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Works council introductions: Do they reflect workers‘ voice?*

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Abstract: Using a large linked employer–employee dataset from Germany, the author investigates workers' decision to introduce a works council as an exit-voice consideration. Thereby, the author explores the collective voice face of introductions, while previous studies focus on the monopoly aspect. Controlling for unobserved plant heterogeneity, council introductions are more likely if workers have high plant-specific human capital or earn high wages, whereas no association between the labor market situation and introductions shows up. The findings on human capital and wages are consistent with the idea that workers trade off introducing a council against exit as well as with workers trying to protect an existing distribution of rents. Redoing the analysis for a sample of plants in which it is less relevant for workers to protect themselves against management decisions yields similar results supporting the voice interpretation.

Zusammenfassung: Mit einem umfangreichen kombinierten Betriebs-Beschäftigten-Datensatz für Deutschland betrachtet diese Arbeit die Entscheidung, einen Betriebsrat zu gründen, als ein Abwägen von Exit und Voice. Damit untersucht sie mögliche Voiceaspekte von Betriebsratsgründungen, während sich frühere Arbeiten auf Monopolaspekte konzentrieren. Bei Berücksichtigung unbeobachteter Heterogenität sind Betriebsratsgründungen wahrscheinlicher, wenn die Beschäftigten über hohes betriebsspezifisches Humankapital verfügen oder das Lohnniveau im Betrieb hoch ist. Es zeigt sich jedoch kein Zusammenhang mit der Arbeitsmarktsituation. Die Ergebnisse zu Löhnen und Humankapital sind sowohl mit einem Abwägen von Exit und Voice vereinbar als auch mit dem Versuch der Beschäftigten, eine bestehende Verteilung von Renten abzusichern. Bei einer getrennten Analyse für Betriebe, in denen es für Beschäftigte weniger relevant ist, sich gegen Entscheidungen der Unternehmensführung zu schützen, werden ähnliche Ergebnisse gefunden, was die Voiceinterpretation stützt.

Keywords: Co-determination, works councils, works council introductions, workers' voice

New JEL-classification: J53

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1 Introduction

German works councils have attracted substantial attention from researchers and numerous studies investigate the determinants and effects of existing councils on wages, productivity, firm profits, and the like (for recent surveys of this literature see Addison 2009 and Jirjahn 2011). However, only few studies explicitly look at workers' decision to introduce a council to learn about workers' motives. This is somewhat surprising since once a council exists it is difficult to disentangle its effects from its causes.

Works councils have substantial power via extensive co-determination rights, which workers can use in two, not mutually exclusive ways. They can influence the distribution of an existing surplus between workers and owners or they can increase the total surplus of the firm. Freeman and Medoff (1979) labeled this the two faces of unionism: monopoly and collective voice. While the first description implies that unions focus on the redistribution of rents, the second takes a more positive stance as it implies that they increase efficiency, for example by improving communication in the workplace, and that unions might even benefit owners.

Unlike the research on existing works councils, the empirical research on council introduction does not pay similar attention to both of these aspects. For instance, two recent studies by Müller (2011; 2012) look at the collective voice face of existing councils, finding a positive association between the presence of a works council and plant productivity as well as a positive relation with profitability. This collective voice perspective on existing councils contrasts with a strong focus on the monopoly face in previous studies on council introductions, which often distinguish between offensive and defensive introductions. Here, offensive introductions aim to change the distribution of rents in the workers' favor and defensive ones aim to preserve an existing distribution. Due to this research focus, we know little about potential voice aspects of works council introductions.

This paper addresses this gap in the literature and investigates whether works council introductions reflect workers' voice. More specifically, I look at workers' decision regarding whether or not to introduce a council as an exit-voice consideration along Hirschman's (1970) reasoning, where introducing a council is a form of voice and quitting is a form of exit. Since the hypotheses derived from this trade-off are in line with defensive introductions as well, I also restrict the sample to plants in which rent protection is less relevant and check whether this changes the results and hence their interpretation.

2 Institutional Background

The parallel existence of several forms of worker representation is a major characteristic of Germany's system of industrial relations. While unions represent workers at the sector level

and firms can choose whether to bargain with them, works councils represent workers at the plant level, and a council is mandatory if workers decide to introduce one. They are entitled to do so in plants with at least five permanent workers with voting rights, three of whom must be eligible. Workers have voting rights if they are at least 18 years old, and they can run for office if they have additionally been employed in the plant for at least six months. To give some numbers on the prevalence of works councils, Ellguth and Kohaut (2011) report that 10 per cent of all eligible plants had a council in 2010.

In this section, I will first show that works councils have substantial power that could be used to influence the distribution of rents as well as to express workers' voice, i.e. either or both faces of unionism could be relevant. Afterwards, I will make credible that council introductions do actually reflect workers' decisions. The legal situation for both, existing councils as well as introductions, is defined in the Works Constitution Act (WCA), the latest major revision of which came into force in July 2001.[2]

Works councils have information, consultation, veto, and equal co-determination rights on various topics. The information rights concern mainly the plant's financial and economic situation. The consultation rights regard the organization of work and job design as well as hiring decisions and individual dismissals. Most prominently, a dismissal without consulting the council is null and void. The council's most important veto rights relate to guidelines for personnel matters. Finally, the co-determination rights regard social matters, such as working hours, holiday arrangements, monitoring of workers, and principles of remuneration. Furthermore, councils have special rights in case of major alterations, such as significant reductions of staff or a (partial) plant closure. Its additional rights range from further information rights to co-determination rights on an agreement to reconcile workers' and owners' interests, a so-called social plan.

