

# Works Councils: An Agency Perspective\*

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## Abstract

Employees' representatives at workplace (i.e. Works Councils) are an important component of industrial relations, in particular, in Europe. This institution has been considered as efficient mechanism to avoid the lack of communication between manager and employees [Freeman and Lazear (1995)]. However, we investigate the agency problems between workers and their representatives that are supposed to monitor but may collude with management. Workers can incentivize their representatives through elections. We show that in order to commit to report the truth, worker representatives must have high wages that those for employees. Second, the election process (industrial democracy) can generate an incentive of worker representation to misrepresent their information with wrong consequences for workforce and firm.

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*“...Germany is one of several countries that, in the spirit of industrial democracy, give employees the right to form Works Councils to represent their interests to management and have a say in decision-making... A recent scandal at Volkswagen (VW) saw Peter Hartz (the head of personnel department at VW and architect of the Schröder government’s labor reforms) forced out of his job after allegations that worker representatives were bribed to support certain aspects of corporate policy. ‘Democracy’ does not necessarily ensure real consultation and fairness...”*

[The Financial Times, 2005].

## 1. Introduction

For decades, worker representatives have played an important role in the corporate governance and industrial relations in Europe. Additionally, the precipitous fall in private sector unionism in the United States and UK and the concerns about how different labor relation systems fare in a global marketplace have renewed interest in workers’ representation at the plant level [Weil (2003) and Black and Lynch (2004)]. However, recent scandals involving works councils in Germany (one of the countries with compulsory legislation in favor of worker voice and codetermination at the workplace) have generated some skepticism about the role of these institutions within organizations<sup>1</sup>. This paper studies the role of Councilors within organizations<sup>2</sup>.

In spite of the relevance of this issue, our understanding of the strategic behavior of Councilors is not complete. In this paper, we offer a new perspective about the role of worker representatives. Councilors are independent agents who might pursue their private goals and are constrained by their concerns to be re-elected. The paper tries to give an answer to an important question concerning representative industrial democracy: What are the consequences of workplace representation (i.e. Works Councils) on the performance of the firm and on the welfare of the workforce?

The literature on industrial relations has traditionally considered that there is no conflict of interest between Councilors and workforce [Freeman and Lazear (1995)]. However, Councilors may be tempted to collude with management, as recent scandals in Germany have shown. We investigate the agency problems between workers and their representatives that are supposed to monitor but may form coalitions with management. The main results are as follows: First, we show that in order to commit to report the truth, worker representatives should have higher wages than ordinary workers. Second, the election process may generate an incentive for councilors to misrepresent their information leading to inefficiencies. Inefficiencies occur because Councilors may recommend to exert low effort in times where additional effort is

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<sup>1</sup>Scandals occurred not only at VW but also other car manufactures like BMW and Daimler-Chrysler. Also they affected Commerzbank and Europe’s largest chip-producer, Infineon. “It’s normal that the cases only come to light by accident and the ‘dark’ numbers are very high, but only 5% to 10% of cases become known,(...) We are speaking of the tip of an iceberg, but the problem is that we don’t know how big the iceberg is”, says Peter von Blomberg, deputy chairman of the German chapter of Transparency International [**The Guardian, 2005**].

<sup>2</sup>In this paper we will use all of the terms Councilors, Works Councils, and Representatives when we talk about worker representatives.

crucial for the firm's performance.

The paper studies a firm where wages are determined by collective industrial agreements and where levels of effort exerted at workplace are not contractible, but they might be crucial when the firm is performing poorly. Effort is not contractible because the firm faces productivity shocks after the industrial agreement has been signed, so the manager can not compensate workers for additional effort. The manager has information about the realization of the productivity shocks, but she cannot transfer credibly her observed information to the workforce. Information is valued by workers to exert the right effort and avoid either the cost of effort or the risk of massive layoffs. In order to avoid mistakes, the literature about industrial relations has advocated for Works Councils as an instrument to verify the realization of productivity and recommend or not the implementation of additional effort [Roger and Streeck (1995)].

However, worker representatives have private information that they can use strategically. As economic theory recognizes different levels of a firm's hierarchy can use private information opportunistically, possibly through coalitions against other levels of the hierarchy [Tirole (1986)]. Particularly, works councils and management (i.e. the most informed parties) may form coalitions to misreport the real value of the productivity parameter. Moreover, Councilors may have different preferences to form coalitions with management. The industrial dialog between representatives and management in Europe has lived important periods of conflicts resolution at workplace, but Councilors may also be self-interested<sup>3</sup>. We formalize this fact by considering that Councilors are heterogeneous in their preferences for management's monetary transfers. Hence, employees face representatives that may or may not have congruent interests with them. Here, congruency means that Councilor dislikes management's monetary transfers (i.e. bribes).

In the bulk of the paper, we consider elections as the only way to incentivize representatives. However, as a benchmark, we first consider that workers can incentivize them through contingent monetary payments. Then, the principal (i.e. workers) can give monetary transfers to the supervisor (i.e. Councilors) to deter potential collusive behavior. In states of nature where workers can be expropriated by potential coalitions, they should pay higher compensations to Councilors [Tirole (1986)]. Collusion makes contingent payments costly and reduces workers' payoff. However, in reality, explicit incentives for Councilors are often infeasible. Then, elections are the only mechanisms that constituents have to influence Councilors, in which they should be reelect contingent on first period outcomes and Councilor's recommendation.

Whether heterogeneous Councilors are appointed in office through elections they

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<sup>3</sup>The European Foundation for the improvement of living and working conditions has documented several cases of Pacts for employment and competitiveness signed between representatives and employers that have had a well acceptance for workforce (see <http://www.eurofound.europa.eu/areas/industrialrelations/pecs.htm>).

should be compensated with higher wages than those for ordinary workers. When only congruent councilors are elected a fixed wage equal to the wage of the employees is enough to recommend the worker's preferred action. However, when there are non-congruent Councilors they should receive a compensation that takes into account potential bribes from management. If Councilors are well compensated for their representative activities they would face an inter-temporal tradeoff between accepting management's transfers at first period and losing rents at the second period. Councilors' compensation should increase with how much they weight management's transfers. Also, it should increase in firms where additional effort has a large effect on output, which depends on the size of workforce and the effect of high effort per worker on output. It occurs because the effect of additional effort on output is the source of potential management's bribes.

The Councilor's compensation is crucial for a well performance of election process as an accountable mechanism. When Councilors receive enough wages to act in the workers' interest they recommend the preferred effort contingent upon their observed information. In the states of nature where they are uninformed they recommend effort such that it maximizes the workers' expected payoff and they make mistakes only in few cases. However, when Councilor's compensation is low non-congruent Councilors always allocate high effort and they receive management's transfers. Given this dominant strategy of non-congruent Councilors, Workers believe that Councilors whom recommend high effort under good times are more likely to be non-congruent. As result, congruent Councilors would like to behave different. They only allocate high effort when they observe low productivity shocks otherwise they allocate low effort in order to avoid the risk to be fired when they are uninformed about the productivity parameter. Under this behavior they may push the firm toward economical problems when the productivity is low and additional effort is crucial. This behavior is a consequences of their interest to remain in office rather to be uniformed. This important results contributes to the growing literature about potential drawbacks of representative democracy [Besley (2006) and Maskin and Tirole (2004)].

The paper proceeds as follows. Section 2 discusses the background of the problem and the related literature. Section 3 states the model and two benchmarks. The first benchmark considers the coordination failures between workers and manager when there is not works councils within the firm. The second benchmark considers the case where workers can give contingent monetary transfer and studies the effect of potential collusion on the implementation of works councils. Section 4 studies the case of representative industrial democracy, in which workers can incentivize their representatives through elections. This section states the two main results about elections process at the workplace. Section 5 concludes.

