Faculdade de Economia
da Universidade de Coimbra

Grupo de Estudos Monetários e Financeiros
(GEMF)
Av. Dias da Silva, 165 – 3004-512 COIMBRA,
PORTUGAL

gemf@fe.uc.pt
http://gemf.fe.uc.pt

JOHN T. ADDISON, PAULINO TEIXEIRA & THOMAS ZWICK

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RENT SEEKING AT PLANT LEVEL: AN APPLICATION OF THE CARD-DE LA RICA TENURE MODEL TO WORKERS IN GERMAN WORKS COUNCILS

JOHN T. ADDISON,* PAULINO TEIXEIRA,** and THOMAS ZWICK***

* Department of Economics, University of South Carolina, Queen's University Belfast, and GEMF, University of Coimbra
** Faculty of Economics/GEMF, University of Coimbra
*** Munich School of Management, Ludwig-Maximilians University Munich, and Centre for European Economic Research/ZEW, Mannheim

Abstract
Low-skilled workers enjoy a large wage advantage in German works council establishments. Since job tenure is also longer for these workers, one explanation might be rent-seeking. If the premium is a compensating wage differential (or a return to unmeasured ability), it should not lead to higher tenure; whereas if it is (partly) rent, lower quits should lead to longer tenure at plants with works councils. Our analysis uses the Card and de la Rica (2006) tenure model, and although the association between skill level and the works council tenure gap is positive it fails to achieve statistical significance in a single equation framework. However, running the tenure equation for separate skill quintiles, we find that those with the highest wage premium have the greatest tenure. As a result, although we cannot be certain that the works council wage mark-up of low-skilled workers is necessarily a non-competitive rent, the observed pattern of job tenure across different skill subsamples is not after all inconsistent with rent-seeking behavior.

Introduction

In an important paper on European collective bargaining published in this *Review*, Card and de la Rica (2006) examine the effect of firm bargaining – 'firm-specific contracts' – on wages in a system where wages are typically determined under sectoral collective bargaining with extension. The immediate context is Spain but the wider collective bargaining framework of a network of sectoral contracts overlaid with optional firm-specific agreements is European, mimicking similar arrangements in countries such as Italy and the Netherlands. Firm-specific bargaining in Spain takes place in negotiations between management and works councils of worker representatives. Such negotiations cover around 15 percent of Spanish workers. The authors report that decentralized bargaining of this nature is associated with a wage premium in the range 5 to 10 percent, with larger increases for more highly skilled workers.

The novel aspect of the Card-de la Rica study is the use of data on tenure to address the vexed question of whether or not the premium associated with local bargaining is evidence of rent seeking or simply a compensating wage differential for higher effort levels (as might result from the payment of efficiency wages). The basic idea is simply this: if the premium is a compensating wage differential (or a return to unmeasured ability), it should not lead to higher tenure, whereas if it is rent or partly rent lower quits should lead to longer tenure at plants with firm-specific contracts. In particular, by analyzing the wage mark-up associated with a specific institution across broad skill groups and then looking at the relationship between tenure and the selected measure of skill one should be in a position to evaluate whether workers with a higher wage premium are those who have a relatively higher tenure.

We apply this methodology to German works councils. Although the bargaining role of works councils is potentially very different in Germany than in Spain (e.g. the prohibitions on strikes and local bargaining in the absence of express contractual language to the contrary in the relevant sectoral master agreement), it is widely acknowledged that the German institution has a distinct bargaining capacity and a positive influence on earnings (Addison, Teixeira, and Zwick, 2010).

A complication of the German situation is of course that there is another type of firm-specific plant agreement, negotiated between the (industrial) union and the firm. Such agreements are separate from sectoral or industry-level collective bargaining agreements,[1] so that there is no two-tier system per se in which unions subsequently negotiate at the workplace higher wages than laid down in the master agreement. Any such *supplementary* mechanism is confined to the actions of the works council institution which is formally independent of unions. Moreover, collective agreements at firm level are still not very common, covering well under 10 percent of firms and workers. One reason for this, apart from the existence of works councils, is that master agreements do not prevent firms from paying more than what has been agreed to by their bargaining agent at sectoral level**,** while at another level they have acquired flexibility via opening clauses allowing for hours and wage derogations from the centralized wage contracts. That said, it would be idle to pretend that the relation between sectoral collective agreements, 'substitute' firm-level agreements, and 'complementary' formal/informal works council agreements is at all well understood. We will have occasion to return to this nexus below, noting here that it shapes our decision to look to different works council effects by broad collective bargaining (and absence of collective bargaining). But

at a purely descriptive level the tendency in recent years has been for a decline in both sectoral collective bargaining and union agreements at firm level, with the result that an increasing number of establishments are today not covered by a formal collective bargaining agreement.