Due to their various rights, works councils play an important role in implementing collective bargaining agreements. For instance, works councils can veto grading decisions in payment schemes, which are an essential part of collective bargaining agreements. In line with this, Addison, Bellmann, Schnabel, and Wagner (2003) find that plants that are subject to a collective agreement are more likely to have a works council.

The power of works councils increases in plant size as do the resources the employer has to provide. For instance, there are paid full-time councilors in plants with 200 or more workers and the council has the right to purchase consulting services in case of major alterations in plants with more than 300 workers. Again, this is reflected in empirical results. For instance, Ellguth and Kohaut (2011) report that only 6 per cent of the plants with 5 to 50 employees had a works council in 2010, but roughly 90 per cent of those with more than 500 employees.

While the powers of works councils are wide-ranging, there are several limitations. First, councils may not call strikes. Next, councils cannot obstruct decisions without proper cause as a decision from a conciliation committee or a labor court can substitute for the works council's agreement. Finally, councils may not bargain on conditions of employment that are

[2] The description of legal background borrows from Addison (2009), where more details can be found.

usually settled in collective agreements, especially wages. Nevertheless, councils might informally use their power regarding other topics to influence those working conditions.

Even considering these limitations, works councils still have substantial power and workers can thus increase their influence by introducing one. The information and consultation rights clearly point towards a collective voice face as workers do not possess legal power to influence decisions. Veto and co-determination rights however might be used to influence the distribution of rents rather than in an efficiency-enhancing way.

Turning to works council introductions, the WCA aims to provide a simple procedure and to prevent any influences from the management. Council introductions run as follows: First, at least three workers (or a union represented in the plant) have to call a meeting of the workforce. At this meeting an electoral board is determined by majority vote. This board calls the election, runs it and announces the results. If the meeting fails or is not held, the labor court appoints a board. For plants with at most 50 workers there is a streamlined procedure, which also can be applied in plants with 51 to 100 workers if workers and the employer agree to do so. Apart from that, management must not influence the introduction. Interfering with the election of a council is even punishable with up to one year in prison or a fine. As a further means of protecting initiators of councils against oppressive measures, workers who call the meeting of the workforce, are on the electoral board, or run for office enjoy special employment protection as do councilors.

On the empirical side, Schlömer-Laufen and Kay (2012) qualitatively investigate ten successful works council introductions and give an opportunity to compare legal setting to practice. They find that it takes typically between three and six months to introduce a council, supporting that introducing a council is simple. Looking at management behavior, councilors in no case report that management tried to prevent the introduction, though management was critical in some plants. Occasionally, management even seems to support council introductions, which is also in line with Mohrenweiser, Marginson, and Backes-Gellner (2012). However, the picture is somewhat flawed as both studies only look at successful introductions and there is no systematic evidence on failed attempts to introduce councils.

To sum up, the legal background of council introductions and the empirical findings indicate that council introductions are the workers' decision. Therefore, council introductions are an opportunity to learn about workers' motives when introducing a council. This has drawn some, though limited, attention to the workers' decision to introduce councils, and the following section summarizes this literature.

3 Previous Literature on Works Council Introductions and Hypotheses

Freeman and Medoff (1979) distinguish two faces of unions. Firstly, the monopoly face describes that unions try to influence the distribution of rents between workers and owners. Secondly, the collective voice face means that unions can increase efficiency, e.g. through

improved communication between workers and management as modeled by Freeman and Lazear (1995). In contrast to the more general literature on works councils, the literature on council introductions focuses on the notion that workers introduce a council to influence the distribution of rents and, thus, the monopoly face. However, introducing a works council can also be understood as a form of voice. Along Hirschman's (1970) lines, dissatisfied workers would then trade off introducing a council against exit, i.e. quitting the plant. Such introductions might have positive effects on the plants' efficiency, e.g. less plant-specific human capital is destroyed by staff turnover or working conditions may be improved without harming profits.

Freeman and Medoff (1984) argue that workers differ in their mobility and less mobile workers will be more inclined to opt for voice, here introduce a works council. To distinguish different groups of workers that differ in their mobility and to study the influence of the workforce composition on council introductions is, hence, a natural starting point to explore the collective voice aspect. I will therefore report results on to the workforce composition in the following overview of the literature, though none of the studies focused on this.

Turning to the empirical evidence on works council introduction, Addison et al. (2003) find that council introductions between 1996 and 2000 are more likely in large plants, branch plants, plants with limited liability, and plants that are subject to collective bargaining agreements. As these determinants show up in most of the following studies, I will only point out exceptions. Addison et al. (2003) do not find associations between council introductions and a plant's profit situation or workforce characteristics.

Moving forward to council introductions between 1998 and 2004, Addison, Bryson, Teixeira, Pahnke and Bellmann (2009) find that introductions are less likely if the management expects increasing sales. Here, a positive relation between introductions and the shares of female workers shows up as well as a negative one with the share of part-time workers. In contrast to the first study, the association with the branch plant status is insignificant.

Dilger (2003) uses data on council introductions between 1994 and 1996 and focuses on the influence of different payment schemes on introductions, which does not show up. He does not find significant associations between introductions and plant size, branch plant status or sector-level collective bargaining agreements, while the coefficient of firm-level agreements is positive and significant at the 10 % level. Also, no influence of the workforce composition or the turnover per capita, which comes closest to a measure of the profit situation, is found.