## **2. Background and Related Literature**

### **2.1. Works Council activity**

Many European countries possess laws and institutions concerning with employees involvement and participation at workplace. One of the most relevant workplace institution has been Works Councils or Workers Committees, which have been implemented in almost all the European Countries. Moreover, the European Commission has implemented mandatory laws to foster European Works Councils through multinational firms [see, DIRECTIVE-2002/14/EC (2002)]. These laws give information and codetermination rights about financial and personnel issues like employment decisions, new production process and investment projects that affect the workforce.

In addition, worker involvement has started to play an important role in United States. The US manufacturing productivity grew even faster at almost 4.4% annually during the second half of the 1990s [Black and Lynch (2004)]. This rising in productivity seems to be explained by the introduction of the technological changes and by the fact that more firms have adopted work process in which an increasing proportion of non-managerial workers are involved in problem solving and daily decision-taking [Aghion, Caroli, and García-Peñalosa (1999) and Acemoglu (2002)].

Legislation across countries differs with respect to works councils' objectives and rights, but a common element is that those committees possess rights to be informed about firm's financial situation. And information rights about financial situation is crucial for personnel policies at workplace. Moreover, in countries like Germany, Belgium and France Works Councils have rights not only on information but also on consultation and codetermination, which implies they can participate in the daily decision taking. Works Council's objective, often specified in legislation, is to foster labor and management cooperation with the goal of increasing the performance of the firm and protecting the interest of the labor workforce. Summing up, Councilors should monitor manager's financial information, communicate the gathered information, and recommend or not new personnel practices to workforce.

Both theory and empirical literature have taken as given that works councils behave in the workers' interest [Addison, Schnalbe, and Wagner (2003), Freeman and Lazear (1995)]. However, works councils have valuable information that they might use in their own goals. In fact recent scandals have shown the problem in hand. For instance, the Volkswagen Group, the Europe's largest car constructor, had resigned its top human resource manager, Peter Hartz, and Klaus Volkert, head of Volkswagen's Works Council and a supervisory board member, for bribes scandals about works council misbehavior.

Then, given the widespread use of worker representatives and the recent directives of the European Community it is relevant to have a better understanding of the incentives of these agents within organizations.

“Today, with employee consultation back in the spotlight thanks to the European Union's information and consultation directive, which requires companies to involve the workforce in significant decisions, it is time to consider again the benefits and pitfalls of consultation. When it works it works very well and can add significant long-term value by tapping directly into the knowledge and

experience of employees. When it fails, as at Volkswagen, it is because management is either merely going through the motions of consulting, or trying to rig the process and doing real harm to their companies...”[Financial-Times (2005)].

## 2.1. Related literature

There are three branches of the economic literature to which this paper borrows ideas. The first branch is the literature on Works Council and industrial relations. This literature study the benefits and the pitfalls of worker representatives with rights to be informed about the workplace issues. On the side of the benefits, the Works Councils, as supervisors of the manager activities, create truthful relationship between labor force and managers [Weil (2003), Black and Lynch (2004)]. This truthful cooperation can improve the performance of the firm and rise its long-run value [Freeman and Lazear (1995) and Zwick (2004)]. On the side of drawbacks, workers with rights to information could delay the daily decision-making and increase their bargaining power. From the perspective of shareholders, a higher bargaining power could destroy value in the long-run because workers could claim a higher profit shares [FitzRoy and Kraft (1987)]. Then the main implication of worker representatives’ pitfalls is that the firm would discourage the implementation of any voluntary worker involvement in decision-making.

Freeman and Lazear (1995) presents a coordination failure problem in which the manager and workers must choose some workplace variables, for example the speed of work or the level of effort. In their model, the manager has a private information about the financial situation of the firm. Workers value this information because it allows them to implement the right effort in each state of nature. The manager lies in the good times in order to extract the higher effort of workers by claiming that the financial situation is bad and the firm would face a bankruptcy. The manager’s information is not credible and employees use their own beliefs to take the course of actions. In their model, the social benefit of a worker representative comes from the fact that it eliminates the risk that workers choose low effort when the firm faces financial troubles. “Councils are a very good communication channel, specially with regard to bad news...” [Freeman and Lazear (1995)].

The analysis of benefits and pitfalls suggests that the comprehensive information rights of the Works Council make the impact of these institutions on firm’s performance ambiguous. On the one hand, councilors foster the trust that is necessary to establish productivity-enhancing work practices. On the other hand, they may use their bargaining power to negotiate less productive practices that require less effort. However, this cost can be reduced if the industrial labor regulation introduces instruments that decouple both production and distribution processes within the firm. For instance, Freeman and Lazear (1995) claim that if a firm could set up its wages under a collective or industrial agreement the Works Council could improve the firm’s performance.

The second branch of literature is the theory of collusion on organization [Tirole (1986) and Tirole (1992)]. The Final branch of literature is the political agency literature [Besley (2006) and Maskin and Tirole (2004)]. Both papers present the basic result of the wrong side of accountability, in which even if politician knows the right decision for the electorate the accountability process gives him incentives to choose the wrong action in order to please the electorate.

### 3. The Model

#### 3.1. Production, Players and Information

*Production:* Output is determined by both a random variable, which measures productivity per worker, and a decision variable at workplace, which measures the effort of each worker:

$$x = \theta + e$$

a firm faces a positive shock with a high value  $\theta = \bar{\theta}$  and a negative shock with a low value  $\theta = \underline{\theta}$  (with  $\Delta\theta = \bar{\theta} - \underline{\theta} > 0$ ).

Workers may exert high ( $\bar{e}$ ) or low ( $\underline{e}$ ) effort (with  $\Delta e = \bar{e} - \underline{e} > 0$ ). High effort has a cost for each worker equal to  $\psi_{\bar{e}} = \psi$ , and low effort has a zero cost  $\psi_{\underline{e}} = 0$ . We assume that  $\Delta e > \psi$ . Firm's technology implies that output's level may take four possible values:

$$\bar{\theta} + \bar{e} > \underline{\theta} + \bar{e} > \bar{\theta} + \underline{e} > \underline{\theta} + \underline{e} \equiv b$$

under the lowest level of output ( $b$ ) the firm cannot pay the total wage bill signed at the collective industrial agreement.

*Players:* The manager is risk-neutral maximizes the firm's value, which is given by output of  $N$  workers less wages ( $U^m = N[x - w]$ ). Given the fixed wages and the firm technology, she always prefers to implement a high level of effort.

There are " $N$ " homogeneous employees whom exert effort, receive fixed wages, and may elect one worker representative from the group of workers. After electing their representative they want to maximizes their utility that is given by wages net of effort less the councilor's fees ( $s$ ):

$$U = (N - 1)[w - \psi_e] - s$$

The firm's labor contracts are governed by collective industrial agreements where each worker should receive a fixed wage ( $w = \bar{w}$ ). However, a firm with poorly performance ( $x \equiv b$ ) can only pay an small part of its collective wage-bill (with  $w = \underline{w} < \bar{w}$ ). The employees' payoffs depend on effort through the output's level. Exerting high effort always eliminate the economic problems of the firm, but exerting low effort, in some circumstances, pushes the firm on its lowest output. Employees

prefer exert high effort only in bad times in order to avoid the lowest output  $b^4$ .

Finally, the Councilor is elected from the workforce and he does not play a productivity role. He should acquire information about the productivity parameter and recommend the allocation of effort contingent on his information. He receives a wage from his representative activities equal to  $s$ . But also, he might receive additional “rents” from potential coalitions with management ( $B$ ). However, Councilors can differ in how much they weight management’s transfers. We assume that there are two types of Councilors, congruent and non-congruent with the workforce. A congruent councilor dislikes manager’s transfer and non-congruent councilors weights it positively. Councilor’s rents are  $R = s + \alpha B$ . We characterize congruent Councilors with a parameter  $\alpha = 0$  and non-congruent Councilors with a parameter ( $\alpha = \tilde{\alpha} > 0$ ). The utility of the Councilor is  $v(R)$ , with  $v(\cdot)$  strictly concave. The Councilor has an outside opportunity equal to  $s_o$ <sup>5</sup>.

