One-third Codetermination at Company Supervisory Boards and Firm Performance in German Manufacturing Industries: First Direct Evidence from a New Type of Enterprise Data

By Joachim Wagner*

Abstract

This paper contributes to the empirical literature on the co-determination – firm performance nexus by using a new type of data that combines information on the co-determination status of enterprises from a commercial data base and supplementary information collected from the firms with comprehensive data on the firms from official statistics. The data allow for the first time a direct comparison of enterprises from the same size class with and without co-determination at the supervisory board level. It is shown that one-third codetermination at the supervisory board level in limited-liability companies from West German manufacturing industries seems to be neither positively nor negatively related to two core firm performance indicators, productivity and profitability.

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1. Motivation

Co-determination of workers can be regarded as an essential element of the system of industrial relations in Germany's social market economy. Basically, there are two forms of it – employee representation at the level of the establishment (the local production unit) via works councils (i.e., *betriebliche Mitbestimmung*), and codetermination at the enterprise level (i.e., *Unternehmensmitbestimmung*) where employees are sitting on supervisory boards. While the economic consequences of German works councils for various dimensions of firm performance have been extensively investigated empirically,[1] much less is known about the effects of employees as members of supervisory boards.

Details aside, we have today three different regimes of co-determination at the supervisory board level: In the (few) enterprises from the coal and steel industries with more than 1.000 employees there is full-parity codetermination (1951 Codetermination Act); in enterprises with more than 2,000 employees we have quasi-parity representation (1976 Codetermination Act) with a chairperson of board (who is elected by the shareholders) who has the casting vote in case of a tie; and one-third codetermination in enterprises with between 500 and 2,000 employees (2004 Third Part Act, or *Drittelbeteiligungsgesetz*). In the economic discussion of the pros and cons of co-determination at the board level, there are mainly two theoretical lines of arguments that can be summarized in a nutshell as follows (see, e.g., Renaud, 2007). Property rights theory points out that co-determination weakens the residual decision rights of the owners, leads to less efficient or at least delayed decisions, lower productivity, less profitability, and rent shifting in favour of the employees. Participation theory suggests co-determination can improve efficiency (and thus the joint surplus) of the firm due to information exchange, consultation and codetermination (see Freeman / Lazear, 1995 for a formal model in the context of co-determination at the establishment level via works councils).

Whether the net effect of supervisory board level co-determination on firm performance is positive or negative, therefore, is an empirical question. Summarizing the findings from the (few) empirical studies on the effects of co-determination at the supervisory board level in a recent survey of this literature

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[1] Details aside, a works council is found in establishments with at least 5 employees, provided that one has been elected by the employees. These works councils can have "two faces". They can use their legal rights to delay or modify management decisions, and to redistribute rents to the employees. And they can improve efficiency (and thus the joint surplus) of the establishment due to information exchange, consultation and codetermination (see Freeman / Lazear, 1995 for a formal model). Whether the net effect on firm performance is positive or negative is an empirical question. The bottom line after some 25 years of econometric research is that these effects are small on average, and that there is no evidence that works councils adversely effect firm performance (see Addison / Schnabel / Wagner, 2004; Jirjahn, 2006; Addison, 2009 for surveys of this literature, and Addison / Schank / Schnabel / Wagner, 2006, 2007 for recent studies).

Addison / Schnabel (2009) argue that "the German system of codetermination at company level has not had (positive or negative) economic effects of a magnitude that would induce (other) companies (and governments) to adopt the system or to wholly abandon it." Renaud (2007) draws a similar conclusion based on his survey of the empirical literature and on the results from his own study.

This appraisal of the state of our current knowledge regarding the effects of board-level co-determination on enterprise performance is based on a small number of empirical studies. Some of these studies are criticised by Addison / Schnabel (2009) for the methods applied, and most of them are based on rather small samples of data that cover years from the quite distant past. Empirical investigations of the relation between different degrees of co-determination at the supervisory board level (none, one-third, quasi-parity, full-parity) and firm performance are hindered by the lack of any information on co-determination in enterprise surveys from official statistics. Econometric studies on the co-determination – firm performance nexus, therefore, are usually based on data sets collected by researchers using (publicly available) information on publicly-traded companies (*Aktiengesellschaften*) only.[2]

