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Works Councils - Sand or Grease in the Operation of German Firms?

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ABSTRACT

Works Councils – Sand or Grease in the Operation of German Firms?

Using a large panel data set we investigate whether works councils act as sand or grease in the operation of German firms. Stochastic production frontier analysis indicates that establishments with and without a works council do not exhibit significant differences in efficiency.

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1. Institutional and theoretical background

There is nowadays much interest in worker participation on efficiency grounds, and the German works council has emerged as an interesting exemplar whose effects on firm performance are not yet well understood. According to the German Works Constitution Act, works councils may be elected by the workers in all establishments exceeding a size threshold of five permanent employees, and the employer has to bear the entire cost of the apparatus. Works councils are given extensive rights of information (e.g. on the introduction of new working methods), consultation (e.g. on manpower planning) and even codetermination (on the regulation of working hours and overtime, health and safety measures etc.). In contrast to unions, however, they may not call a strike, and the law enjoins the employer and the works council to "work together in a spirit of mutual trust" (for details, see Addison et al., 2001).

From an economic perspective, works councils can be interpreted as having two faces: On the one hand, works councils can use their extensive rights to delay or modify management decisions and to redistribute rents to the employees. On the other hand, the machinery of a works council holds out the prospect of an improvement in the efficiency (and thus in the joint surplus) of the enterprise stemming from information exchange, consultation and codetermination. These issues are addressed by Freeman and Lazear (1995) in a works council-specific model that extends the well-known rent-seeking and collective voice arguments discussed by Freeman and Medoff (1984) for the case of company unions.

Due to these two faces, theory provides meager guidance as to the likely effects of a works council on firm performance. The few empirical studies for Germany suggest that both faces seem to play a role, with works councils being associated with lower profitability, higher wages, reduced labour fluctuation, unclear productivity effects and insignificant effects on innovation (see, e.g., FitzRoy and Kraft, 1987, Frick, 1996, Addison et al., 2001, and Dilger, 2002). In order to examine whether works councils act as sand or grease in the operation of a firm, we make use of a large-scale panel data set and of stochastic production frontier analysis, an econometric technique that has not been applied yet to study the efficiency effects of works councils.

2. Empirical estimates

For our empirical analysis we use the representative IAB Establishment Panel (see Kölling 2000 for a detailed description of this dataset). Each year since 1993 (1996), this panel has surveyed several thousand establishments from all sectors in western (eastern) Germany.

We consider a stochastic production frontier function of the following form:

$$y_{it} = a + X'_{it} b + v_{it} - u_i, \qquad (1)$$

where y_{it} denotes the logarithm of total sales of plant *i* at time *t*; X_{it} is the vector of inputs of plant *i* at time *t* which includes the logarithm of employment and the logarithm of (plant-)mean investment over the sample period[1] and as further covariates the percentages of part-time employees, of apprentices, of skilled employees and of female employees, 41 sector dummies and 7 year dummies; a is an intercept term; b is a vector of technology parameters; v_{it} captures statistical white noise and u_i depicts technical inefficiency, which is assumed to be non-negative and time-invariant. Defining $a_i = a - u_i$, Equation (1) may be rewritten as

[1] Unfortunately information on the stock of capital is not available in our dataset.

$$y_{it} = a_i + X'_{it} b + v_{it}, \quad (2)$$

which can be estimated by a fixed-effects regression. Following Schmidt and Sickles (1984), we normalise the efficiency of the most efficient plant as 100%. Hence, estimates of the technical efficiencies for the other plants are obtained as intercept shifts to the most efficient plant:

$$\hat{u}_i = \max_j a_j - a_i . \quad (3)$$

Since Equation (1) is specified in logarithms, producer-specific estimates of technical efficiencies, which are defined by the ratio of a plant's actual output to its maximal attainable output, are then given by

$$TE_i = \exp\{-\hat{u}_i\}, \quad (4)$$

which are bounded by zero and one. The great virtue of our estimator is that the technical efficiencies are not required to be uncorrelated with the regressors, neither are any distributional assumptions on the u_i necessary.[2] In the second stage, we compare the median technical efficiency of plants with a works council with the median technical efficiency of plants without a works council. These are computed with and without a correction for the average industry effect.