Three studies explicitly focus on the influence of a plant's situation on council introductions and try to distinguish whether councils are introduced in a defensive manner during bad times (rent protection) or in an offensive manner during good times (rent seeking). Jirjahn (2009) uses data on council introductions between 1994 and 1996. He concludes that workers introduce councils defensively since they are more likely to do so if the sales situation is poor, employment is shrinking, or the management has no expansive strategy. Furthermore, he finds that the likelihood of council introductions is higher in plants with a large proportion of skilled blue collar workers or a small proportion of apprentices. Looking at additional

workforce characteristics, he does not observe associations between introductions and the overall share of blue collar workers or the share of university graduates.

Beckmann, Föhr, and Kräkel (2010) use data on introductions between 2001 and 2005. They argue that council introductions are more likely if a plant is doing well economically. While supporting previous results regarding branch plant status, legal form, and collective bargaining, they do not find significant relationships between plant size or any aspects of the workforce composition and council introductions.

Mohrenweiser et al. (2012) use data from 1999 to 2007 and investigate the link between organizational changes, such as in-sourcing or out-sourcing, and works council introductions. They find that introductions are more likely after such events. However, in contrast to Jirjahn (2009) and Beckmann et al. (2010), they do not find a relation between the profit situation and introductions. Looking at the workforce composition, Mohrenweiser et al. (2012) observe that introductions are more likely if the share of part-time workers is low (not controlling for the share of female workers), but they do not find associations with the shares of skilled workers and apprentices.

Kraft and Lang (2008) study the influence of council introduction between 2001 and 2006 on wages and employment security, neither of which they find using plant-level data. Regarding introductions, they observe a negative relation with a good profit situation as well as the share of blue collar workers, but no relationship with the shares of part-time and female workers.

Finally, three studies look at the effects of works council introduction without giving multivariate results on their determinants. Combining matching and difference-in-differences, Addison, Bellmann, Schnabel, and Wagner (2004) do not find significant effects on quits, sales per employee, employment growth, nor on the profit situation. Using a matching approach, Schultz (2006) does not find effects on value-added per worker, the share of qualified workers, nor the profit situation. Relying on a difference-in-differences approach, Gralla and Kraft (2012) observe that employment growth is lower after introductions, which they interpret as evidence for the monopoly face and against voice effects of newly introduced works councils.

To sum up, the results regarding the profit situation, and thus the monopoly face, are far from being conclusive. While some results indicate that a bad profit situation comes along with more introductions, others find that introductions are more likely if the profit situation is good. Even using similar data, the results differ; compare Kraft and Lang (2008) to Mohrenweiser et al. (2012). Also, it is unclear what we can learn from the studies that look at the effects of works council introductions given Mohrenweiser et al.'s (2012) finding that often other changes occur at the same time. Turning to workforce characteristics, and thus one possible approach to workers' voice, the findings are again inconclusive. In face of these results, I proceed differently and use Hirschman's (1970) exit-voice reasoning to generate hypotheses about council introductions and test them empirically.

According to Hirschman (1970), members of an organization trade off voice against exit in declining organizations, read when they are dissatisfied with their situation. From this reasoning, I derive hypotheses regarding the influence of plant-specific human capital, the

labor market situation, and the wage level on the workers' decision to introduce a council. These hypotheses should hold if workers' decision is based on an exit-voice trade-off and introductions reflect workers' voice. Firstly, workers lose their plant-specific human capital if they quit. Hence, I hypothesize that workers with high plant-specific human capital will be more likely to introduce a council as quitting is more costly for them. To measure specific human capital, I use the median of the workers' tenure.[3] Secondly, quitting is less feasible if there are few job market alternatives. Thus, workers with few job market alternatives should be more inclined to introduce a council. Workers' alternatives are measured by the unemployment rate in the plant's district. Thirdly, a new job should yield a similar or better wage. If the wage level at a plant is high, such a job is more difficult to find. Therefore, workers in plants with a high wage level should introduce a council with higher probability. The wage level is measured by the median of the full-time workers' wages when controlling for the occupation and qualification structure as well as other wage related characteristics.

None of these hypotheses has been tested before, though some studies touch upon them. Kraft and Lang (2008) match introducing and not-introducing plants without controlling for the qualification of the workforce. They observe higher wages and fewer quits in introducing plants. Mohrenweiser et al. (2012) include wages above the level specified in collective bargaining agreements as a control variable and do not find a significant association with council introductions. Gralla and Kraft (2012) observe that the share of dismissals is on average lower in plants that will introduce a works council in the future than in plants that will not do so.

The three hypotheses refer to situations in which workers are in a relatively beneficial position that they want to maintain. Therefore, the hypotheses are also in line with defensive works council introductions and when we observe these patterns one may ask whether this reflects rent protection or workers' voice. To investigate this more closely, I will also look at samples of plants in which it is less relevant for workers to protect themselves against management decisions. Two major threats workers might want to protect themselves against should be wage reductions and dismissals. Hence, it would be insightful to look at plants in which these threats are less plausible. If the hypotheses are confirmed in the complete sample and the evidence disappears when restricting the sample, this would be evidence in favor of the defensive reasoning. In contrast, finding the same results for the restricted sample would indicate that council introductions are not only about the distribution of rents, but also reflect workers' voice.