The present paper builds on our earlier analysis in this *Review* of works council effects (Addison, Teixeira, and Zwick, 2010) in which we reported that works councils are associated with higher earnings, ceteris paribus. Interestingly, we found that the positive earnings influence is stronger for usually disadvantaged worker groups, such as women and the low skilled. These differences allow us to identify worker groups that benefit more than others from the presence of works councils and look at their tenure. We therefore seek to determine whether the observed mark-up enjoyed by such groups is indicative of rents or instead of compensating advantages using the tenure approach suggested by Card and de la Rica. Pending improved analysis of the accuracy of purported shifts in collective bargaining status, we shall not attempt to use panel estimation methods to tackle the selection of firms into the different bargaining regimes. Nor on this occasion – to keep the analysis as transparent as possible – will we seek to fit a probit model to works council incidence.

Methodology

Defining the predicted wage (skill) quintiles

Let us assume that the wage of individual *i*, y_i, is determined by

(1) $$y_i = X_{1i}B_1 + X_{2j(i)}B_2 + Z_{j(i)}B + u_i,$$

where, X_{1i}, $X_{2j(i)}$, and $Z_{j(i)}$ denote the characteristics of workers, co-workers in the same establishment, and establishments, respectively. Note that the $X_{2j(i)}$ term, in particular, is included to control for unobserved individual heterogeneity, the maintained hypothesis being that workers with higher unobserved ability will tend to have co-workers with higher average skills and conversely for workers with low unobserved ability. (Time subscripts are omitted given the cross-sectional nature of our linked employer-employee data.)

To obtain a simple index of skill, we fit model (1) to the sample of non-works council employees and use the estimated coefficients to predict the wages of all workers. Then, based on the obtained predicted wage, each individual is allocated to the corresponding quintile (Card, 1996). By construction, the five groups are 'uncontaminated' by the pay structure of the works council jobs. An alternative approach – and indeed that followed by Card and de la Rica (2006) – is to use the observed wage distribution to calculate the different wage quintiles and then to estimate ordered probit models to predict the probability that a given individual would earn a wage in one of the five quintile ranges; and, in a second step, to weight each observation according to the predicted probability of earning a wage in the given quintile[2] in quintile-specific wage regressions. In the interests of simplicity, we follow the first route.

We also decided on this occasion not to control for the potential bias arising from establishment- (and worker-) specific factors possibly correlated with the determination of works council status.[3] For its part, selection into collective bargaining coverage is dealt with by simply providing separate estimates of works council 'effects' for covered and

uncovered establishments, aggregating over the two types of collective agreement (i.e. both sectoral and firm).[4]

Job tenure

As hypothesized earlier, the payment of higher wages in works council establishments may reflect either the ability of works councils to extract a bigger slice of the pie (joint surplus) *or* the ability of firms to elicit greater effort from workers (e.g. via the payment of efficiency wages). In the former case, workers are paid above 'normal' or market-clearing wages and, all else constant, we should observe higher tenure T_i. In the latter case, establishments pay a compensating differential so that no correlation between tenure and works council status should be expected.

To test these conflicting hypotheses, we first specify the following base model

$$(2) \qquad T_i = X_{1i}B_1 + X_{2j}B_2 + Z_jB + Woco_{j(i)}\delta + e_i,$$

where the parameter δ gives the estimated relationship between tenure and establishment workplace representation status. Given job tenure is higher in works council establishments (see below), we expect that $\delta > 0$. Then, given that skill has been proxied by predicted (works council-free) wages, a simple and direct way of testing whether the tenure gap varies across the skill distribution is to add an interaction term between the works dummy, $Woco_{j(i)}$, and the skill index, $\hat{y}_i$, to yield

$$(3) \qquad T_i = X_{1i}B_1 + X_{2j}B_2 + Z_jB + Woco_{j(i)}\delta + \hat{y}_i * Woco_{j(i)}\gamma + e_i.$$

In this framework, $\gamma < 0$ indicates that the lower the skill level the higher the works council tenure gap.