One critical point here is that these studies assume that all enterprises from a certain size class (500 – 2,000, or >2,000 employees) do have a supervisory board with a certain type of co-determination, i.e. quasi-parity codetermination according to the 1976 Codetermination Act for firms having more than 2,000 employees, or one-third representation in companies with between 500 and 2,000 employees according to the Third Part Act of 2004 (or its forerunner, the 1952 Works Constitution Act). While the assumption that all firms do have a supervisory board is appropriate for publicly traded companies, it is not for the second large group of enterprises that is covered by the German co-determination laws, the limited liability companies (*Gesellschaft mit beschränkter Haftung, GmbH*). Experts for labour law and industrial relations point out that, contrary to the law, such limited liability companies very often do not have a supervisory board at all, and, therefore, are not co-determined firms.[3] It should be noted that according to the law there is no direct penalty for limited liability companies that do not install a supervisory board, but that employees do have the opportunity to enforce its installation by going to court which might be seen as a thread for a potential penalty for a firm due to the costs related to court proceedings.

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[2] Cases in point include Gorton / Schmid (2004) who use data for the largest 250 non-financial traded stock corporations for the period 1989 to 1993, and Fauver / Fuerst (2006) where the sample consists of all publicly traded German corporations as of 2003. Stettes (2007) uses data from a survey of CEOs and leaders of supervisory boards for a descriptive study.

[3] I thank Michael Adams who pointed this out to me in private correspondence in April 2007.

If there really is such a thing as a large co-determination free zone among limited liability companies that fall under the Third Part Act of 2004,[4] and if it is known which limited liability companies with 500 to 2,000 employees do have a co-determined supervisory board and which do not, this information can be used to compare the performance of firms from within this size class with and without co-determination.

This paper contributes to the empirical literature on the co-determination – firm performance nexus by using exactly this type of information on the presence or not of a co-determined supervisory board in limited liability companies covered by the Third Part Act of 2004. In doing so it follows a suggestion by Renaud (2007) for further research, namely to compare supervisory board-codetermined enterprises with enterprises without any employee representatives in a board at all. It uses a new type of data that combines information on the co-determination status of enterprises from a commercial data base and supplementary information collected from the firms with comprehensive data on the firms from official statistics. These data (that are for 2006, and, therefore, of a much more recent vintage than most of the data used before to investigate the supervisory board codetermination – firm performance nexus) allow for the first time a direct comparison of enterprises from the same size class with and without a co-determination supervisory board.

It has to be pointed out explicitly that in the particular case of one-third codetermination at the supervisory board in limited liability companies one of the two faces of codetermination – the "ugly" one that is at the centre of the property rights theory, and that argues that co-determination weakens the residual decision rights of the owners, leads to less efficient or at least delayed decisions, lower productivity, less profitability, and rent shifting in favour of the employees – can be expected to be more or less absent, or at least not to show up distinctly. The reason for this is that the supervisory board in a limited liability company has only restricted rights compared to the supervisory board in a publicly traded company with 500 to 2000 employees. While in the latter case the supervisory board has the right to "hire and fire" the management board members and to monitor their performance, and to approve the annual balance, this role is fulfilled by the assembly of owners (*Gesellschafterversammlung*) in the case of a limited liability company. A supervisory board under the Third Part Act of 2004, therefore, can be classified as having mainly information rights, while as a rule decision rights are in the hands of the assembly of owners.[5] Therefore, it comes as no surprise that the one-third board representation

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[4] Note that if this condition holds any type of regression discontinuity design comparing limited liability companies with (slightly) less and (slightly) more than 500 employees can not identify differences between firms with and without one-third codetermination at the supervisory board level, and the same holds for limited liability companies with up to and more than 2,000 employees in the case of one-third versus quasi-parity co-determination.

option in general, and especially in limited liability companies, is often viewed as an absence of codetermination. However, the "beautiful" face of codetermination that is pointed out by participation theory, suggesting that co-determination can improve efficiency (and thus the joint surplus) of the firm due to information exchange and consultation, might show up here. It is an empirical question that has not been investigated before econometrically whether this is the case, and if so, to which extent.