The German regime of industrial relations provides an opportunity to get at the likelihood of wage cuts. Collective bargaining agreements provide minimum working conditions, while firms may voluntarily offer better conditions, e.g. pay higher wages as studied by Jung and Schnabel (2011). The management of plants that are either not subject to a collective agreement or pay wages above the level specified in a binding agreement can credibly threaten to reduce real wages by keeping nominal wages constant. Reducing (real) wages is more difficult in plants that strictly pay wages specified in a binding agreement. Thus, the rent

[3] This pattern can also be explained by seniority wages. This payment scheme makes exit less attractive as tenure increases since longer tenure implies higher wage losses. However, this is consistent with the collective voice reasoning as workers still trade off exit (and subsequent wage losses) against voice.

protection argument is less plausible in these plants, while the exit-voice consideration is not altered.

Looking at workers' perceived employment security is more difficult since no direct measure is available in the data. As an indirect way to get at this, I will look at plants that do not expect decreasing employment in the next year. While workers should obviously be concerned in plants that expect employment reductions, we cannot be sure that they do not worry about individual dismissals in the remaining plants. However, this approach excludes plants from the sample in which workers should have particularly strong concerns regarding layoffs, and the rent protection argument is less relevant for the remaining plants than in the complete sample.

4 Data and Descriptive Evidence

In the empirical analysis, I use the cross-sectional model of the LIAB for the years 2001 to 2008, i.e. the Linked Employer–Employee Dataset of the Institute for Employment Research (IAB) of the German Federal Employment Agency (Alda, Bender and Gartner (2005) provide further details). The dataset links administrative data on workers with the IAB Establishment Panel, of which I additionally use earlier and later waves. This allows me to control in detail for both, worker and plant characteristics.

Looking at the plant side, the IAB Establishment Panel is a random sample of about 16,000 German plants. It stems from the Employment Statistics, which comprise all plants that employ at least one worker liable to social security. The sample is drawn according to the principles of optimal stratification. Strata are defined over plant sizes and industries and large plants are oversampled. The response rates of plants that are repeatedly interviewed exceed 80 per cent, making the dataset well suited to follow plants over time. The survey provides information on the plant's works council status, the number of workers, its collective bargaining status, profit situation, and industry affiliation, among others. Using this information, I drop all observations that cannot introduce a council since they already have one or have less than five workers. I also exclude not-for-profit plants from the analysis.

On the worker side, the dataset is based on the Employee History, which stems from the integrated notification procedure for the health, pension, and unemployment insurances. The notification procedure requires employers to report information on all workers covered by the social security system. These notifications are compulsory and misreporting is prohibited. As a consequence, information is available for all workers liable to social security in plants that are covered by the Establishment Panel. Though, among others, civil servants and family workers are not included, about 80 per cent of all employed individuals are part of the Employee History. The data include information on workers' daily wage, tenure, age, sex, occupation, and education.

To ensure that I observe actual introductions of new councils, I identify a plant as introducing a council in *t* if it neither has a council in *t-1* nor in *t*, but reports having a council in *t+1* and *t+2*. Paralleling, I identify a plant as not introducing a council in *t* if it reports having no council from *t-1* through *t+1* and is also observed in *t+2*. Using establishment data from 2000 to 2010, this procedure leaves me with 22,701 observations of 6,582 plants, 189 of which reflect council introductions between 2001 and 2009. The numbers imply that the average probability of an introduction is 0.8 per cent.

Table 1 presents the descriptive statistics. According to the human capital hypothesis, one would expect that workers of introducing plants have longer tenure. However, the data shows that the average median tenure is 0.3 years higher in plants without introduction. Turning to the labor market situation, the unemployment rate is on average 0.9 percentage points higher for introducing plants, which again does not support the corresponding hypothesis. In contrast, the evidence on the wage level is in line with the hypothesis as median wages are on average about 20 log points higher in introducing plants. However, both types of plants differ substantially in many other dimensions. For example, introducing plants are larger, 15 per cent have at least 200 workers compared to 3 per cent of the not-introducing plants, and they are also more often subject to a collective agreement, 62 per cent compared to 39 per cent.

[Table 1 about here]

5 Econometric Analysis

To investigate the determinants of works council introductions, I fit binary response models, where an introduction is coded as a success. Given the low average probability of introductions, I consider them as rare events and thus use complementary log-log models throughout the analysis (for a brief overview see Cameron and Trivedi 2005: 466–467). To begin with, I investigate only the hypotheses about plant-specific human capital and the labor market situation, but leave out the wage hypothesis since wages are potentially affected by both. Next, I will turn to the wage hypothesis. Afterwards, I will restrict the sample to plants in which rent protection is less relevant and finally check the robustness of the results.