Following Addison et al. (2001), we have included only those establishments in our investigations whose size during sample period never falls below 21 and never exceeds 100. This ensures that the rights of the works council within a certain establishment (which are size-dependent) do not change over time. Furthermore, we avoid any potential bias in the estimated impact of a works council due to size effects (very large establishments almost always have a works council whereas small plants rarely have one). Banks and insurances as well as the public sector have been excluded from the analysis since they do not report sales figures comparable to other industries.

Our data cover eight years (1993-2000), and we have used two different samples: an unbalanced sample consisting of 6136 observations and 2301 establishments and a balanced subsample comprising all establishments with no missing values in each of the 8 years (592 observations, 74 plants). In each sample, about two thirds of the plants have no works council. While the sample size is obviously much lower for the balanced subsample, its fixed effects (and therefore the technical efficiencies) are expected to be estimated more precisely on average.[3]

Having obtained technical efficiencies for each plant according to Equations (3) and (4), we have dropped those plants which were in the top and the bottom 1% of the efficiency distribution and repeated the analysis. This should rule out that our results are flawed by outliers.

The bottom row of Table 1 contains as a benchmark the impact of a works council which has been obtained by including a works council dummy in an OLS regression of Equation (1). For the unbalanced panel – but not for the balanced panel – we obtain a positive and significant estimate, implying that establishments which have a works council are more productive. However, as is well-known, this estimate may be biased due to the correlation of unobservables with the works council. While fixed-

[2] Indeed, the Hausman test statistic after a random effects regression of Equation (1) clearly rejects the hypothesis that the a_i are uncorrelated with the X-variables.

[3] Since eastern German plants are included in the IAB Panel only since 1996, the balanced dataset covers only establishments from western Germany.

effects estimation can control for unobservables which are time-invariant, the impact of a works council cannot be identified directly since very few establishments installed (or deinstalled) a works council during the sample period.

Technical efficiency estimates obtained according to Equations (2)-(4) are reported in the first two rows. As the standard errors of the estimated fixed-effects are inversely related to the number of times a plant is observed, the standard error of the median technical efficiency may be relatively large (respectively small), depending on whether the median contains a plant which is observed only once (respectively eight times). Since it would not make much sense to draw conclusions from technical efficiencies of plants which occur only once in the regression sample of the unbalanced dataset, we report the technical efficiency and its confidence interval from the plant which is observed eight times and which is closest to the median. This had almost no effect on the reported efficiency, but affected the reported confidence intervals.

As can be seen, in all four cases do the confidence intervals of the median plant with a works council and the median plant without a works council overlap. We have also stratified the two samples into production and services to check for the robustness of the results, and, in addition, we have used two different 5-year balanced datasets, 1996-2000 and 1993-1997 (results are reported in the appendix). However, our main finding remains unaffected. We do not find clear-cut evidence that the production process is significantly more efficient in plants with a works council.

3. Conclusion

Stochastic production frontier analysis with a large-scale panel dataset indicates that establishments with and without a works council do not exhibit significant differences in efficiency. Most likely, negative rent-seeking effects and positive voice effects balance each other with respect to efficiency, implying that worker participation is not simply the sand or the grease as which it is interpreted by its opponents and supporters, respectively.