To preview the most important result (which is in line with the conclusions drawn by Addison / Schnabel, 2009 cited above), one-third co-determination at the supervisory board level in limited-liability enterprises from West German manufacturing industries seems to be neither positively nor negatively related to two core firm performance indicators, productivity and profitability.

The rest of the paper is organized as follows: Section 2 describes the new data, section 3 contains the empirical investigation, and section 4 discusses the results.

2. Data

As said, enterprise surveys from official statistics do not contain any information on the presence or not of a co-determined supervisory board in the firms sampled. Such information, however, is available from a commercial data base, the *Hoppenstedt Datenbank Grossunternehmen* (see www.hoppenstedt-grossunternehmen.de). This data base contains information on the 25,000 largest enterprises in Germany with at least 200 employees and / or a sales volume of at least 20 Mio. Euro. Coverage for enterprises with 500 or more employees is complete in this data base.

In this data base it is reported whether or not an enterprise has a supervisory board (and its size), and whether or not worker representatives are among the board members (and their number). This information on the presence or not of a supervisory board and its composition, however, is not available for all enterprises. In this project, for limited liability enterprises from manufacturing industries in West Germany that had between 550 and 1975 employees[6] missing information was collected via telephone calls.[7]

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[5] The division of rights between the supervisory board and the assembly of owners might vary from case to case according to decisions taken by the owners; see Fuchs / Köstler (2005) for a detailed discussion.

[6] The Third Part Act of 2004 covers enterprises with 500 to 2000 employees. The different critical values used in this project were selected to take care of the degree of fuzzy-ness that is often given at the threshold values.

[7] A detailed description of the data and the process of its collection can be found in Troch (2009). Boneberg (2009) reports comparable data for the West German services sector industries.

The most important result from an empirical investigation using these data is that only some 60 percent of all limited liability companies from German manufacturing industries that fell under the Third Party Act of 2004 had a co-determined supervisory board in 2007/2008 (Troch, 2009). This provides evidence for the existence of a large co-determination free zone among limited liability companies with 500 to 2.000 employees.

This fact offers the possibility for an empirical investigation of the relationship between supervisory board level co-determination and firm performance based on a direct comparison of co-determined and co-determination free firms from the same size class with the same legal form. To perform this investigation, information on the presence or not of a co-determined supervisory board in an enterprise (taken from the Hoppenstedt data base, or collected via telephone) was merged with data from a second source, the cost structure survey for enterprises in the manufacturing sector by the Statistical Offices.[8]

This survey is carried out annually as a representative random sample survey (stratified according to the number of employees and the industries) of around 18.000 enterprises. All enterprises with 500 or more employees are included in each survey. A detailed description of the cost structure survey can be found in Fritsch et al. (2004). Data from the most recent available cost structure survey for 2006 are used to construct measures for two core dimensions of firm performance, productivity and profitability.

Productivity is measured as value added at factor costs per employee. Note that any measure of total factor productivity cannot be computed because of a lack of information on the capital stock[9] in the survey. In the econometric investigation the amount of depreciation per employee (that can be expected to by closely linked to the capital stock per employee) is used as a proxy variable for the unobserved capital intensity.[10]

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[8] Merging was done using information about the register number and register court of the trade register (*Handelsregisternummer* und *Handelsregistergericht*) for the enterprise, because this information is available in both the Hoppenstedt data base and in the official register of enterprises (*Unternehmensregister*) that was linked with the cost structure survey data. Merging firm level data from official statistics and from other sources is legal according to §13a of the Federal Statistics Law (*Bundesstatistikgesetz*) provided the data from external sources are publicly available. This is the case with the data on co-determination used here, because they are either taken from the publicly (though not costless) available Hoppenstedt data base, or published as an appendix to Troch (2009) that is available from the web free of charge (see www.leuphana.de/vwl/papers no. 128a).

[9] Information about investment is available from a different survey that can be linked to the cost structure survey, and this information might be used to approximate the capital stock in a firm. A close inspection of the investment data, however, reveals that many firms report no or only a very small amount of investment in many years, while others report huge values in one year. Any attempt to compute a capital stock measure based on these data would result in a proxy that seems to be useless.