*Information:* There are two types of asymmetric information in the model. First, after a collective agreement has been signed the firm faces a productivity shock. The manager has perfect information about this realization. Workers are uninformed about this parameter, which is relevant for the effort decision at workplace. Workers believe that firm faces a high productivity shock ( $\bar{\theta}$ ) with probability  $\rho$  and a low productivity shock ( $\underline{\theta}$ ) with probability  $(1 - \rho)$ . Parameter  $\rho$  is a measure of how much workers believe that the firm is under a good situation and no additional effort should be required. However, they can improve their information by electing a Councilor. The Councilor receives informative signal about the realization of productivity. The structure of information after a Councilor has been elected is the following: There are four states of nature, indexed by  $i$ , state of nature  $i$  has probability  $p_i$  (with  $\sum_{i=1}^4 p_i = 1$ ).

state of nature 1: the manager and the Councilor observe  $\bar{\theta}$ .

state of nature 2: the manager observes  $\bar{\theta}$  and the Councilor observes nothing  $\phi$ .

state of nature 3: the manager observes  $\underline{\theta}$  and the councilor observes nothing  $\phi$ .

state of nature 4: the manager and the Councilor observe  $\underline{\theta}$ .

We consider hard information, which implies that workers can verify the Councilor’s information. With this information structure Councilor should recommend high effort if he observes  $\underline{\theta}$  and low effort if he observes  $\bar{\theta}$ . A Councilor who does not have additional information should recommends the allocation of high effort contingent on his beliefs and preferences. He recommends high effort ( $\bar{e}$ ) with probability  $\pi$  and low effort ( $\underline{e}$ ) with probability  $(1 - \pi)$ .

Second group of asymmetric information is about the councilor’s type. Workforce is uninformed about the Councilor’s preferences for management’s transfers. They face a pool of potential representatives that may be either congruent or non congruent with the workforce. The Councilor can be congruent with probability ( $\gamma$ )

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<sup>4</sup>Workers have the certainty that in bad times they prefer to exert high effort ( $\bar{w} - \underline{w} > \psi$ ).

<sup>5</sup>Councilor’s outside opportunity may equal to the wage for ordinary workers  $s_o = \bar{w}$ .



and no congruent with probability  $(1 - \gamma)^6$ .

### 3.2. Timing of the game

The organization lives for two periods and workers can elect a new representative or re-elect the incumbent councilor at the end of the second period contingent to the Councilor's allocation of effort and the first period outcome<sup>7</sup>. We use a simplified version of a two period model. We will model the game at the second period as perfect information case, in which everyone at the organization knows that the firm faces a negative productivity shock and workers exert high effort<sup>8</sup>.

#### Period 1:

Period 1 is composed by five stages. At stage 0, a collective agreement determines the level of wages  $\bar{w}$ , the election and reelection of a worker representative and if it is the case collective agreement also determines the representative's compensation ( $s$ ). At stage 1, Nature chooses the productivity parameter of the firm  $\theta$ . Managers observes perfectly the realization of  $\theta$ . An elected councilor receives the structure of information explained above. Councilor and Manager learn councilor's type. Workers are uninformed, but they have some beliefs about the productivity parameter ( $\rho$ ) and they have some beliefs about the councilor type ( $\gamma$ ). At stage 2: Manager and Councilor can form coalitions to recommend the effort. Workers exert the level of effort recommended by the Councilor<sup>9</sup>. At stage 3: the output is realized and the firm might or might not pay its fixed wages ( $\bar{w}$ ) contingent on the value of  $x$ . Councilor receives his compensation and potential rents of coalitions. At stage 4 a reelection process takes place. If the councilor is fired he receives the first period payments  $s$  and his rents from the coalition. If supervisor is reelected, he receives first and second period rents<sup>10</sup>.

#### Period 2: (common discount factor $\beta$ )

At the beginning of period 2,  $\theta = \underline{\theta}$  is realized and it is observed by everyone. Workers exert high effort and their payment is  $(N - 1)(\bar{w} - \psi)$ . And supervisor receives  $s$ .

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<sup>6</sup>We assume that at the time when the manager bargains with Councilor on effort allocation she has perfect information about the Councilor's type. This assumption is natural if we consider that Councilor has several tasks to discuss with management. The manager and the councilor meet not only to bargain on allocation of effort at workplace, but also to discuss different issues of the employment policy conditions.

<sup>7</sup>We do not consider the case where workers can elect a Councilor for the first period and elect anyone for the second period.

<sup>8</sup>With this simple version of the second period we do not consider the positive effect from to re-elect a congruent councilor on the workers payoff for second period, but we can underline the behavior of Councilors under the election process.

<sup>9</sup>We assume that workers commit to exert the effort which is recommended by the councilor.

<sup>10</sup>Even if representatives are useless at the second period, workers commit to pay compensation at second period if Councilor is reelected.

### 3.3. Benchmark 1: No Works Councils within the firm

As a first benchmark we analyze the potential coordination failures in the allocation of effort in a firm without workplace representation. In this model, the efficient result is the allocation of high effort independent of the realization of productivity. Effort is valued because it increases production more than the cost of effort ( $\Delta e \geq \psi$ ). However, we assume that choice of additional effort is not contractible and decision is taken at the workplace by employees.

The problem arises because workers know that the dominant strategy of the manager is to misinform about the real situation of the firm. Then they form own beliefs about the realization of productivity and take decision disregarding what management says even if it is truthful. When they exert high effort their expected utility is  $(N[\bar{w} - \psi])$ , but when they choose low effort their expected payoff is  $(N[\rho\bar{w} + (1 - \rho)\underline{w}])$ . Then workers's decision is determined by the following condition:

$$\rho \leq \rho^{**} = 1 - \frac{\psi}{\bar{w} - \underline{w}} \quad (1)$$

The allocation of effort is determined by both the worker's beliefs about productivity  $\rho$  and the threshold  $\rho^{**}$ . Note that  $\rho^{**} \in (0, 1]$  because workers always prefers exert effort in bad times ( $\bar{w} - \underline{w} > \psi$ ).

In a situation where workers can be compensated by the cost of additional effort the optimal threshold is  $\rho^* = 1$ . Then if labor contracts cannot internalize the positive effect of additional effort on firm's output, optimistic workers can choose low effort more frequently and generate inefficiencies under some situations. Workers implement more additional effort in firms where beliefs about productivity shock are very low with respect to  $\rho^{**}$ , which decreases with the cost of additional effort ( $\psi$ ) and increases with the wages' gap ( $\bar{w} - \underline{w}$ ).

The empirical implication of this result is that coordination failures on effort are more likely in firms where workforce has high beliefs about stability of the firm in which non additional effort is crucial. Also in firms where employment policies to overcome potential negative shocks are costly for employees or the collective wages are low. Traditional literature on Works Councils says that elected councilors can overcome with these coordination problems, so we should observe more Councilors in firms where potential coordination failures are important<sup>11</sup>.

### 3.4. Benchmark 2: Works Councils payed with contingent monetary transfers

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<sup>11</sup>The industrial relations cases support this view, for example the Pacts for Employment and Competitiveness shows several cases where Works Councils have played an important role. “*There were a number of important factors that allowed VW to reach agreement on employment and competitiveness. Firstly, a prerequisite for the speed and ease with which agreement was reached was the consensual and pragmatic relations between VW and the works council(...)*”[i.e. Schulten, Seifert, and Zagelmeyer (2002)].