Table 1: Technical efficiency estimates and 95%-confidence intervals for median plant, separately for plants with and without a works council (WC)

	Balanced Panel		Unbalanced Panel	
	No Industry Effects	Industry Effects	No Industry Effects	Industry Effects
WC=0[a]	.1201 [.1053,.1369]	.2577 [.2163, .3074]	.0756 [.0630,.0906]	.0545 [.0454, .0655]]
WC=1[a]	.0898 [.0759,.1063]	.2830 [.2432, .3294]	.1072 [.0898,.1281]	.0663 [.0554,.0793]
OLS est. of WC[b]	.057 [-.199, .312]		.101 [.038, .163]	

a Technical efficiencies obtained according to Equations (2)-(4). One fixed-effects regression for each of the four columns with (log) total sales as the dependent variable and as independent variables: (log) employment, the percentages of part-time employees, of apprentices, of skilled employees and of female employees and year dummies.

b OLS regression of Equation (1) with a works council dummy and (unbalanced panel only) a dummy for eastern Germany as additional independent variables. Estimation of standard errors is not based on the assumption that observations within plants are independent.

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Appendix

Table A1: Impact of a Works Council on Productivity, Dummy in OLS-Regression, (Dependent Variable: log sales)[a-c]

		All				Production				Services			
Sample		coef.	p-val.	R^2	n	coef.	p-val.	R^2	n	coef.	p-val.	R^2	n
Balanced Panel	(i)	-.015	[.881]	.701	896	.011	[.909]	.834	472	.163	[.431]	.566	416
1993-2000	(ii)	.057	[.659]	.716	584	.126	[.221]	.774	288	.086	[.662]	.633	288
Balanced Panel	(i)	.107	[.048]	.689	2700	.009	[.910]	.695	1215	.228	[.006]	.666	1215
1996-2000	(ii)	.105	[.117]	.668	1905	.014	[.886]	.654	805	.295	[.004]	.693	900
Balanced Panel	(i)	-.046	[.600]	.678	960	-.039	[.679]	.812	470	.005	[.976]	.579	475
1993-1997	(ii)	-.026	[.797]	.636	635	.092	[.472]	.704	290	-.016	[.920]	.583	340
Unbalanced Panel	(i)	.101	[.000]	.629	7938	.041	[.246]	.649	4054	.178	[.000]	.611	3434
1993-2000	(ii)	.101	[.002]	.579	6012	.024	[.518]	.582	2998	.180	[.001]	.590	2667

[a] Independent variables: (log) employment, (log) mean investment, percentages of part-time employees, of apprentices, of skilled employees, of female employees, year dummies, 41 sector dummies, dummy for East Germany.

[b] (i): Mean plant size between 21 and 100. (ii) Plant size in each year between 21 and 100 (version used in Table 1 in the main text).

[c] Estimation of standard errors is not based on the assumption that observations within plants are independent.

Table A2: Impact of a Works Council (WC) on Productivity: Efficiency Estimate and 95%-Confidence Interval of Median Plant, Separately for Plants without and with Works Council; Fixed Effect Estimation (with no Distributional Assumption) of the Efficiency Error Component; (Dependent Variable: log sales) [a]

	All				Production				Services			
	Without WC		With WC		Without WC		With WC		Without WC		With WC	
	Med.	Conf.Int.	Med.	Conf.Int.	Med.	Conf.Int.	Med.	Conf.Int.	Med.	Conf.Int.	Med.	Conf.Int.
Balanced Panel, 1993-2000												
(i)	.1443	[.1233,.1689]	.1468	[.1264,.1706]	.2380	[.2056,.2756]	.2728	[.2374,.3135]	.1329	[.1134,.1557]	.1583	[.1365,.1837]
(ii)	.1201	[.1053,.1369]	.0898	[.0759,.1063]	.2336	[.2075,.2629]	.2872	[.2582,.3195]	.1569	[.1170,.2105]	.1832	[.1508,.2227]
Balanced Panel, 1996-2000												
(i)	.0704	[.0551,.0900]	.1221	[.0981,.1518]	.0756	[.0604,.0945]	.1132	[.0909,.1409]	.0751	[.0606,.0930]	.1598	[.1279,.1996]
(ii)	.0707	[.0582,.0859]	.1091	[.0886,.1344]	.0749	[.0604,.0929]	.0913	[.0742,.1123]	.0479	[.0397,.0577]	.1179	[.0970,.1432]
Balanced Panel, 1993-1997												
(i)	.1199	[.0971,.1479]	.1207	[.0985,.1480]	.1734	[.1455,.2067]	.1943	[.1631,.2314]	.1299	[.0965,.1749]	.1163	[.0920,.1470]
(ii)	.1413	[.1159,.1721]	.1237	[.1020,.1501]	.1637	[.1364,.1964]	.2017	[.1677,.2426]	.1397	[.1081,.1806]	.1606	[.1287,.2005]
Unbalanced Panel, 1993-2000												
(i)	.0744	[.0607,.0912]	.1119	[.0918,.1363]	.0931	[.0779,.1112]	.1360	[.1145,.1616]	.0914	[.0729,.1145]	.1287	[.1027,.1613]
(ii)	.0756	[.0630,.0906]	.1072	[.0898,.1281]	.0971	[.0829,.1137]	.1230	[.1055,.1434]	.0691	[.0563,.0847]	.0970	[.0789,.1193]