Profits are computed as a rate of return, defined as gross firm surplus (computed as gross value added at factor costs minus gross wages and salaries minus costs for social insurance paid by the firm) divided by total sales (net of VAT) minus net change of inventories. As the data set does not have any information on the capital stock, or the sum of assets or equity, of the firm, it is not possible to construct profit indicators based thereon like return on assets or return on equity. Our profit measure is a measure for the price-cost margin which, under competitive conditions, should on average equal the required rental on assets employed per money unit of sales (see Schmalensee, 1989, 960 f.). Differences in profitability between firms, therefore, can follow from productivity differences, but also from different mark-ups of prices over costs and from differences in the capital intensity (for which the depreciation per employee is used as a proxy variable).

From the data base (described in detail in Troch, 2009) that includes all limited liability companies from West German manufacturing industries that are covered by the Third Part Act (*Drittelbeteiligungsgesetz*) information for 333 enterprises could be matched to the cost structure survey data from official statistics.[11] From these enterprises 273 are classified as stable over time with regard to the presence or not of a co-determined supervisory board, because we do not have any information from the Hoppenstedt data base CD for 2005 that the co-determination status was different in 2005 compared to 2007.

The 273 enterprises with a stable co-determination status over the period 2005 to 2007 form the sample that is used in the empirical investigation. From these firms 159 (or 58.2) have a co-determined supervisory board, while 114 do not.[12]

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[10] Note that Bartelsman / Doms (2000, 575) point to the fact that heterogeneity in labor productivity has been found to be accompanied by similar heterogeneity in total factor productivity in the reviewed research where both concepts are measured. Furthermore, Foster / Haltiwanger / Syverson (2008) show that productivity measures that use sales (i.e. quantities multiplied by prices) and measures that use quantities only are highly positively correlated.

[11] The data for the other 63 enterprises that were sent to the research data centre of the statistical office of Lower Saxony could not be matched to the data from official statistics. About two thirds of these enterprises were registered not in manufacturing but in other industries (trade or services), so that no information about these firms is included in the cost structure survey that covers manufacturing industries only. For the remaining firms there is either no entry in the official register of enterprises, or the enterprise numbers in the register are not the most recent ones included in our data base. Due to data protection laws it is impossible for me to try to solve these problems with regard to missing matches.

[12] Note that this is well in line with the results reported by Troch (2009) on the proportion of enterprises with a co-determined supervisory board among all firms covered by him that are mentioned above.

3. Empirical Investigation

We start the empirical investigation by looking at differences in labour productivity and profits between enterprises with and without co-determination at the supervisory board level to document the existence and size of the unconditional productivity and profitability differential. According to the results of a t-test on mean differences this differential was statistically significant at an error level of 4 percent, and large from an economic point of view, for productivity – enterprises with co-determination are on average 22 % more productive than firms without co-determination (see table 1). Contrary to this, the difference in mean profitability between enterprises from both groups is not statistically different from zero at any conventional level of significance.

If one looks at differences in the mean value for both groups of enterprises only, one focuses on just one moment of the productivity (or profit) distribution. A stricter test that considers all moments is a test for stochastic dominance of the productivity distribution for enterprises with co-determination at the supervisory board over the productivity distribution for non-codetermined firms. More formally, let F and G denote the cumulative distribution functions of productivity for firms with and without co-determination. Then $F(x) - G(x) = 0$ means that the two distributions do not differ, and first order stochastic dominance of F relative to G means that $F(z) - G(z)$ must be less or equal zero for all values of z, with strict inequality for some z. Whether this holds or not is tested non-parametrically by using the Kolmogorov-Smirnov test (see Delgado / Farinas / Ruano, 2002).

Results reported in table 1 indicate that according to the Kolmogorov-Smirnov test the two productivity distributions for firms with and without co-determination at the supervisory board level do differ, and that the distribution for firms with co-determination first-order stochastically dominates the distribution for firms without co-determination. Contrary to this, the two profitability distributions do not differ according to the Kolmogorov-Smirnov test.

The next step of the empirical investigation consists in the estimation of empirical models that regress productivity (or profitability) on a dummy variable that indicates the presence or not of a co-determined supervisory board in the firm plus control variables. Note that the regression equations estimated here are not meant to be empirical models that aim to explain labour productivity or profits at the firm level. The data set at hand here is not rich enough for such an exercise. The equations are just a vehicle to test for, and estimate the size of, any (positive or negative) premium associated with the presence of a co-determined supervisory board, controlling for other firm characteristics that are included in the empirical model. Productivity differences at the firm level are known to be notoriously difficult to explain empirically. "At the micro level, productivity remains very much a measure of our ignorance" (Bartelsman / Doms, 2000, 586). The same holds for profits.