By definition, fitting model (3) across the entire sample gives the average effect of the skill index on tenure. Given the descriptive statistics (viz. a works council wage

effect that is larger for the least skilled), it is likely that the average effect captured via a single regression will be not flexible enough. An alternative and preferred route, therefore, is to run models (2) and (3) for the separate skill subsamples (or predicted wage quintiles), compare Card (1996).

Data

Our data set is fully described in Addison, Teixeira, and Zwick (2010). Accordingly, we shall only identify the more important aspects here. The main change in the present treatment is that we now focus exclusively on western Germany for reasons connected with the right censoring of the key tenure variable in the raw data. For western Germany, the tenure data are top censored at 25 years for 9 percent of the sample as compared with just 10 years for 35 percent of the sample in eastern Germany. Predicted tenure for workers in western Germany with censored tenure was generated by running censored tenure regressions in 20 cells differentiated by gender, education and nationality.

The raw data source is the 2001 LIAB, a nationally-representative linked employer-employee data set provided by the Institute for Employment Research (*Institut für Arbeitsmarkt- und Berufsforschung*). The LIAB matches employee records gathered by the Federal Employment Agency (*Bundesagentur für Arbeit*) with plant-level data from the IAB Establishment Panel (*IAB-Betriebspanel*). The employment register (*IAB Beschäftigtenstichprobe, IABS*) includes information on the individual's three-digit occupation, daily gross wage (up to the earnings ceiling for social security contributions – see below), gender, year of birth, nationality, marital status, number of children, and level

of schooling/training. Each individual record also contains the establishment identifier, allowing the matching of the individual with the establishment-level information.

The plant information is based on a stratified random sample – the strata are for 16 industries and 10 employment size classes – from the population of all establishments employing at least one employee paying social security contributions. (Larger plants are over-sampled, but within each cell the sampling is random.) The main feature of this IAB survey is its extensive description of the labor force at plant-level, including the overall wage bill, training provision, hours worked, overtime payments, and collective bargaining and works council status. The IAB establishment panel file also includes questions concerning the establishment's sales, exports, investment expenditures, age, and corporate form/legal status.

Our sectoral coverage is restricted to manufacturing and services, and not-for-profit organizations are excluded. Further, we include only those establishments in which works councils can be elected, which in practice means that workers in plants with less than five employees are dropped. After applying these filters, our linked employer-employee data set comprises approximately 1 million (estimation sample) full-time individuals aged between 19 and 65 years in 5,400 (western) German establishments.

Finally, we should note that not only is our key tenure variable censored. Earnings are top coded, too, and for roughly the same proportion of the sample (10 percent). For these individuals imputed earnings were generated using exactly the same procedure as was applied to obtain predicted tenure in respect of the top-coded tenure cases.

Findings

Summary statistics of the (log) wage and tenure variables are given in Table 1. The information is presented by (predicted) wage quintiles and by gender. The most notable feature of the material is the suggestion that workers in establishments with works councils have generally higher wages than their counterparts in establishments without councils. This is most obviously the case for the first two skill quintiles *and* for females. For females in the lowest two quintiles the mean (log) wage differences are 0.33 and 0.16, respectively, for those in works council establishments. The corresponding wage gaps for males are lower at 0.22 and 0.06, respectively. Job tenure is also materially longer in works councils plants for the lowest quintiles: by a 2.4 and 3.3-year (1.4 and 2.9-year) margin in the case of females (males). Further, note that although the wage structure in (western) Germany is seemingly compact in all quintiles, the standard deviation of (log) wages is nevertheless always higher in the case of workers in establishments without works councils.