As a second benchmark we introduce the situation where workers can contract with a Councilor, but they can pay contingent to the state of nature. The idea is that councilor's compensation is not determined by collective agreements and the workforce can compensate them contingent upon the state of nature<sup>12</sup>. The objective is to introduce the effect of collusion on workplace representation. We consider the contract between workers and Councilor for one period of time. Since reelection is not in the interest of this section we do not model the second period of the organization. The timing considers only the four first stages of period 1 (see section 3.2.).

The most important feature of this section is that workers can contract with a Councilor to monitor manager's private information and recommend the allocation of effort, but no congruent Councilors might form coalitions with management. The theory of collusion in organizations has shown that informed individuals can use their private information strategically against uninformed parts. For instance, under the information structure presented above the manager and the councilor can form a coalition where the former bribes the latter to hide information about high productivity. Workers must take into account potential coalitions between manager and councilors. This potential coalitions may reduce the workers' benefits to elect works councils.

When councilor and manager forms a coalition to hide information on high productivity they obtain some rents. Formally, when councilor observes  $\bar{\theta}$  and recommends the preferred effort of workers the manager's payoff is  $(N - 1)[\bar{\theta} + \underline{e} - \bar{w}]$ . However if the councilor hides information and recommends low effort the manager's payoff is  $(N - 1)[\bar{\theta} + \underline{e} + \Delta e - \bar{w}]$ . The manager prefers that Councilor hides information because she gains  $(N - 1)\Delta e$ , which she can share with the Councilor. Manager can give  $\tilde{\alpha}(N - 1)\Delta e$  to the councilor<sup>13</sup>.

There are two remarks on the game played by the manager and councilors about the potential coalitions. First, in bad times all agents within organization prefers exert high effort to avoid the risk of poorly performance. Under this situation the manager does not have incentives to form coalitions with the Councilor. Then information is not hidden when a bad state of nature is observed by the Councilor. Second, the manager observes the parameter  $\alpha$  (the type of the councilor) and when it is equal to zero he does not offer any bribes to the Councilor, thus means that there is not coalitions formation between manager and congruent Councilor. However, when the parameter  $\alpha$  is positive the manager offers bribes to the Councilor<sup>14</sup>.

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<sup>12</sup>Contingent transfers from workers to Councilors are not common in the real world, but the objective is to show the relevance to have well compensated experts (Councilors)

<sup>13</sup>Another interpretation for the parameter  $\alpha$  is that it represents the bargaining power of the supervisor at the coalition. For example,  $\tilde{\alpha} = 1$  implies that all the gains within the coalition are taken by the Councilor and  $\alpha = 0$  implies that Councilor does not receive rents from the coalition, in which case he does not form coalitions.

<sup>14</sup>This game implies than a non-congruent councilor would have perfect information of the realization of the productivity, but the congruent Councilor just observes the information structure described above.

### 3.4.1. Congruent councilors

If workers can pay contingent monetary transfers to councilors and the latter reports honestly his observed information to the workforce, then the workers problem is to choose a compensation than incentivize the councilor to do his task. The information structure implies that he has perfect information about the parameter  $\theta$  in state of nature 1 and 4. A congruent councilor recommends the workers' preferred allocation of effort in state 1 and state 4 and recommends effort in state 2 and state 3 based on the expected payoff of the workforce. Formally, the problem of workers is to maximize their expected payoff, which are equal to their wages less the cost of effort and councilor's compensation subject to the participation constraint:

$$\begin{aligned} \max_{s_i} \quad & (N-1)\{p_1\bar{w} + p_2(\bar{w} - \pi\psi) + p_3[\pi(\bar{w} - \psi) + (1-\pi)\underline{w}] \\ & + p_4(\bar{w} - \psi)\} - \sum_{i=1}^4 p_i s_i \quad (P^1) \\ \text{s.t.} \quad & \sum_{i=1}^4 p_i v(s_i) \geq v(s_o) \quad (2) \end{aligned}$$

The objective function shows that the councilor's payment is collected from the  $N-1$  productive workers from the firm. At state 1 and state 4 worker representative reports his observed information and workers know perfectly the realization of parameter  $\theta$  and which would be the right allocation of effort. However, at state 2 and 3 the worker representative does not have additional information and he chooses between exert high effort with probability  $\pi$  or low effort with probability  $1-\pi$ . Equation (2) express councilor's participation constraint. Note that the congruent councilor does not receive an offer from manager to hide the information about state 1, then there is not a formed coalition between both agents.

The solution to problem  $(P^1)$  states that if workers can sign contingent monetary transfers with Councilor and the latter reports honestly his observed information, councilor receives the same payment at each state of nature (full insurance). This fixed payment is equal to councilor's outside opportunity (i.e.  $s_i = s_o \forall i$ ). Additionally, councilor recommends low effort in state 1 and high effort in state 4. In state 2 and 3 he recommends high effort if:<sup>15</sup>

$$\frac{p_2}{p_2 + p_3} \leq \rho^{**} = 1 - \frac{\psi}{\bar{w} - \underline{w}} \quad (3)$$

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<sup>15</sup>Appendix A.1. shows the formal solution to this problem.

Congruent works councils can overcome with the potential problems of coordination failures when effort is crucial for the firm's operation. In times where productivity shocks are negatives a councilor recommends high effort with probability  $p_4$  and can recommends high effort under uncertainty if condition in (3) is satisfied. Condition in (3) depends with the threshold ( $\rho^{**}$ ), which is the same as before. It also depends on the probabilities of state 2 and state 3, which implies that if a councilor believes that the state of nature 3 is likely he recommends high effort exert more effort.

Congruent Councilors also can improve employees' payoffs when works councils' cost are low. The expected payoff ( $EW^c$ ) per employee when councilor recommends exert high effort in state 2 and state 3 (i.e.  $\pi = 1$ ) is equal to

$$\frac{EW^c}{N-1} = \bar{w} - \psi + p_1\psi - \frac{s_o}{N-1} \quad (4)$$

which increases with the size of the workforce and with the probability that councilors observes a good state of nature times the cost of effort ( $p_1\psi$ ). Conversely, the gains decreases with the cost of Councilors ( $s_o$ ).

In the other hand, when employees exert low effort (i.e.  $\pi = 0$ ) at state 2 and state 3 he expected payoff ( $EW^c$ ) per employee results:

$$\frac{EW^c}{N-1} = (p_1 + p_2)\bar{w} + p_3\underline{w} + p_4(\bar{w} - \psi) - \frac{s_o}{N-1} \quad (5)$$

as before, which increases with the size of the workforce and it decreases with councilor's compensation. Note that this condition increase with the wage after bankruptcy ( $\underline{w}$ ).

Summing up, the introduction of congruent works councils reduce the risks of bankruptcy in bad states of nature, but also it reduces the implementation of production plans that are not crucial for the firm's operation but improve production. In a dynamic framework this effect can be relevant. We do not consider this effect here. In addition it increases the employees' payment if the cost of Councilors per employee are low. This result show that costless Councilors are always value by workers as the literature in works councils has shown. For instances, in Freeman and Lazear (1995) works councils are costless for employees and Hübler and Jirjahn (2003) when the cost to elect a worker representative is low workplace representation is always valued by workforce.

