tables

Tab. 2: Dependent variable: managers' evaluation of previous year's profits, 1=good or very good; 0 = otherwise

Variable Name	base- line	Heckman Two Step	bargain = 1	bargain = 0
Works council	-0.022	-0.049	-0.072	0.000
Bargain	-0.025	-0.003	.-	.-
IMR*Works council	.-	0.036	0.038	0.015
IMR*(1-Works council)	.-	-0.001	0.030	-0.036
Employees	0.054**	0.082**	0.074	0.088*
Capital Stock	0.001	-0.003	-0.003	-0.004
Tech2	-0.053***	-0.047**	-0.082***	-0.011
Tech3	-0.142***	-0.150***	-0.188***	-0.119***
Tech4	-0.167***	-0.214***	-0.193***	-0.295***
Exporter	0.059***	0.063***	0.035	0.086**
Single	-0.001	0.007	-0.002	0.030
Temporary workers	0.004**	0.003*	0.002	0.006**
Female workers	0.001	0.000	-0.000	0.000
Part-time workers	0.000	0.001	0.000	0.001
Apprentices	0.002	0.001	-0.003	0.005*
Skilled workers	0.000	-0.000	-0.001	0.000
Churning	0.001	0.001	0.001	0.000
Training	0.058	0.063	0.046	0.044
East	0.056**	0.083***	0.098**	0.060
Size100	0.073	0.073	0.062	0.083
Size200	0.028	0.021	0.000	0.042
Old	-0.011	0.007	0.049	-0.029
Overtime	0.067***	0.059***	0.009	0.120***
Work hours	-0.003	-0.006	-0.015	0.008
Observations	6,648	4,735	2,546	2,184

Notes: All results are marginal effects after Probit. Year and sectoral dummies included. *,**,*** denote significance at the 10 percent, 5 percent or 1 percent level, respectively. Standard errors are clustered by establishments. IMR is the inverse Mills Ratio. Columns 2 – 4 are second step probit regressions (equation (3)) from an endogenous switching regression following Vella and Verbeek (1999) – column 2 for the pooled sample, columns 3 and 4 separated according to collective bargaining regime.

Tab. 3: Dependent variable: quasi rent per worker in 1,000 Euro

Variable Name	base- line	Heckman Two Step	bargain = 1	bargain = 0
Works council	3.2***	12.4**	22.1***	3.7
Bargain	2.0**	2.7**	.-	.-
IMR*Works council	.-	-6.1**	-8.1*	-4.5
IMR*(1-Works council)	.-	-5.6	-14.2**	-0.3
Employees	-7.0***	-7.9***	-8.8***	-6.8**
Capital Stock	4.3***	4.1***	3.7***	4.7***
Tech2	-3.0**	-3.9***	-2.4	-5.5***
Tech3	-5.6***	-7.7***	-7.4***	-7.6***
Tech4	-12.4***	-17.9***	-18.0***	-18.2***
Exporter	5.2***	5.8***	5.2***	7.0***
Single	-7.5***	-5.9***	-8.7***	0.2
Temporary workers	0.2**	0.1	0.1	0.1
Female workers	-0.1***	-0.1*	-0.1	-0.1
Part-time workers	-0.0	-0.0	0.0	-0.1**
Apprentices	-0.2***	-0.2**	-0.2	-0.2
Skilled workers	0.0	-0.0	-0.1**	0.0
Churning	-0.1***	-0.1**	-0.0	-0.0
Training	4.6*	-1.4	0.6	-6.1*
East	-4.0***	-4.3***	-2.6	-6.3***
Size100	-8.5***	-7.7***	-8.5**	-6.4
Size200	-6.1***	-6.8***	-7.6***	-7.1*
Old	-2.6**	-3.9***	-3.6	-4.4**
Overtime	-0.6	-0.5	0.7	-2.1
Work hours	-0.4*	0.2	0.6	-0.2
Observations	6,648	4,735	2,548	2,187

Notes: Year and sectoral dummies included. *,**,*** denote significance at the 10 percent, 5 percent or 1 percent level, respectively. Robust standard errors. IMR is the inverse Mills Ratio. Columns 2 – 4 are second step OLS regressions (equation (3)) from an endogenous switching regression following Vella and Verbeek (1999) – column 2 for the pooled sample, columns 3 and 4 separated according to collective bargaining regime.

Tab. 4: Dependent variable: managers report on previous years' profits,
1=positive; 0=negative or balanced

Variable Name	base- line	Heckman Two Step	bargain = 1	bargain = 0
Works council	-0.10***	0.00	0.26	-0.16
Bargain	-0.03	-0.02	.-	.-
IMR*Works council	.-	-0.03	-0.23**	0.12
IMR*(1-Works council)	.-	-0.10	-0.21	-0.06
Employees	0.08**	0.06	-0.04	0.12*
Capital Stock	0.01	0.02	-0.00	-0.00
Tech2	-0.02	-0.01	-0.00	-0.04
Tech3	-0.13**	-0.13**	-0.16***	-0.14
Tech4	0.02	-0.04	-0.21*	.-
Exporter	0.03	0.05	0.04	0.08*
Single	-0.01	0.00	0.04	0.00
Temporary workers	0.01***	0.01***	0.01***	0.00***
Female workers	0.00	0.00	0.00	-0.00
Part-time workers	0.00	0.00	0.00	-0.00
Apprentices	0.00	0.00	0.00	0.01
Skilled workers	-0.00	-0.00	-0.00	0.00
Churning	-0.00	0.00	0.00	-0.00
Training	0.02	0.03	-0.07	0.10
East	-0.01	-0.03	-0.04	-0.06
Size100	0.05	0.05	-0.00	0.10
Size200	-0.08	-0.08	-0.12	-0.01
Old	-0.00	-0.02	0.03	-0.09
Overtime	0.02	-0.01	-0.05	-0.00
Work hours	-0.01	0.00	0.01	-0.00
Observations	1,037	956	486	449

Notes: All results are marginal effects after Probit. Year and sectoral dummies included. *,**,*** denote significance at the 10 percent, 5 percent or 1 percent level, respectively. IMR is the inverse Mills Ratio. Columns 2 – 4 are second step probit regressions (equation (3)) from an endogenous switching regression following Vella and Verbeek (1999) – column 2 for the pooled sample, columns 3 and 4 separated according to collective bargaining regime.