[a] (i): Mean plant size between 21 and 100. (ii) Plant size in each year between 21 and 100 (version used in Table 1 in the main text).

Table A3: Impact of a Works Council (WC) on Productivity: Efficiency Estimate (Controlled for Industry Effects) and 95%-Confidence Interval of Median Plant, Separately for Plants without and with a Works Council; Fixed Effect Estimation (with no Distributional Assumption) of Efficiency Error Component, (Dependent Variable: log sales)[a]

	All				Production				Services			
	Without WC		With WC		Without WC		With WC		Without WC		With WC	
	Med.	Conf.Int.	Med.	Conf.Int.	Med.	Conf.Int.	Med.	Conf.Int.	Med.	Conf.Int.	Med.	Conf.Int.
Balanced Panel, 1993-2000												
(i)	.2069	[.1767,.2423]	.2014	[.1731,.2343]	.3624	[.3194,.4112]	.3752	[.3172,.4437]	.2556	[.2116,.3088]	.2445	[.2065,.2893]
(ii)	.2577	[.2163,.3074]	.2830	[.2432,.3294]	.3989	[.3419,.4653]	.4209	[.3673,.4826]	.2478	[.2041,.3010]	.2680	[.2205,.3257]
Balanced Panel, 1996-2000												
(i)	.0835	[.0664,.1052]	.1061	[.0855,.1317]	.0859	[.0688,.1072]	.1058	[.0846,.1322]	.1156	[.0929,.1440]	.1646	[.1309,.2071]
(ii)	.0819	[.0670,.1000]	.0979	[.0806,.1190]	.0881	[.0712,.1090]	.0999	[.0807,.1237]	.0792	[.0652,.0961]	.1186	[.0970,.1449]
Balanced Panel, 1993-1997												
(i)	.1643	[.1324,.2040]	.1627	[.1335,.1984]	.2742	[.2318,.3243]	.2808	[.2384,.3307]	.1822	[.1456,.2280]	.1817	[.1418,.2327]
(ii)	.1806	[.1518,.2148]	.1848	[.1553,.2198]	.3580	[.2965,.4324]	.3920	[.3308,.4644]	.1776	[.1451,.2173]	.1845	[.1518,.2244]
Unbalanced Panel, 1993-2000												
(i)	.0509	[.0418,.0621]	.0648	[.0532,.0789]	.1060	[.0888,.1264]	.1372	[.1146,.1642]	.0447	[.0353,.0566]	.0545	[.0433,.0687]
(ii)	.0545	[.0454,.0655]	.0663	[.0554,.0793]	.1104	[.0944,.1291]	.1347	[.1142,.1588]	.0463	[.0376,.0571]	.0605	[.0483,.0759]

[a] (i): Mean plant size between 21 and 100. (ii) Plant size in each year between 21 and 100 (version used in Table 1 in the main text).

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