Table 1

Differences between enterprises with and without co-determination at the board level

	Enterprises without co-determination Mean (Standard deviation)	Enterprises with co-determination Mean (Standard deviation)	t-test on mean difference (p-value)	Kolmogorov-Smirnov-test (p-values)		
				H0: equality of distributions for enterprises with and without co-determinations	H0: differences favourable for firms without co-determination	H0: differences favourable for firms with co-determination
Value added per employee (€)	72,678 (40,617)	88,650 (85,327)	0.041	0.002	0.001	0.993
Rate of profit (%)	9.00 (7.26)	7.87 (9.03)	0.255	0.220	0.421	0.110
Number of enterprises	114	159				

Note: Enterprises are limited liability companies from German manufacturing industries with 550 to 1975 employees; data are for 2006.

In the first empirical model productivity and profitability is regressed on a dummy variable that indicates the presence or not of a co-determined supervisory board in the firm plus a set of 2digit industry identifiers.[13] These industry dummy variables control for industry specific structural differences (related to the extent of competition, the technology of production, etc.) and shocks (related to the demand for products or the costs of production). Results are reported in table 2 for model (1) and (3) respectively. The estimated regression coefficient of the dummy variable that indicates the presence or not of a codetermined supervisory board is not statistically significant at any conventional level. Note that for productivity this result differs from the descriptive evidence reported in table 1 above – controlling for industry specific differences matters.

In the next step the empirical model is augmented by a number of control variables. Results are reported in table 2 for model (2) and (4) respectively. The most important result here is that the estimated coefficient of the co-determination dummy variable is not statistically significant in the augmented model for productivity or for profitability at any conventional error level.

Regarding the control variables, the first is the number of employees (and its squared value to control for a non-linear relation). The reason is that the probability of finding a co-determined supervisory board is higher in larger firms (see Troch, 2009) and the descriptive evidence for the sample used here reported in table 3), and that firm size might be related to productivity and profitability, too. Both coefficients of the firm size variables are not statistically different from zero at any conventional level of significance. While this might come as a surprise, it can be explained by the fact that by construction all enterprises included in the sample are from one size class (with 550 to 1975 employees).

Next, the amount of depreciation per employee is included as a proxy variable for capital intensity (see the discussion in section 2 above). Note that the estimated coefficient for depreciation per employee (the proxy variable for capital intensity) is not statistically significantly related with productivity but with profitability.

As a robustness check, the models described above were augmented by other firm characteristics that can be expected to be related to both productivity and profitability. The first firm characteristic is the amount of subsidies per employee received by an enterprise. In the cost structure survey subsidies are defined as any unrequited payments received from federal, regional or local authorities, or from the European Communities, to lower costs of production and / or to lower the prices of goods produced and / or to allow sufficient payments for

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[13] Due to a small number of enterprises in some 2digit industries the following industries were merged so that at least 3 enterprises are in an industry that is included in the empirical models: 15 and 16; 17, 18 and 19; 20, 21 and 22; 23 and 24.

Table 2

**Co-determination at the board level and enterprise performance:
Regression results**

Exogenous variable	Model	Performance indicator: Value added per employee (€)		Performance indicator: Rate of profit (%)	
		(1)	(2)	(3)	(4)
Co-determination (Dummy; 1 = yes)	ß	5,561.02	630.45	1.447	-1.422
	p	0.353	0.890	0.158	0.249
Number of employees	ß		-9.193		0.0014
	p		0.468		0.566
Number of employees (squared)	ß		0.0009		-3.61e-7
	p		0.720		0.460
Depreciation per employee (€)	ß		3.848		0.00017
	p		0.146		0.018
Subsidies per employee (€)	ß		-4.015		-0.0011
	p		0.013		0.008
Share of employees in research and development (%)	ß		972.56		0.152
	p		0.087		0.037
Family owned enterprise (Dummy; 1 = yes)	ß		-5,172.02		2.325
	p		0.357		0.112
Interaction term: Co-determination * Family owned enterprise	ß		-8,751		-2.591
	p		0.392		0.349
2digit industrie dummies (15 industries)		included	included	included	included
Constant	ß	78,741.81	56,299	9.18	5.930
	p	0.000	0.000	0.000	0.001
R-squared		0.095	0.304	0.059	0.129
Number of enterprises		273	273	273	273