Tab. 5: Second step results of Two Step Approach, dependent variable: quasi rent per worker in 1,000 Euro

Variable Name	base- line	Heckman Two Step	bargain = 1	bargain = 0
Works council	2.9	9.8	11.0	8.0
Bargain	2.3	-0.2	.-	.-
IMR*Works council	.-	-6.5	-6.8	-4.4
IMR*(1-Works council)	.-	-0.9	-0.7	-3.3
Exporter	11.8***	11.1***	9.0**	15.0***
Single	-11.5***	-10.8***	-13.3***	-3.7
Training	8.7*	7.6*	10.0	0.7
East	-1.6	-1.8	-2.1	-1.6
Size100	-13.1***	-10.7***	-13.1***	-8.4
Size200	-5.6	-5.6	-7.3	-5.1
Old	-1.0	-1.3	-2.9	-0.1
PDImax	-4.8**	-4.9*	-3.6	-5.6*
PDImin	2.4	2.7	3.1	2.6
Observations (= establishments)	1,722	1,703	956	747

Notes: OLS; all variables are within-establishment averages. Year and sectoral dummies included. *,**,*** denote significance at the 10 percent, 5 percent or 1 percent level, respectively. Robust standard errors. IMR is the inverse Mills Ratio. Columns 2 – 4 are second step OLS regressions (equation (3) applied to the within establishment average of the residuals from equation (4)) from an endogenous switching regression following Vella and Verbeek (1999) – column 2 for the pooled sample, columns 3 and 4 separated according to collective bargaining regime.

Tab. 6: Oaxaca-Blinder decomposition of second step differential, dependent variable: quasi rent per worker (in 1,000 Euro)

Variable	(Std.Err.)	
Unadjusted Differential (1,722 Obs.)		
Prediction with council	5.9***	(1.4)
Prediction without council	-3.2***	(1.0)
Output Differential	9.1***	(1.7)
Decomposition	Coefficient	
Endowments	9.4***	(2.0)
Coefficients	3.8	(2.6)
Interaction	-4.1	(2.7)
Adjusted Differential (1,703 Obs.)		
Prediction with council	2.8**	(1.4)
Prediction without council	-8.9***	(1.0)
Output Differential	11.7***	(1.7)
Decomposition	Coefficient	
Endowments	13.2***	(2.1)
Coefficients	13.3***	(2.7)
Interaction	-14.8***	(2.8)

Notes: Robust standard errors in parentheses. *, **, *** denotes significance at the 10, 5 or 1 percent level, respectively. Positive numbers for the decomposition results indicate advantages for the council group. Decomposition evaluated at the council establishments' endowments.

Tab. 7: Variable Description

Variable Name	Mean	Description
Works council	0.471	1 if works council exists
Bargain	0.574	1 if covered by a collective bargaining agreement between employer and union
Employees	4.273	log of the total number of employees
Capital Stock	14.583	log of capital stock value
Tech1 (reference)	0.232	1 if capital stock is state of the art, self-evaluated relative to competitors
Tech2	0.496	1 if technology of capital stock is one category worse than Tech1
Tech3	0.249	1 if technology of capital stock is two categories worse than Tech1
Tech4	0.023	1 if technology of capital stock is three categories worse than Tech1
Exporter	0.480	1 if the establishment exports
Single	0.723	1 if the establishment does not belong to a group of affiliated companies
Temporary workers	2.03	in percent of total employment
Female workers	33.09	in percent of total employment
Part-time workers	12.80	in percent of total employment
Apprentices	5.43	in percent of total employment
Skilled workers	69.30	in percent of total employment
Churning	5.17	in percent of total employment
Training	0.196	persons participating in employer-provided training programs, share in total employment
East	0.410	1 if located in Eastern Germany
Size100	0.658	1 if at most 100 employees
Size200	0.239	1 if at most 200 employees but more than 100
Old	0.656	1 if the establishment existed prior to 1990
Overtime	0.636	1 if overtime work exists
Work hours	38.74	regular weekly full-time hours
PDImax	0.612	0 to 2; indicates major product innovations
PDImin	0.128	0 to 2; indicates minor product innovations

Notes: Statistics for 6,648 observations of the regressions in column 1 of Tables 2 and 3. The capital stock is computed following Mueller (2008). Skilled workers are craftsmen who have at least two years of formal professional education, or other employees who perform qualified tasks, i.e. university graduates. The churning rate is computed as in Burgess et al. (2000) and measures personnel fluctuations that leave total employment unaffected. Product innovations are asked retrospective for two years in 2001 and 2004 (statistics reported for 1722 observations). The index for PDImax is 2 if the establishment had major product innovations in both periods, it is 1 if it had them in one period and zero if there was no major product innovation. PDImin is coded similarly for minor product innovations.