(Table 1 near here)

The adjusted effect of works councils on individual wages according to equation (1) is given in Table 2. As before, separate results are provided by skill quintiles and by gender. Again note that we are seeking to capture the role of collective bargaining per se in a very simple and unrestricted way, namely, by dividing the subsamples into covered and uncovered sectors. For all but four of the twenty (= 5 x 4) quintile-specific regressions, the coefficient estimate for the works council variable is positive and statistically significant. The exceptions are uncovered males in quintiles 4 and 5 and uncovered females in quintiles 3 and 5 for whom the point estimates are statistically

insignificant. The main lesson to be drawn from the table is the robust wage premium of between 0.072 and 0.189 earned by females where a works council is present in both the covered and uncovered sectors. In contrast, the works council wage gap for males is considerably smaller, in the range 0.029 to 0.078. For each category of worker the broad tendency is for the works council premium to decrease in skill.

(Table 2 near here)

Table 3 presents the results of fitting our *tenure* model, as specified in equations (2) and (3), to the data. In a first step, we run a single equation for each subsample, namely, covered and uncovered males and females. In column (a) we investigate whether there is evidence of longer job tenure in establishments with works councils, controlling for a variety of factors. In column (b) we consider the evidence on the relationship between the observed works council tenure gap and worker skills.

(Table 3 near here)

As is apparent, there is evidence in favor of the hypothesis that workers in plants with works councils have longer tenure. But this is only true for the covered sector, where female workers have approximately 1 more year of tenure and males 1.5 years. Turning to the results in column (b), there is also no evidence of any relationship between the works council tenure gap and skill. The latter finding is not surprising in the case of uncovered workers since there was no evidence of any works council tenure gap in their case (see the first and third columns of the table). More surprising is the finding that the average effect of predicted skill on the tenure gap is a wash. We would attribute this result more to aggregation than anything else. Arguably, the only convincing way to demonstrate the effect of works council presence on tenure *and* at the same time be able

to interpret the observed works council gap (i.e. to connect the observed higher works council wage gap for the least skilled workers – in quintile 1 – to rent-seeking behavior or otherwise) is to run models (2) and (3) for separate quintiles.

(Table 4 near here)

Table 4 provides this disaggregation. As can be seen from column (a) of the table we can confirm that, all else equal, both genders in quintile 1 have higher tenure of roughly one year in the covered sector. No such relation is reported for any of the other four quintiles. We therefore obtain the interesting result that those who enjoy additional gains from works council presence – low-skilled men and women in the covered sector – do have higher tenure.

Column (b) of the table tests whether it is possible to detect within each quintile any evidence that the works council-tenure gap is decreasing in skill as well. We find no evidence of such an effect in quintile 1. And, given that the works council effect in column (a) is never statistically significant for the other quintiles, no well-determined interaction effects are found for quintiles 2 through 5 either – other than for a handful of instances for which we have no cogent explanation. Given the compressed dispersion of German wages, it would seem that our derived measure of skill (based on predicted wages) is also very compact, generating data with insufficient variability per quintile.

Conclusions

There is evidence of a large wage gap favoring low-skilled workers in German works council establishments, especially for women. Since job tenure is also longer for these groups of workers, a crucial issue is whether the observed tenure gap is compatible with

rent-seeking behavior**.** Our empirical strategy follows Card and De la Rica (2006) in focusing on the works council institution, while also controlling for the presence of (predominantly sectoral) collective bargaining, and in running two separate (augmented) tenure equations: the first adding a works council dummy, and the second adding an interaction term between skill/predicted wages and the works council variables.

Not surprisingly, our results differ somewhat from Card and de la Rica, who found that the works council wage premium in Spain is increasing in skill. That is to say, although in our case the association between skill level and the tenure gap is positive it fails to achieve statistical significance in a single equation framework. Running the tenure equation for separate skill quintiles though, we obtain the same basic result that those with the highest wage premium have the greatest tenure premium. It is just that their identity is different in the German case, constituting male and female workers in the *lowest* quintiles of the skill distribution. (As a matter of fact, given the compact nature of the German wage distribution, we did not anticipate finding a robust interaction term for all five quintiles.)