As a starting point, I use a pooled maximum likelihood approach. I regress council introductions between *t* and *t+1* on workers' median tenure ($tenure_{it}$), the average unemployment rate at the plant's district in the previous calender year (UR_{it}), the workforce composition and the plant's business situation (x_{it}) as well as further control variables (z_{it}). Thus, the model is

$$P(introduction_{it} = 1) = F(\beta_1 tenure_{it} + \beta_2 UR_{it} + x_{it}\theta + z_{it}\gamma) \quad (1)$$

where F(·) is the cumulative distribution function of the extreme value distribution. Note that all explanatory variables are measured before workers' decisions, which should rule out problems of reversed causality.

x_{it} encompasses the workers' median age, the shares of part-time workers, female workers, apprentices, qualified and highly-qualified workers as well as workers in manual and business occupations.[4] To capture the plant's economic situation, x_{it} also includes a dummy variable indicating a good or very good profit situation in the previous business year and the employment growth in the previous year relative to the employment level at the beginning of that year. z_{it} includes dummy variables indicating whether a plant is subject to a collective bargaining agreement at the firm or at the sector level, dummies for plants with limited liability, subsidiary plants, location in a rural area, and plants in foreign ownership, as well as three dummies indicating plant size and five dummies indicating plant age.[5] z_{it} also captures the occurrence of organizational shocks at a plant up to one year before the survey.[6] Finally, z_{it} includes dummies for nine industries, seven years, and location in East Germany.

The first column of Table 2 presents the average partial effects using this specification. From the institutional background, one would expect that the likelihood of council introductions is higher in plants that are covered by collective bargaining agreements and increases with plant size. Indeed, the estimation results show this pattern. Council introductions are 0.8 percentage points more likely in plants that are covered by a collective agreement at the sector level than in plants not covered by a collective agreement, ceteris paribus. Looking at agreements at the firm-level, the estimated effect is somewhat larger, but estimated imprecisely. Furthermore, the likelihood of introductions is between 0.5 percentage points (for plants with 21–100 workers) and 2.9 percentage points (plants with 200 or more workers) higher in larger plants than in plants with at most 20 workers. The results also confirm two other determinants of council introductions that are repeatedly reported in the literature. Workers in branch plants and in plants with limited liability are more inclined to introduce councils. The coefficients of all of these variables are statistically significant at the 1 % level.

Turning to the hypotheses to be tested, I find that the probability of a council introduction is 0.06 percentage points higher if the median of the workers' tenure is one year higher. Thus, a one standard deviation rise in workers' tenure approximately raises the likelihood of an introduction by one fifth of the average probability. The effect is also statistically significant at the 1 % level. Regarding the unemployment rate, the estimated average partial effect is neither of substantial size nor is the coefficient significant. In contrast to the hypothesis, it even points towards a lower likelihood of council introductions if unemployment is high.

[4] I distinguish workers having completed neither Abitur (A-levels) nor an apprenticeship (lowly-qualified, reference group), workers having completed Abitur and/or an apprenticeship (qualified), and workers with a college or university degree (highly-qualified). To capture the occupational structure, I use an aggregated form of Blossfeld's (1985) classification and distinguish service occupations (reference group), manual occupations, and business occupations.

[5] The plant age dummies are coded in five year steps with one final category capturing an age of 25 years or higher. Plants aged less than five years are used as reference groups.

[6] Organizational shocks encompass the closure, relocation or separation of a plant or parts of it or the integration of a plant or a plant unit.

[Table 2 about here]

To address time-invariant unobserved heterogeneity, I apply a correlated random effects approach and include the plant-level averages of workers' median tenure, the other workforce characteristics, the unemployment rate, and the business situation, $\bar{x}_\iota$. This approach goes back to Mundlak (1978) and allows for an unobserved time-constant effect that is correlated with the means of those variables and corresponds to including plant fixed effects in a linear panel model. The model now reads

$$(2) \qquad P(introduction_{it} = 1) = F(\beta_{1a} tenure_{it} + \beta_{2a} UR_{it} + x_{it}\theta_a + z_{it}\gamma_a + \bar{x}_\iota \xi)$$

and the estimated parameters can be used to compute average partial effects. One can investigate the presence of unobserved heterogeneity of the described form by testing the significance of $\hat{\xi}$. This approach closely resembles the correlated random effects probit model discussed in Wooldridge (2010: 615–617).[7]

The second column of Table 2 presents the results from this correlated random effects model. The results regarding the control variables discussed above are not altered. The estimated effect of an increase in the median tenure is larger and amounts to a 0.17 percentage point increase of the likelihood of council introductions in response to a one year increase of the median tenure. As before, the effect is statistically significant at the 1 % level. The results also indicate a positive relation between the unemployment rate and introductions, though the association is not statistically significant.

As the coefficients $\hat{\xi}$are jointly significant at the 1 % level, I stay with the correlated random effects model to study the wage hypothesis and add the log of the median of the workers' wages as an explanatory variable. The results are given in Table 3, first column. Controlling for the wage level does not change the results outlined above. In line with the hypothesis, the wage level has a positive influence on the likelihood of council introductions, implying that a one per cent increase of the median wage raises the probability by 0.012 percentage points. While this effect is comparatively small, it is still statistically significant at the 1 % level.

[Table 3 about here]

[7] Note that I do not include the means of all time-varying variables for two reasons. First, some plant characteristics vary only very little, e.g. whether a plant is in foreign ownership or its legal form. Second, variation in some of the other variables seems to be quite noisy, e.g. see Ellguth and Kohaut (2011), who give account of an editing procedure for plants that repeatedly change their reported collective bargaining status. Both problems make a precise estimation of the respective coefficients impossible when controlling for the plant-level average as this eliminates most of the meaningful variation. When including the averages of all time-varying plant characteristics, but sector and plant age (as plants do practically not switch sectors and plant age changes mechanically like year dummies), the coefficients of the additional variables are jointly significant. However, the main results of the analysis remain unchanged, but estimates are less precise as one would expect. Therefore, I only include the averages of the workforce characteristics, the unemployment rate, and the business situation.