Note: Enterprises are limited liability companies from German manufacturing industries with 550 to 1975 employees; data are for 2006. OLS regression with robust standard errors.

factors of production. We therefore expect that subsidies are higher in "weaker" firms with lower productivity and lower profits. The second firm characteristic is the share of employees in research and development (R&D) in all employees. R&D activities are expected to lead to higher productivity due to improved production processes, and to higher value added per employee due to innovative products that can be sold for higher prices on national and international markets. Both improved production processes and innovative products can be expected to lead to higher profits, too. Note that the estimated coefficients of both variables have the expected signs, and that all of them are (at least, marginally) statistically significant.

Table 3

Descriptive statistics for variables used in the regressions reported in table 2

Variable		Complete Sample	Enterprises without co-determination	Enterprises with co-determination
Value added per employee (€)	Mean	81,980.64	72,677.99	88,650.46
	Standard deviation	70,547.35	40,617.21	85,327.48
Rate of profit (%)	Mean	8.343	8.999	7.873
	Standard deviation	8.340	7.264	9.027
Co-determination (Dummy; 1 = yes)	Mean	0.582	0	1
	Standard deviation	0.494	0	0
Number of employees	Mean	933.99	737.87	1,074.61
	Standard deviation	518.72	313.24	587.69
Number of employees (squared)	Mean	1,140,426	641,710.4	1,497,996
	Standard deviation	1,956,196	638,615.4	2,447,028
Subsidies per employee (€)	Mean	81.89	44.37	108.80
	Standard deviation	736.07	364.24	914.37
Share of employees in research and development (%)	Mean	5.63	5.40	5.79
	Standard deviation	9.06	9.96	8.38
Number of enterprises		273	114	159

Note: Enterprises are limited liability companies from German manufacturing industries with 550 to 1975 employees; data are for 2006.

Furthermore, the models were augmented by a dummy variable indicating whether the enterprise is a family-owned firm (*Familienunternehmen*) or not, plus an interaction term of this dummy variable and the dummy variable indicating the presence or not of a co-determined supervisory board. The reason for this is that, on the one hand, family-owned enterprises are known to have a lower probability to have a co-determined supervisory board compared to other types of firms (as shown in Troch, 2009 for manufacturing and Boneberg, 2009 for services).[14] On the other hand, family-owned enterprises are said often to be managed differently, with a focus more on long-run survival than on short-run profitability. Controlling for family-ownership status, therefore, might be important in empirical models that look at the relationship between supervisory board level co-determination and firm performance. Results show that the conclusions do not change. Neither the dummy variable indicating co-determination, nor the interaction term between this dummy variable and the dummy variable indicating a family-owned business, is statistically different from zero at any conventional level of significance.

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[14] In our sample 12 out of 39, or 30.1%, of the family-owned firms have a co-determined supervisory board, while this is the case in 147 out of 234 (or 62.8%) of the other types of firms.

The bottom line, then, is that after controlling for industry and a number of firm characteristics, one-third codetermination at the supervisory board level seems to be neither positively nor negatively related to two core firm performance indicators, productivity and profitability.[15]

4. Discussion

To put the results that are presented above into perspective the following points should be mentioned:

First of all, although the data used in the empirical investigation are in part based on panel data (stemming from the panel data of the cost structure survey) only cross-section data could be used. The reason is that the presence or not of a co-determined supervisory board in the enterprises included in the sample used here does not change over time – by construction, and due to the way the data are collected. Therefore, it is not possible to use panel data from the cost structure survey, augmented by the information on the presence or not of a co-determined supervisory board, and to include fixed enterprise effects in the empirical model to control for unobserved heterogeneity at the firm level. Unobserved heterogeneity can be due to differences in the quality of the management of a firm, and this management quality can be related to the presence or not of a co-determined supervisory board. Correlation between the (observed) presence or not of a co-determined supervisory board and the (unobserved) quality of management leads to biased estimates of the coefficient of the co-determination dummy variable in the empirical models considered above, and given that we can not be sure whether the quality of management is systematically higher or lower in firms with or without co-determination at the board level, the direction of the bias is unknown.