In sum, we find that workers in works council establishments enjoying the highest wage premia are also those with a comparatively longer tenure. As a result, although we cannot be certain that the generous works council wage gap of low-skilled workers is necessarily a non-competitive rent, the observed pattern of job tenure across different skill subsamples is not after all inconsistent with rent-seeking behavior. For the future it will be interesting to get a firmer handle (than co-worker skills) on unobserved individual heterogeneity and in particular to ascertain whether the premium survives – or emerges

for other parts of the distribution – the shifting allocation of workers and firms between collective bargaining states.

ENDNOTES

[1] Sectoral collective agreements are legally binding on all member firms of the relevant employers' association and apply to all members of the relevant trade union at the place of work. In practice, employers typically extend the terms of the sectoral agreement to nonmembers as well, while other employers who are not members of the employers' association often apply them voluntarily. Finally, there is provision for extension of the master agreement to nonparties at the behest of the Federal Ministry of Labor.

[2] So as to control for the "uncertainty in predicting wage outcomes" (Card and de la Rica, 2006, p. 584).

[3] For a treatment of worker self-selection into works council status, see Addison, Teixeira, and Zwick (2010).

[4] Controlling for self-selection issues seems only to reduce the size of estimates, not their sign or statistical significance (see Addison, Teixeira, and Zwick, 2010, Table 2, column (4)).

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Table 1. Selected Characteristics of Works Council and Non-Works Council Workers by Predicted Wage Quintiles.

	Predicted wage quintile				
	1	2	3	4	5
Male workers					
Non-works council sector:					
Mean log wage	4.16 (0.35)	4.46 (0.27)	4.62 (0.30)	4.80 (0.30)	5.03 (0.31)
Average tenure (in years)	4.69 (6.68)	10.1 (9.62)	10.3 (9.82)	12.2 (9.94)	9.90 (8.63)
Works council sector:					
Mean log wage	4.38 (0.25)	4.52 (0.20)	4.62 (0.21)	4.80 (0.28)	5.05 (0.29)
Average tenure (in years)	6.06 (7.79)	13.0 (9.68)	16.3 (9.61)	14.9 (10.75)	15.0 (9.93)
Works council gap:					
Mean log wage difference	0.22	0.06	0,00	0,00	0,02
Standard deviation difference	-0.10	-0.07	-0.09	-0.02	-0.02
Average tenure difference	1.37	2.90	6.00	2.70	5.10
Female workers					
Non-works council sector:					
Mean log wage	3.83 (0.40)	4.17 (0.38)	4.35 (0.37)	4.49 (0.35)	4.67 (0.38)
Average tenure (in years)	4.38 (6.19)	6.37 (7.13)	9.66 (8.24)	11.3 (8.67)	9.13 (8.49)
Works council sector:					
Mean log wage	4.16 (0.34)	4.33 (0.27)	4.46 (0.29)	4.58 (0.30)	4.76 (0.35)
Average tenure (in years)	6.74 (7.82)	9.71 (9.01)	9.74 (8.46)	11.5 (9.25)	12.7 (9.24)
Works council gap:					
Mean log wage difference	0.33	0.16	0.11	0.09	0.09
Standard deviation difference	-0.06	-0.11	-0.08	-0.05	-0.03
Average tenure difference	2.36	3.34	0.08	0.20	3.57

Notes: Predicted wages are obtained on the basis of a standard earnings equation for the non-works council sector (see equation (1)), which is then used to generate a predicted wage distribution for all workers in the sample – where workers in the first quintile in either sector have the least productive skills, and so on. Standard deviations are given in parentheses.

Table 2. Estimated Works Council Effects on Wages in the Covered and Uncovered Sectors.

	Predicted wage quintile				
	1	2	3	4	5
Male workers, uncovered	0.070 (0.011)	0.078 (0.017)	0.041 (0.017)	-0.011 (0.015)	-0.009 (0.018)
Male workers, covered	0.066 (0.002)	0.029 (0.003)	0.032 (0.003)	0.043 (0.004)	0.017 (0.006)
Female workers, uncovered	0.139 (0.021)	0.072 (0.026)	0.030 (0.026)	0.082 (0.028)	0.039 (0.033)
Female workers, covered	0.189 (0.005)	0.111 (0.005)	0.070 (0.006)	0.042 (0.008)	0.040 (0.013)

Notes: The works council coefficient estimates reported in each column of the table are obtained from separate earnings regressions for collective agreement regime, predicted wage quintile, and gender. The general model specification is equation (1), with the workplace representation dummy now added to the full set of regressors. These include dummies indicating sales in export markets, use of paid overtime, the profit situation, and industry dummies. The share of workers of non-German nationality and the average characteristics of co-workers are also included in the specification. Standard errors are given in parentheses.