### 3.4.2. No congruent councilors

The most important feature in this section is that councilor weights positively the potential rents from coalitions with management. Workers should be sure that councilor is going to participate on the contract (i.e. individual rationality constraint given in 2) and they must care about potential coalition against them. Councilor can hide information when he has observed good state of nature (at state 1) and manager

gains for this behavior. When supervisor receives the same payment at state 1 and 2, as in section 3.4.1., he has incentives to accept some manager's bribes by hiding information. Workers must take into account the following incentive constraint of the supervisor between state 1 and state 2:

$$s_1 \geq s_2 + \tilde{\alpha}\pi(N-1)\Delta e \quad (6)$$

Equation (6) is obtained after consider that councilor has some incentives to hide information when he observes good state of nature (i.e. state of nature 1). When councilor observes  $\theta = \bar{\theta}$  and reports it manager's payoff is  $(N-1)[\bar{\theta} + \underline{e} - \bar{w}]$ , but if councilor hides it the manager's payoff is  $(N-1)[\bar{\theta} + \underline{e} + \pi\Delta e - \bar{w}]$ . Note that manager prefers that councilor hides information because she gains  $(N-1)\pi\Delta e$ . So, if manager can convince councilor that hides information at state 1, she can pay  $\tilde{\alpha}\pi(N-1)\Delta e$  to councilor.

On the other hand, when councilor observes a low state of nature he may report his observed information or hide it. At bad state of nature the manager does not have incentives to bribe the councilor to misreport on the value of  $\theta$ . Workers take into account the fact that manager wants that the observed information is reported at bad times, which implies that they do not care about the misreporting between state 3 and 4.

Therefore considering the additional constraints on the workers' problem their objective is to maximize their expected payoff subject to the participation constraint in (2) and the incentive constrains in (6):

$$\max_{s_i} (N-1)\{p_1\bar{w} + p_2(\bar{w} - \pi\psi) + p_3[\pi(\bar{w} - \psi) + (1-\pi)\underline{w}] \quad (P^1)$$

$$+ p_4(\bar{w} - \psi)\} - \sum_{i=1}^4 p_i s_i$$

*s.t.*

$$\sum_{i=1}^4 p_i v(s_i) \geq v(s_o)$$

$$s_1 \geq s_2 + \tilde{\alpha}\pi(N-1)\Delta e$$

The solution to problem ( $P^2$ ) is given in appendix A.2. When workers should exert high effort in state 2 and state 3, they must care about the fact that manager has incentives to bribe the councilor to misreport at state 2. Under this situation, if workers exert high effort in state 2 and 3 the Councilor's compensations should be

equal to  $s_1 > s_3 = s_4 = s_o > s_2$ . With  $s_1 = s_2 + \tilde{\alpha}(N - 1)\Delta e$  given by the coalition constraint.

This solution follows the theory of collusion in organization, when workers exert high effort in state 2 and state 3 the Councilor's compensation at state 1 should be higher than that for state 2 because workers want to compensate him by report his observed information. Compensation at state 3 and 4 is the same because workers do not care about formed coalitions in those two states of nature. At the same time, workers penalize councilor with a low compensation in state 2, with respect to other payments in order to decrease the incentives to hide information in state 1. However, Councilor cannot be penalized with negative payments.

When employees can compensate non-congruent Councilor with contingent monetary transfers the allocation of effort is the same that the situation of congruent councilor. Since non-congruent councilors should be compensated to deter potential coalitions the employees' payment decreases with the councilors payment. The employees' payment ( $EW^{nc}$ ) with high effort in state 2 and 3 is

$$\frac{EW^{nc}}{N - 1} = \bar{w} - \psi + p_1\psi - \left[ \frac{(p_1 + p_2)s_2 + (p_3 + p_4)s_3}{N - 1} + p_1\tilde{\alpha}\Delta e \right] \quad (7)$$

employees have less payment in firms where additional effort is important on output, because manager have more resources to bribe councilor. Additionally, workers do not contract with councilors if there is large differences between councilor and workforce interests, because it makes a contingent contract for workers very expensive and the expected gains of councilor's information do not compensate the cost of councilor's compensation. Note the differences with equation (4), in large firms (i.e. when  $N$  is large) the cost of congruent councilor goes to zero in equation (4), however in the case of non-congruent councilors there is an additional term  $p_1\tilde{\alpha}\Delta e$ , which does not depend on  $N$ .

Comparing the payoff with congruent and non-congruent we can see the effect of potential coalitions between management and councilor on the employees payments. We can compare the payoff per ordinary worker with congruent and non-congruent councilors:

$$\begin{aligned} \frac{EW^c}{N - 1} - \frac{EW^{nc}}{N - 1} &= \bar{w} - \psi + p_1\psi - \frac{s_o}{N - 1} - \\ & \left[ \bar{w} - \psi + p_1\psi - \frac{(p_1 + p_2)s_2 + (p_3 + p_4)s_o}{N - 1} - p_1\tilde{\alpha}\Delta e \right] \\ &= \left[ \frac{1}{N - 1} \right] (p_1 + p_2)(s_2 - s_o) + p_1\tilde{\alpha}\Delta e \end{aligned}$$

Workers can achieve the same expected utility under congruent and non-congruent situation [ $EW^c = EW^{nc}$ ] if:

$$\left[\frac{1}{N-1}\right](p_1 + p_2)(s_0 - s_2) = p_1 \tilde{\alpha} \Delta e$$

If  $\tilde{\alpha} = 0$ , the payoff in both cases is the same and  $s_0 = s_2$ , which is the case under congruent councilors. However, if  $\tilde{\alpha} > 0$ , the compensation in state 2 should be lower than the outside opportunity  $s_2 < s_0$ , and it should be given by:

$$s_2 = s_0 - \left[\frac{p_1}{p_1 + p_2}\right](N-1)\Delta e \tilde{\alpha} \quad (8)$$

However, workers cannot pay negative compensation to councilor (i.e.  $s_2 > 0$ ). This constraint implies that contracting with a non-congruent councilor gives the same payoff of congruent if and only if

$$\tilde{\alpha} \leq \frac{s_0}{(N-1)\Delta e} \frac{(p_2 + p_1)}{p_1} \equiv \alpha^* \quad (9)$$

Workforce can contract with non-congruent councilors and obtain the same level of utility than the case of congruent councilors when the preference for manager's transfers of non-congruent councilors are less than  $\alpha^*$ . Otherwise the workforce should compensate councilors with negative payments in state of nature 2, which is not possible.

we can rewrite  $\alpha^*$  like:

$$\alpha^* \equiv \frac{s_0}{(N-1)\Delta e} \frac{1}{\frac{p_1}{p_2+p_1}} \quad (10)$$

Note that the threshold  $\alpha^*$  decreases with the size of the workforce ( $N$ ) and the gains on production per additional unit of effort ( $\Delta e$ ), which implies that larger production larger the potential rents on coalitions. It decreases with the term  $\frac{p_1}{p_2+p_1}$ , which measure the probability to have informed councilor about high productivity shock conditional on having a high productivity shock. Note that the threshold decreases with this term because the councilor becomes better informed and has more incentives to collude. Finally, the threshold increases with the outside opportunity of the councilor  $s_0$ , which is natural because better payed councilors has less incentives to hide information.

### 3.4.3. Final remarks on contingent monetary payments

When the Councilor's interest is very different from the workforce's interest (i.e.  $\tilde{\alpha} > \alpha^{**}$ ) a worker representative would be not implemented even if the workforce is large enough to compensate the Councilors' representative activities. It happens



because workers perceives the lack of congruence as a cost of contracting with a Councilor. When the Councilor is congruent, workers contract with him, specially in firms with a large workforce or a low cost of councilor's activity. For the problem with non-congruent Councilors workers exert high effort in state 2 and state 3, the solution in problem ( $P^2$ ) considers the Councilor's incentives to collude with the manager.