To allow for correlation between the wage level in a plant and the unobserved heterogeneity term, I also include the average wage as an explanatory variable. The results in the second column of Table 3 show an increase in the estimated average partial effect of a 1 per cent wage increase to 0.019 percentage points. However, as the coefficient for the average wage is insignificant and its inclusion substantially reduces the precision of the estimated effect, I prefer to leave out the average wage level.[8]

These results support the human capital hypothesis as well as the wage hypothesis, while no link shows up between the labor market situation and works council introductions. As outlined above, the hypotheses are consistent with an exit-voice reasoning as well as with rent protection. Therefore, I will next turn to the restricted samples of plants in which defensive introductions are less relevant. Table 4 gives the results from the analysis when restricting the sample to plants paying strictly according to collective agreements (Panel A) and when excluding plants that expect decreasing employment (Panel B). The positive relationships between works council introductions and workers' tenure as well as the wage level show up again. Combining both restrictions in Panel C yields similar results, though the effect of tenure is statistically significance only at the 5 % level. As rent protection is less relevant in these plants, the results suggest that introductions do also reflect workers' voice and not only attempts to influence the distribution of rents.

[Table 4 about here]

To check the robustness of the results, I address two possible objections to the validity of the empirical analysis. Firstly, one could argue that the analysis compares apples to oranges as only certain types of plants ever introduce councils. To address this, I redo the analysis with a more homogeneous sample and match exactly on sector, plant size, plant age, collective bargaining status, and location in West or East Germany. Secondly, works councils are a dynamic phenomenon and introducing plants might have had a works council before. In such plants high tenure and wages could rather be consequences of a previously existing council than causes of an introduction. Thus, I exclude all plants from the sample that have ever reported to have a council using all available data back until 1993. Table 5 gives the average partial effects from these robustness checks. The estimates yield a positive and significant relationship between tenure as well as wages and the probability of council introductions and thus confirm the previous results. Note that the average probability of council introductions differs substantially in the sub-samples, making it difficult to compare the effect sizes.

[Table 5 about here]

[8] When including the means of all time-varying variables, the estimated average partial effect of the wage variable is almost identical, but much less precisely estimated and the coefficient is therefore only significant at the 10 % level.

Before concluding, let me briefly point out some other results from the correlated random effects models controlling for wages to foster comparison with the previous literature. No association shows up between the plant's business situation and council introductions, but I find a positive relation with organizational shocks. Turning to workforce characteristics, I observe positive relationships between the share of apprentices as well as the workers' median age and council introductions, which are significant at the 5 and 10 % level, respectively. Furthermore, there is a positive relation between introductions and the shares of qualified and highly-qualified workers, both of which are significant at the 5 % level, implying that lowly-qualified workers are less likely to introduce a council. I do, however, not find significant differences by the shares of female workers, part-time workers, or occupational structure.

6 Conclusions

In this study, I explore the collective voice face of works council introductions by investigating workers' decision to introduce a council as an exit-voice consideration. I derive and empirically test three hypotheses that should hold if workers trade off introducing a council against exit. Workers should be more inclined to introduce a council if they have high plant-specific human capital, have few labor market alternatives or earn high wages. To measure these characteristics, I use the workers' median tenure, the local unemployment rate, and the median wage at the plant. The empirical evidence supports the human capital and the wage hypotheses, though not the labor market hypothesis. My preferred specification suggests that the probability of an introduction increases by 0.17 percentage points if tenure increases by one year and by 0.01 percentage points if the wage level increases by one per cent. Compared to the low average probability of introductions, these effects are of mentionable size.

The findings on human capital and wages are consistent with an exit-voice consideration as well as with the notion that workers introduce a council to protect an existing distribution of rents. Therefore, I separately look at plants in which rent protection is less relevant. The patterns in these plants are very similar. This indicates that workers do not only introduce councils to influence the distribution of rents, but that council introductions do reflect workers' voice.

Contrasting the results with previous research on works council introductions, the estimates of the correlated random effects models confirm findings on plant size, collective bargaining, legal form, and branch plant status. The results on the economic situation are similar to Mohrenweiser et al. (2012), who also observe a positive relationship between organizational shocks and introductions, but no significant association between introductions and the profit situation. Comparing the results on workforce characteristics is difficult since the previous evidence on these is even less clear. Considering that the results in this study are the first to be based on within plant variation, they might provide a helpful benchmark for further research into the relation between workers’ characteristics and their decision to introduce a works council.

Looking at the research on existing councils, it is interesting to see that two aspects that are often seen as effects of works councils already show up before their introduction: higher wages and longer tenure (see the surveys in Addison 2009 and Jirjahn 2011). From the monopoly point of view, this supports the notion that councils rather act defensively than offensively. This is also in line with the possible defensive interpretation of this study's results. However, it may well be that older councils were introduced with different intentions or that councils change their behavior over time and it hence remains unclear whether such a generalization is valid.

As more data becomes available, it will be interesting to take a look at the further developments at plants after works council introductions. Tracking those plants can yield insights in the ways workers actually use power and whether this changes as councils mature. For instance, power that is initially seized without such intentions may still be used in an offensive manner later on. Following these plants over time promises more detailed insights into such processes than cross-sectional analyses, such as Jirjahn, Mohrenweiser and Backes-Gellner (2011). What is more, we can learn about management's responses to an increase in the workers' influence by looking at plants that introduce a council. This may improve our understanding of potential effects of changes in industrial relations systems and thus provide valuable guidance for policy makers.