Furthermore, in the empirical models investigated in this note the presence or not of a co-determined supervisory board is exogenously determined, and fixed. Therefore, it is not possible to investigate the causal effects of co-determination at the board level on firm performance by considering co-determination as a treatment that is given to some firms and not to others, and to look at the average treatment effect on the treated firms. To investigate these causal effects information on a sample of firms is needed where at time t none of the firms has a co-determined supervisory board, and at time $t+1$ some become co-determined, so that we can compare the performance of the two groups of firms after $t+1$ (taking care of the fact that the introduction or not of a co-

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[15] In her study of the economic consequences of one-third co-determination in supervisory boards of German service sector enterprises that uses a similar approach Boneberg (2010) finds that the existence of a co-determined supervisory board seems to positively affect productivity but not profitability.

determined supervisory board might not be random but systematically linked to characteristics of the firm).[16]

What is more, considering the presence or not of a third-part co-determined supervisory board as given means that it is not possible to control for any self-selection of firms into co-determination. The presence of a co-determined supervisory board may not be random, it might well be the result of an optimization process of the owners or managers of a limited liability company. For example, it might well be the case that owners or managers of a firm foster (or, at least, do not hinder) the introduction of a co-determined supervisory board if they expect that this will be in favour of the performance of the firm. Any attempt to control for this type of self-selection via a Heckman-type approach, however, needs at least one variable that is important for the decision to install a co-determined supervisory board but that is not relevant for either productivity or profitability. Given the absence of any such variable in the data set this approach to control for self-selection into third-part co-determination is not possible.[17]

The impossibility to control for unobserved heterogeneity caused by differences in the quality of the management, the impossibility to perform an analysis of the causal effects of co-determination at the supervisory board level, and the impossibility to control for possible self-selection of firms into third-part co-determination severely limits the empirical study presented here. We look at correlations, controlling for observables, and can not go any further. However, using a newly available tailor-made data set, this note presents at least first evidence from a direct comparison of co-determined and non-codetermined enterprises that, controlling for industry and a number of firm characteristics, one-third codetermination at the supervisory board level of limited liability companies seems to be neither curse nor blessing.

On the one hand, this finding of no evidence for any negative effects of co-determination on productivity and profitability may come at no surprise if one takes into account the fact discussed above that the supervisory board in a limited liability company has only very restricted rights. However, given that according to a widely held opinion one-third co-determination is considered by owners of enterprises as a vehicle to reduce the value of a firm and, therefore, as an obstacle for growth because enterprise decide not to grow further if this

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[16] For an example how to design an empirical study that takes into account unobserved heterogeneity, and that performs an investigation of the causal effect of a treatment on firm performance, see Wagner (2007) who looks at the effect of exporting on firm productivity.

[17] This problem is well known from the literature on the economic effects of works councils. There have been attempts to endogenize works councils presence, but identification is particularly difficult in this case (see Addison / Schnabel / Wagner, 2004, 271). Therefore, recent empirical investigations on the effects of works councils usually use a matching approach (see e.g. Addison et al., 2007).

would lead to a crossing of the threshold of 500 employees where the Third Part Act of 2004 bites (see, e.g., Adams, 2006), it is important to have empirical evidence showing that there seems to be no such thing as a negative effect of one-third co-determination, at least not in limited liability companies from manufacturing industries in West Germany.

On the other hand, the absence of any evidence for a positive effect as pointed out by participation theory, suggesting that co-determination can improve efficiency (and thus the joint surplus) of the firm due to information exchange and consultation, can inform ongoing policy debates over one-third codetermination. While this type of codetermination might be favoured as an important element of a social market economy for wider political reasons, it can not be expected (again, at least not in limited liability companies from manufacturing industries in West Germany) to have positive effects on two core elements of firm performance that are important for economic dynamics, productivity and profitability. From an economic point of view, therefore, there seems to be no argument in favour of enforcing the Third Part Act.

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