## 4. Representative industrial democracy

In the last section we assume that workers can sign contingent contracts with their representatives, which does not fit with the real situation of European industrial relation about Works Councils. In general, being representative bodies, works councils are influenced by their constituents mainly through elections process. In this section, workers can not give contingent monetary transfers to incentivize their representative and they use a reelection process to incentivize him. We consider the complete timing in section 3.2. There are two objectives in this section. First, which compensation should receive the councilor if he is appointed in office. Second, when the pool of candidates have different preference with respect to coalitions with manager an determined compensation can reduces the benefits of accountability under collusion. We consider the first problem, in which the pool of candidates is homogeneous (congruent or non-congruent) and they should be participate in elections process. The second section consider the situation under heterogeneous councilors and the effect of accountability on workforce utility and firm performance.

### 4.1. Homogeneous Councilors

As a first case, workers know that they will elect the candidate of a pooling of homogeneous representatives. They do not care about the fact that they should screen the right candidate for represent their interests and they should consider only the incentives to discipline him to represent the workforce interest. In terms of the model workers receive a perfect signal of the Councilors' type. For example, they know that the pool of candidates would be congruent ( $\gamma = 1$ ) or no congruent ( $\gamma = 0$ ). In this section we present the inter-temporal trade off in terms of currently lost of rents and future benefits to behave on the interest of employees.

#### 4.1.1. A pool of congruent Councilors ( $\gamma = 1$ )

If any potential Councilor should be congruent with employees there is not reasons to care about a mechanism to discipline him on potential coalitions. The problem is to set up at stage 0 the right fixed compensation than gives him the incentives to make his representative task. It implies than a congruent Councilor is always reelected because workers know that Councilor recommends the right effort contingent to his observed information and the ex-ante problem is similar to problem ( $P^1$ ) in section 3.4.1., however they take into account the two period payoffs.

$$\begin{aligned} \max_{\bar{s}} \quad & (N-1)\{p_1\bar{w} + p_2(\bar{w} - \pi\psi) + p_3[\pi(\bar{w} - \psi) + (1-\pi)\underline{w}] \\ & + p_4(\bar{w} - \psi)\} - \bar{s} + \beta[(N-1)(\bar{w} - \psi) - \bar{s}] \end{aligned} \quad (P^3)$$

*s.t.*

$$v(\bar{s}) \geq v(s_o) \quad (11)$$

If Councilors are congruent with the workforce interest the ex-ante Councilor compensation  $\bar{s}$  should be setting at the lowest value ( $\bar{s} = s_o$ ). The expected payoff per employee when they exert high effort at state 2 and state 3 is:

$$\frac{EW^{\gamma=0}}{N-1} = \bar{w} - \psi + \frac{p_1\psi}{\beta} - \frac{s_o}{N-1} \quad (12)$$

and the expected payoff per employee when they exert low effort at state 2 and state 3 is:

$$\frac{EW^{\gamma=0}}{N-1} = (p_1 + p_2)\bar{w} + p_3\underline{w} + p_4(\bar{w} - \psi) + \beta(\bar{w} - \psi) - (1 + \beta)\frac{s_o}{N-1} \quad (13)$$

When individuals do not discount the time (i.e.  $\beta = 1$ ) two expected payoffs are the same than those in the case of contingent monetary transfers. This is main implication of the congruence. When Councilors are perfect congruent with the workforce and they represent the interest of the employees a contingent payment or a fixed payment with reelection give the same payoff for workers. There is not additional gains in using whether a contingent monetary transfers or an election process.

#### 4.1.2. Non-congruent councilor ( $\gamma = 0$ )

When workers contract with non-congruent Councilors they know that a fixed payment  $\bar{s}$  supervisor has the incentive to misreport at state of nature 1 because he can get the manager compensation. Given the recommendation on effort and the first period output  $x$  workers take the decision if to rehire or to fire the Councilor. The election condition is the following: If the value of  $\theta = \bar{\theta}$  and the Councilor's recommendation was  $e = \bar{e}$  the Councilor is fired. Otherwise the Councilor is going to be rehired. Note that if Councilor's recommendation was  $e = \bar{e}$  and the realization of productivity parameter was  $\bar{\theta}$  is because he hid relevant information or he was uniformed at state 2. However, non-congruent Councilors receives offers from the manager at state 1 and he can infer from those offers the realization of productivity parameter and in expected terms non-congruent councilors are more probable to recommend high effort under high productivity shocks.

This reelection condition gives a trade-off between first period and second period rents. A councilor who lies about state 2 receives the following expected payment:

$$\bar{s} + (p_1 + p_2)\tilde{\alpha}(N - 1)\Delta e + \beta[1 - (p_1 + p_2)]\bar{s} \quad (14)$$

councilor receives a fixed payment  $\bar{s}$  under period 1 and he can receive some rent from the manager by recommending a high effort in state of nature 1 and 2, which is given by  $p_1 + p_2\tilde{\alpha}(N - 1)\Delta e$ . Because he recommends high effort under realization of high productivity, he will be fired for the next period with probability  $(p_1 + p_2)$ .

When he does not hide information, he receives:

$$(1 + \beta)\bar{s} \quad (15)$$

he is reelected with probability 1. Then workers incentivize Councilor to reveal the observed value if the expected payment in equation (15) is higher or equal than the expected payment in (14), which gives the trade-off between present and future rents:

$$\bar{s} \geq \frac{\tilde{\alpha}(N - 1)\Delta e}{\beta} \quad (16)$$

Workers' problem is to choose a councilor's compensation such that they maximize their expected payment. The solution to this problem is simple. Councilor's compensation enters negatively in the objective function of workers, so they would like to pay as low as it is possible subject to Councilor's participation and incentive constraints given in equations (11) and (16), respectively. There are two cases on this solution. First, when

$$\frac{\tilde{\alpha}(N-1)\Delta e}{\beta} < s_0$$

councilors can be compensated with a fixed wage  $\bar{s} = s_0$  as in the case of congruent councilor. Since the incentive constraint is not binding councilor does not hide information and fixed wages equal to  $s_0$  is enough to discipline him.

Second, when

$$\frac{\tilde{\alpha}(N-1)\Delta e}{\beta} \geq s_0$$

councilor must receive at least a compensation  $\bar{s} = \frac{\tilde{\alpha}(N-1)\Delta e}{\beta}$ , otherwise he will prefer to hide information. When councilors who are paid with a less compensation than  $\bar{s}$ , workforce cannot deter the potential coalition. Note that workforce should set up ex-ante a compensation for councilors such that they can deter potential coalitions. We can state the first result about the industrial relations.

**Proposition 1:** *When councilors receive the same wage that ordinary workers ( $\bar{w}$ ), the workforce cannot discipline all of them through elections. A councilor with high preferences for manager's transfers, who is characterized by a parameter  $\tilde{\alpha} \geq \alpha^{**} = \frac{\beta(\bar{w})}{(N-1)\Delta e}$ , has incentives to hide information and recommend high effort*

under high productivity shocks.

The proof is simple. Consider that the councilor's compensation is equal to the wages for ordinary workers (i.e.  $\bar{s} = \bar{w}$ ). If  $\bar{w} > \frac{\tilde{\alpha}(N-1)\Delta e}{\beta}$ , the reelection condition gives the enough incentives to report the observed information. However, if  $\bar{w} \leq \frac{\tilde{\alpha}(N-1)\Delta e}{\beta}$  councilor has incentives to hide information and the reelection condition cannot discipline him in favor of the workforce's view. From the incentive constraint in (16) we can get the threshold for the preference parameter under which a councilors can hide information, so:

$$\bar{w} = \frac{\tilde{\alpha}(N-1)\Delta e}{\beta}$$

rewritten for  $\tilde{\alpha}$  we have the threshold

$$\alpha^{**} = \frac{\bar{w}}{(N-1)\Delta e}\beta \quad (17)$$

a councilor with a parameter  $\tilde{\alpha} \geq \alpha^{**}$  cannot report's his observed information in state of nature 1 and 2 ■.