Table 1. Descriptive statistics

Explanatory variables	*No introduction*		*Introduction*	
	Mean	*St. Dev.*	*Mean*	*St. Dev.*
Median tenure in years	6.09	3.84	5.73	3.93
Unemployment rate in per cent (previous calendar year)	12.89	5.49	12.04	5.31
Log(median wage in euros)	4.097	0.372	4.327	0.351
Collective bargaining at the sector level (d)	0.348	0.476	0.540	0.500
Collective bargaining at the firm level (d)	0.040	0.196	0.085	0.279
Plant with limited liability (d)	0.579	0.494	0.889	0.315
Branch plant (d)	0.073	0.261	0.434	0.497
Foreign ownership (d)	0.023	0.148	0.095	0.294
Plant in rural area (d)	0.356	0.479	0.296	0.458
Plant in East Germany (d)	0.472	0.499	0.397	0.491
5 to 20 workers (d)	0.570	0.495	0.243	0.430
21 to 100 workers (d)	0.356	0.479	0.481	0.501
100 to 199 workers (d)	0.047	0.212	0.127	0.334
200 or more workers (d)	0.027	0.161	0.148	0.356
Organizational Shock (d)	0.038	0.191	0.101	0.302
Good profit situation (previous business year, d)	0.357	0.479	0.429	0.496
Relative employment growth	0.028	0.326	0.066	0.231
Median age in years	40.59	7.06	40.36	5.66
Share of part-time workers	0.202	0.220	0.225	0.268
Share of female workers	0.411	0.300	0.412	0.293
Share of apprentices	0.064	0.099	0.040	0.066
Share of highly-qualified workers	0.068	0.155	0.099	0.178
Share of qualified workers	0.783	0.230	0.750	0.226
Share of workers in manual occupations	0.492	0.364	0.385	0.367
Share of workers in business occupations	0.287	0.291	0.385	0.354
Observations	22,512		189	

Notes: The unemployment rate is measured at the district level. The median wage refers to full-time workers only. (d) denotes dummy variables and employment growth is relative to employment in the previous year. The dataset used is the LIAB, cross-sectional model, 2001–2008.

Table 2. Average partial effects on the probability of a works council introduction

Explanatory variables	*Pooled maximum likelihood*		*Correlated random effects*	
	APE	*Std.Er.*	*APE*	*Std.Er.*
Median tenure	0.0006***	0.0002	0.0017***	0.0004
Unemployment rate (previous calendar year)	–0.0002	0.0002	0.0008	0.0007
Collective bargaining at the sector level (d)	0.0080***	0.0017	0.0079***	0.0017
Collective bargaining at the firm level (d)	0.0134***	0.0054	0.0141***	0.0055
Plant with limited liability (d)	0.0076***	0.0012	0.0071***	0.0012
Branch plant (d)	0.0198***	0.0034	0.0192***	0.0034
Plant in foreign ownership (d)	0.0014	0.0025	0.0013	0.0024
Plant located in rural area (d)	–0.0003	0.0014	–0.0002	0.0014
Plant located in East Germany (d)	–0.0007	0.0024	–0.0004	0.0025
Plant with 21 to 100 workers (d)	0.0049***	0.0012	0.0053***	0.0013
Plant with 101 to 199 workers (d)	0.0122***	0.0035	0.0123***	0.0035
Plant with 200 or more workers (d)	0.0295***	0.0068	0.0290***	0.0068
Organizational shock (d)	0.0062**	0.0032	0.0063**	0.0032
Good profit situation (previous business year, d)	0.0007	0.0013	0.0004	0.0012
Relative employment growth	0.0009**	0.0004	0.0007	0.0009
Median age	<0.0001	0.0001	0.0005*	0.0003
Share of part-time workers	0.0048	0.0029	0.0132*	0.0071
Share of female workers	–0.0002	0.0034	0.0087	0.0096
Share of apprentices	–0.0094	0.0092	0.0370**	0.0172
Share of highly-qualified workers	0.0105**	0.0045	0.0263**	0.0107
Share of qualified workers	0.0037	0.0037	0.0160**	0.0065
Share of workers in manual occupations	0.0005	0.0031	0.0161	0.0136
Share of workers in business occupations	0.0032	0.0032	–0.0027	0.0081
Plant-specific averages of several time-varying variables	No		Yes***	
Observations	22,701			
Council introductions	189			

Notes: Complementary log-log-models are fitted and the dependent variable is an indicator that takes the value of 1 if a council is introduced in the next year. Five plant age, nine industry and seven year dummies are further control variables. The correlated random effects model includes the plant-level averages of workers' median tenure and the other workforce characteristics, the unemployment rate, the profit situation, and the employment growth. Standard errors of average partial effects are calculated using the delta method. The dataset used is the LIAB, cross-sectional model, 2001–2008. */**/*** denote statistical significance of the estimated coefficient at the 10/5/1 per cent level using standard errors clustered at the plant level.