Table3. Estimated Works Council Effects on Worker Tenure in the Covered and Uncovered Sectors.

	Uncovered		Covered	
	(a)	(b)	(a)	(b)
Male workers				
Interaction term [Predicted wage * Works council]	-----	0.654 (1.126)	-----	0.205 (0.477)
Works council	0.337 (0.517)	-2.614 (5.185)	1.455 (0.226)	0.546 (2.129)
N	20,011		738,314	
Female workers				
Interaction term [Predicted wage * Works council]	-----	-0.423 (0.986)	-----	-0.023 (0.612)
Works council	0.604 (0.494)	2.377 (4.199)	0.954 (0.292)	1.050 (2.463)
N	10,567		244,386	

Notes: The works council coefficient estimates reported in each column of the table are obtained from separate tenure regressions by collective agreement regime and gender. The model specifications for columns (a) and (b) are equations (2) and (3), respectively. The regressors include dummies indicating sales in export markets, use of paid overtime, the profit situation, and industry dummies. The share of workers of non-German nationality and the average characteristics of co-workers are also included in the specification, together with a full set of dummies for each single year of age. The dependent variable is the number of years elapsed since starting work with the present employer/establishment. Standard errors are given in parentheses.

Table 4. Estimated Works Council Effects on Worker Tenure in the Covered and Uncovered Sectors, by Wage Quintile.

	Predicted wage quintile									
	1		2		3		4		5	
	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)
Male workers, uncovered										
Interaction term		0.448		1.329		-0.3456		2.389		17.881
[Predicted wage * Works council]		(1.541)		(3.996)		(4.729)		(3.807)		(6.753)
Works council	0.496	-1.377	0.488	-5.402	-0.494	1.098	-0.557	-11.919	0.082	-89.403
	(0.594)	(6.249)	(0.800)	(17.663)	(0.711)	(21.783)	(0.636)	(18.247)	(0.932)	(33.271)
N	7,140		2,476		2,921		3,422		4,052	
Male workers, covered										
Interaction term		-0.393		5.434		0.847		-1.836		2.449
[Predicted wage * Works council]		(0.809)		(1.750)		(2.142)		(2.564)		(2.374)
Works council	1.303	2.955	-0.262	-24.454	0.106	-3.796	0.509	9.282	0.115	-12.121
	(0.221)	(3.393)	0.321)	(7.787)	(0.322)	(9.874)	(0.455)	(12.335)	(0.474)	(11.915)
N	144,068		148,517		148,871		148,880		147,978	
Female workers, uncovered										
Interaction term		-6.212		-12.268		-4.263		-3.559		3.170
[Predicted wage * Works council]		2.113		(3.486)		(4.086)		(4.737)		(4.659)
Works council	1.048	25.054	-0.443	50.548	-0.408	18.117	-1.521	13.808	0.297	-14.313
	(0.625)	(8.125)	0.677)	(14.426)	(0.728)	(17.595)	(0.759)	(21.023)	(0.596)	(21.585)
N	2,930		2,246		2,134		1,777		1,480	
Female workers, covered										
Interaction term		0.767		-2.107		12.993		-0.638		1.705
[Predicted wage * Works council]		(0.959)		(1.932)		(3.199)		(3.328)		(3.336)
Works council	1.108	-1.872	-0.148	8.654	-0.423	-56.314	-0.532	2.171	-0.522	-8.334
	(0.246)	(3.739)	0.275)	(8.155)	(0.391)	(13.767)	(0.457)	(14.764)	(0.437)	(15.473)
N	48,009		49,054		48,742		49,018		49,563	

Notes: The works council coefficient estimates reported in each column of the table are obtained from separate tenure regressions by collective agreement regime, predicted wage quintile, and gender. The model specifications for columns (a) and (b) are equations (2) and (3), respectively (see notes to Table 3). Standard errors are in given in parentheses.

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