As before, the threshold  $\alpha^{**}$  decreases with the size of the workforce ( $N$ ) and the gains in production for additional unit of effort ( $\Delta e$ ), which implies that larger production larger the potential rents on coalitions. The threshold increases with the wages  $\bar{w}$ , which is natural because better payed councilors has less incentives to hide information. It also increases with the discount factor  $\beta$ , when second period is important councilors value the future rents more than the present rents.

When  $\beta = 1$ , individuals do not discount the time, we can compare the case of collusion with contingent monetary transfers and election mechanism. When workforce can give contingent monetary payment to the councilors, employees can gives more incentives to the councilors to report the truth than the case of re-elections. Under contingent monetary transfers workers can incentivize councilors with a parameter  $\alpha^*$  which is higher than  $\alpha^{**}$  in (17).

With  $\beta = 1$  note that:

$$\alpha^{**} \equiv \frac{\bar{w}}{(N-1)\Delta e} < \frac{\bar{w}}{(N-1)\Delta e} \frac{1}{\frac{p_1}{(p_2+p_1)}} \equiv \alpha^*$$

Summing up, Councilors always should act in the worker's interest if they have a professional compensation for his task, which should be different from the wages for employees. This results shows that councilors play an important role at the industrial relations and have some valuable information that any collective agreement

must take into account if the objective is to implement the representativeness at the workplace. The compensation should increase with the size of workforce and with the effect of additional effort on the production.

Finally, under councilor compensation  $\bar{s}$  such that he reveals his observed information, the payoff per employee when high effort is exerted at period 2 and 3 is equal to:

$$\frac{EW^{\gamma=1}}{N-1} = \bar{w} - \psi + \frac{p_1\psi}{(1+\beta)} - \frac{\bar{s}}{N-1} \quad (18)$$

and using the condition in (16) we have that

$$\frac{EW^{\gamma=1}}{N-1} = \bar{w} - \psi + \frac{p_1\psi}{(1+\beta)} - \frac{\tilde{\alpha}\Delta e}{\beta}$$

## 4.2. Works councils and the representative democracy

In the last section, we assume that the potential pool of candidates are homogeneous in their preferences by manager's transfer. Under the right wages the councilor has incentive to report his observed information in order to decrease the risk to be fired for the second period. Accountability may discipline councilors with the workforce's interest. However, the homogeneity assumption is less plausible in the real world. In reality, the workforce can face a heterogeneous pool of candidates, in which some representatives would have different motivations. This heterogeneity would reduce the benefits of the accountability. In some cases, even aligned councilor can recommend erroneous level of effort in order to be sure that they would remain as representatives for next periods. This result is similar to that on the political agency literature, where in some cases accountability may generate some outcomes that reduce the welfare of the electorate (workforce) [Besley (2006) and Maskin and Tirole (2004)].

We introduce councilor's heterogeneity by considering different values of  $\tilde{\alpha}$ . We consider a case where workforce face congruent councilors whose preference parameter for manager's rents is  $\tilde{\alpha} = 0$ , and no congruent Councilors whose preference parameter is  $\tilde{\alpha} > 0$ . If  $\gamma = 1$  workforce faces only congruent councilors and the elected councilor reports his observed information. He should be reelected and receive his reservation utility  $\bar{s} = s_o$ . However, if  $\gamma = 0$  employees face a non-congruent councilor, with a preference parameter equals to  $\tilde{\alpha}$ . The councilor should report his observed information if he receives a compensation that deters potential coalitions, which should be fixed at  $\bar{s} = \frac{\tilde{\alpha}(N-1)\Delta e}{\beta}$ . With this level of compensation councilor is reelected and workers' payoffs are given for equation (18).

The interesting case is when workers have uncertainty on the type of worker representative ( $\gamma \in (0, 1)$ ). Workers should consider the cost to deter collusion and the possibility to have bad election results. We have two main results of the hetero-

geneity. The first result is the case where the compensation for councilors can deter potential collusive behavior and the incumbent is reelected as representative for the next periods.

**Proposition 2:** *If councilors receives a compensation  $\bar{s} > \frac{\bar{\alpha}(N-1)\Delta e}{\beta}$ , he is disciplined by the election process and reports his observed information. Since there is no collusive behavior the workforce reelects its incumbent representative for the second period.*

Proof:. When councilor receives  $\bar{s} > \frac{\bar{\alpha}(N-1)\Delta e}{\beta}$  the incentive constraint is satisfied and he does not have incentives to hide information. Since the incumbent councilor can reveal his observed information, even if he likes manager's rents, Workers cannot update their beliefs about councilor's type. All the councilors reports high productivity in state of nature 1, low productivity in state of nature 4 and uncertainty in state of nature 2 and 3. The workforce does not know if the councilor who recommends high effort in state 2 is congruent or non-congruent. Low effort is allocated at state 1, at state 4 high effort is allocated. The allocation of effort at state 2 and 3 is the same for all representatives, which is contingent on the expected payoff of the workers given by equation in (3) as in the case of congruent councilors. The probability to have a congruent councilor given the effort and the realization of output is the following:

$$Pr(j = c | x = \bar{\theta} + \bar{e}) = \frac{p_2\gamma}{\gamma p_2 + (1 - \gamma)p_2} = \gamma$$

workers are indifferent between the incumbent and new representative for second period. We assume that he prefers to rehire incumbent when they are indifferent. Then the incumbent is reelected. ■.

Note that the solutions states that accountability of the workers representative through elections is a right mechanism to discipline the councilors if the latter is paid with right wages. The councilor's compensation should be determined by the size of the workforce and the information that they can obtain. Industrial democracy may work if the representative receives payments that recognizes his expertise and his tasks, which is not the same that the employees. Any wrong results due to industrial democracy comes not by the heterogeneity on the quality of the representatives but by the lack of enough incentives to carry the tasks.

The second important result on industrial democracy considers what would happen if councilors are paid with the same wages that employees. From proposition 1 we have that councilor with a parameter of preferences higher than the threshold in (17) cannot be disciplined by the election process. Since a councilor with high preferences by manager's bribes ( $\tilde{\alpha} > \alpha^{**}$ ) always hide information he will try to recommend to exert a high level of effort in state of nature 1 and 2. This is the natural result in proposition 1. However, there is an additional effect of accountability, in which even congruent councilors can recommend the wrong effort in state of nature 3.

**Proposition 3:** *when councilors are payed with the same compensation that ordinary workers, employees cannot deter potential coalitions for non-congruent councilors with high preferences for manager's rents ( $\tilde{\alpha} > \alpha^{**}$ ). Workers use election process not only to discipline councilor but also to screen the congruent councilors. Non-congruent Councilors are fired. Congruent Councilors are always reelected.*

Proof: If  $\bar{s} = \bar{w}$  and non-congruent councilor is characterized by a parameter ( $\tilde{\alpha} > \alpha^{**}$ ), he does not care about reelection and he recommends high effort whatever the realization of productivity shock in order to receive the first period coalition rents. Since congruent councilor is characterized by a parameter ( $\tilde{\alpha} = 0 < \alpha^{**}$ ) he prefers to be reelected for second period. The latter recommends the right effort when he is informed and low effort at state 2 and 3 in order to be reelected.