Table 3. Average partial effects on the probability of a works council introduction, controlling for the wage level

Explanatory variables	*Correlated random effects w/o average wage*		*Correlated random effects with average wage*	
	APE	*Std.Er.*	*APE*	*Std.Er.*
Log(median wage)	0.0121***	0.0024	0.0185***	0.0058
Average log(median wage)	/		–0.0068	0.0058
Median tenure	0.0017***	0.0004	0.0016***	0.0004
Unemployment rate (previous calendar year)	0.0009	0.0007	0.0009	0.0007
Collective bargaining at the sector level (d)	0.0080***	0.0017	0.0080***	0.0017
Collective bargaining at the firm level (d)	0.0140***	0.0054	0.0139***	0.0054
Plant with limited liability (d)	0.0068***	0.0012	0.0068***	0.0012
Branch plant (d)	0.0169***	0.0031	0.0170***	0.0031
Plant in foreign ownership (d)	–0.0006	0.0022	–0.0006	0.0022
Plant located in rural area (d)	0.0002	0.0014	0.0002	0.0014
Plant located in East Germany (d)	0.0025	0.0027	0.0024	0.0027
Plant with 21 to 100 workers (d)	0.0052***	0.0012	0.0052***	0.0012
Plant with 101 to 199 workers (d)	0.0122***	0.0035	0.0122***	0.0035
Plant with 200 or more workers (d)	0.0277***	0.0065	0.0280***	0.0065
Organizational shock(d)	0.0064**	0.0032	0.0064**	0.0032
Good profit situation (previous business year, d)	0.0003	0.0012	0.0003	0.0012
Relative employment growth	0.0006	0.0007	0.0006	0.0008
Median age	0.0005*	0.0003	0.0005*	0.0003
Share of part-time workers	0.0108	0.0075	0.0085	0.0075
Share of female workers	0.0108	0.0099	0.0117	0.0098
Share of apprentices	0.0365**	0.0176	0.0347**	0.0178
Share of highly-qualified workers	0.0252**	0.0111	0.0240**	0.0111
Share of qualified workers	0.0168**	0.0067	0.0162**	0.0065
Share of workers in manual occupations	0.0143	0.0142	0.0133	0.0144
Share of workers in business occupations	–0.0053	0.0086	–0.0074	0.0088
Observations	22,701			
Council introductions	189			

Notes: Complementary log-log-models are fitted and the dependent variable is an indicator that takes the value of 1 if a council is introduced in the next year. Further control variables are included as described in Table 2. Standard errors of average partial effects are calculated using the delta method. The dataset used is the LIAB, cross-sectional model, 2001–2008. */**/*** denote statistical significance of the estimated coefficient at the 10/5/1 per cent level using standard errors clustered at the plant level.

Table 4. Sample restricted to plants for which rent protection is less relevant

Explanatory variables	*Correlated random effects w/o average wage*		*Correlated random effects with average wage*	
	APE	*Std.Er.*	*APE*	*Std.Er.*
A: Plants strictly paying according to collective agreement				
Log(median wage)	0.0217***	0.0068	0.0347***	0.0136
Median tenure	0.0034***	0.0012	0.0032***	0.0012
Unemployment rate (previous calendar year)	–0.0015	0.0017	–0.0015	0.0017
Observations	4,055			
Council introductions	56			
B: Without plants that expect negative employment growth				
Log(median wage)	0.0115***	0.0025	0.0180***	0.0058
Median tenure	0.0011***	0.0004	0.0011**	0.0004
Unemployment rate (previous calendar year)	0.0008	0.0007	0.0008	0.0007
Observations	19,990			
Council introductions	163			
C: Plants included in A and in B				
Log(median wage)	0.0211***	0.0072	0.0384***	0.0122
Median tenure	0.0028**	0.0013	0.0026**	0.0013
Unemployment rate (previous calendar year)	–0.0006	0.0019	–0.0006	0.0019
Observations	3,498			
Council introductions	49			

Notes: Complementary log-log-models are fitted and the dependent variable is an indicator that takes the value of 1 if a council is introduced in the next year. The specifications used are the correlated random effects models with and without average wages as in Table 3, though in Panels A and C two industry and one plant age dummies are dropped as they perfectly predict failure. Standard errors of average partial effects are calculated using the delta method. The dataset used is the LIAB, cross-sectional model, 2001–2008. */**/*** denote statistical significance of the estimated coefficient at the 10/5/1 per cent level using standard errors clustered at the plant level.

Table 5. Robustness checks

Explanatory variables	*Correlated random effects w/o average wage*		*Correlated random effects with average wage*	
	APE	*Std.Er.*	*APE*	*Std.Er.*
A: Matched sample				
Log(median wage)	0.0535***	0.0142	0.1246***	0.0407
Median tenure	0.0099***	0.0028	0.0092***	0.0029
Unemployment rate (previous calendar year)	–0.0020	0.0043	–0.0018	0.0042
Observations	3823			
Council introductions	198			
B: Without plants that ever reported having a works council before				
Log(median wage)	0.0078***	0.0004	0.0149***	0.0053
Median tenure	0.0015***	0.0004	0.0015***	0.0004
Unemployment rate (previous calendar year)	0.0009	0.0007	0.0010	0.0007
Observations	21,582			
Council introductions	133			

Notes: Complementary log-log-models are fitted and the dependent variable is an indicator that takes the value of 1 if a council is introduced in the next year. The specifications used are the correlated random effects models with and without average wages as in Table 3. The sample on panel A is matched exactly on sector, plant size, plant age, collective bargaining status, and location in West or East Germany. Standard errors of average partial effects are calculated using the delta method. The dataset used is the LIAB, cross-sectional model, 2001–2008. */**/*** denote statistical significance of the estimated coefficient at the 10/5/1 per cent level using standard errors clustered at the plant level.

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