Now we must analyze the workers behavior. Workers reelect a supervisor if they think that after the realization of output he is congruent, which means that their beliefs about they workers representative's type is higher than  $\gamma$ .

$$Pr(j = c|x = \bar{\theta} + \bar{e}) = \frac{\pi p_2 \gamma}{\pi p_2 \gamma + (1 - \gamma)(p_1 + p_2)} < \gamma$$

where  $\pi$  is the probability that a congruent councilor allocate effort in state 2 and 3. Since workers update their beliefs about councilor types they always fire a representative that had recommended high effort in states of the nature 1 and 2. Under this behavior congruent councilors face a high risk to recommend high effort when he does not have information about  $\theta$ . Then his dominant strategy at state 2 and state 3 is to recommend low effort  $\pi = 1$  ■

Even if in expected terms a congruent councilor must recommend high effort in state 1 and 2, his preferences for be appointed at second period makes him to recommend low effort to be consider as congruent councilor. Then non-congruent councilors recommends high effort whatever the value of  $\theta$ . Congruent councilors recommends low effort at state 1, and high effort at state 4. They want to avoid the probability to be fired by being unlucky at state 2, they recommend low effort at state 2 and stat 3, even if he knows that a low effort at state 3 can generate in some cases wrong consequences for the workforce.

When councilor is compensated as an employee accountability process may screen incumbents with high preference for manager's rents, but it generates inefficient behavior for congruent representatives at state 3. Since congruent councilor want to be in office he signal his type to the workforce to reject any additional effort in state 2 and 3. In state 3 low effort generates a bad performance and the firm cannot pay its wage bill. Accountability process, under a pool of heterogeneous candidates, may press to congruent councilors to take extreme positions. And some cases radical positions are negatives not only for management but also for employees.

## 5. Conclusion

This paper tries to explain why in some times of the industrial conflict resolutions councilors seem closer to management policies than workers' interest. The paper underline the effect of potential coalitions among management and self-interested workers representatives. Under assumption than workers can pay contingent monetary transfers to the councilors if the Councilor's interest is very different from the workforce's interest (i.e.  $\tilde{\alpha} > \alpha^{**}$ ) a worker representative would be not implemented even if the workforce is large enough to compensate the Councilors' representative activities. It happens because workers perceives the lack of congruence as a cost of contracting with a Councilor.

A potential explanation for the recent scandals in the European industrial relations is the lack of incentives for Councilors. Councilor with a professional compensation, which should be different than employees, for his task acts in the interest of their constituency. Since councilors have relevant information for the efficiency within the firm and they are an important component for the industrial relations any collective agreement should consider this fact in the councilor's compensation. Well paid Councilors are more important in large firms, firms with large uncertainty on its productivity and where the effect of additional effort is relevant for the production.

Further the consequences of a wrong Councilor compensation is not only that non-congruent Councilor cannot be disciplined by the accountability mechanism, but also that congruent Councilors may take very extreme positions against management policies. Extreme positions like the recommendation of low effort even under high levels of uncertainty can be generate large inefficiencies for the firm and workforce. When councilor is compensated as an employees the accountability process may screen incumbents with high preference for manager's rents but it generates inefficient behavior for congruent representatives. Since congruent councilor want to be in office he signal his type to the workforce to reject any additional effort under uncertainty. Then under low productivity shocks the low effort generates a bad performance and the firm cannot pay its industrial negotiated wages. Accountability process, under a pool of heterogeneous candidates, may press to congruent councilors to take extreme positions. This can be the additional wrong side of industrial democracy with bad compensation schemes for workers representatives.

The future research should consider that a councilor has multiples constituencies. For example, many members of the Works Councils in Germany have union membership and they have the support of their union. Councilors should take into account not only the workforce interest but also the union interest. When the pool of candidates for Works Councils board is chosen by the main union on the workplace the workforce faces a set of more homogeneous councilor and the accountability mechanism can help to discipline them. The effect of screening of the right candidates can be reduced by the union membership.



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## Appendix

### A.1. Solution problem ( $P^1$ ) (Congruent Councilor)

The Lagrangian for program ( $P^1$ ) is

$$\begin{aligned} L_{s_i} = (N - 1) \{ & p_1 \bar{w} + p_2 (\bar{w} - \pi \psi) + p_3 [\pi (\bar{w} - \psi) + (1 - \pi) \underline{w}] + p_4 (\bar{w} - \psi) \} \\ & - (p_1 s_1 + p_2 s_2 + p_3 s_3 + p_4 s_4) \\ & + \mu_1 \{ p_1 v(s_1) + p_2 v(s_2) + p_3 v(s_3) + p_4 v(s_4) - v(s_o) \} \end{aligned}$$

First order condition with respect to supervisor's payment  $s_i$  are

$$v'(s_i) = \frac{1}{\mu_1} \quad \forall i = 1, 2, 3, 4$$

Workers want to pay as less as it is possible to the supervisor, which makes binding the supervisor's participation constraint ( $\mu_1 > 0$ ). With  $\mu_1 > 0$  supervisor receives same payment in each state of nature  $s_1 = s_2 = s_3 = s_4 = \bar{s}$ . The participation constraint in the problem implies that this payment is equal to the supervisor outside opportunity  $v(\bar{s}) = v(s_o)$ . Finally, effort is allocated take into account the supervisor's compensation and the reduction on uncertainty given by the supervisor's information. When supervisor has observed good financial situation ( $r^s = \bar{\theta}$ ) workers exert low effort ( $e = \underline{e}$ ). When a bad financial situation is observed by supervisor ( $r^s = \underline{\theta}$ ) then workers exert high effort. In state 2 and state 3 workers exert high effort if

$$\frac{p_3}{p_2 + p_3} (\bar{w} - \underline{w}) \geq \psi$$

### A.2. Solution problem ( $P^3$ ) (No Congruent Councilor)

The Lagrangian for program ( $P^2$ ) is

$$\begin{aligned} L_{s_i} = (N - 1) \{ & p_1 \bar{w} + p_2 (\bar{w} - \pi \psi) + p_3 [\pi (\bar{w} - \psi) + (1 - \pi) \underline{w}] + p_4 (\bar{w} - \psi) \} \\ & - (p_1 s_1 + p_2 s_2 + p_3 s_3 + p_4 s_4) \\ & + \mu_1 \{ p_1 v(s_1) + p_2 v(s_2) + p_3 v(s_3) + p_4 v(s_4) - v(s_o) \} \\ & + \mu_2 \{ s_1 - s_2 - \tilde{\alpha} \pi (N - 1) \Delta e \} \\ & + \mu_3 [(N - 1) (\bar{w} - \psi) - s_1] \end{aligned}$$

First order condition with respect to supervisor's payment  $s_i$  are

$$\begin{aligned} v'(s_1) &= \frac{1}{\mu_1} \left[ 1 - \frac{\mu_2}{p_1} + \frac{\mu_3}{p_1} \right]; \\ v'(s_2) &= \frac{1}{\mu_1} \left[ 1 + \frac{\mu_2}{p_2} \right]; \end{aligned}$$

$$v'(s_3) = \frac{1}{\mu_1} = v'(s_4)$$

Allocation of effort is equal to  $e = \underline{e}$  at state 1, and  $e = \bar{e}$  at state 4. In state 2 and state 3 workers exert high effort if

$$\frac{p_3}{p_2 + p_3}(\bar{w} - \underline{w}) \geq \psi$$

When low effort is exerted participation constraint does not matter and the problem is the same than the case of congruent Councilors. However if high effort is exerted we should consider the effect of potential collusion. As before, participation constraint is binding, which implies that  $\mu_1 > 0$ . When  $\mu_2 > 0$  the first order condition implies that  $v'(s_1) < v'(s_3) < v'(s_2)$ . Then  $s_1 > s_3 = s_4 > s_2$ . Moreover, when  $\mu_2 > 0$  incentive constraint is binding  $s_1 = s_2 + \tilde{\alpha}\pi(N-1)\Delta e$ . If  $s_1 > s_2$  then it is necessary that  $\pi = 1$ , otherwise it is impossible. Because worker should compensate Councilors at state 1 they must set up a compensation as larger as it is possible, then  $\mu_3 > 0$  and  $s_1 = (N-1)(\bar{w} - \psi)$ . Then  $s_2 = (N-1)[\bar{w} - \psi - \tilde{\alpha}\Delta e]$ .