

The July Agreement: bargaining power, efficiency wage or both?

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1. INTRODUCTION

The decentralised bargaining was instituted in 1993 as part of the July Agreement which signed a broader change of positions in the industrial relations, summarised by the slogan *from conflict to participation*. The protocol modified the collective agreement into a two-step process: in the first step wages continue to be collectively negotiated at a sector-wide level and in the second step an additional compensation, strictly linked to some form of profit sharing, is agreed at the firm level. The Pact explicitly recognises that the second level bargaining may be of advantage to the whole productive system through an improvement of firm efficiency and profitability. For the matters concerning the wage, the national collective agreement, is renegotiated every two years, whereas the second level bargaining takes place every four years during which both parts should engage in procedures of information, consultation or negotiation aimed at managing the social effects of technical innovations, firm reorganisation and restructuring.

With respect to the usual bargaining, the sort of decentralised negotiation spelled out in the Agreement presents an important difference as the profit sharing element, being an explicit part of the bargaining, introduces efficiency wage considerations. Moreover, since the specific implementation of the profit/gain sharing scheme is left to each firm, the enhancing productivity effects is likely to be firm specific and the returns from adopting the decentralised bargaining will therefore vary across firms.

Given these main elements, we model the final wage by combining the usual wage bargaining model with efficiency wages along the lines initially suggested by Summers (1988) and later formalized by Martin and Garino (2000), and Mauleon and Vannetelbosch (2003); moreover, we account for the presence of a two-stage bargaining following Muysken-van Veen (1996) and Mulino (2000).

Our objective is to provide an estimable wage equation¹ in order to test to what extent different schemes of profit sharing, different forms of firm organisation and industrial relations affect the final wage. In particular, on the basis of the existing literature on high performance workplace practices (ref...), we expect the design of the profit sharing scheme to affect labour efficiency and the degree of rent sharing specially if profit sharing is part of a more general firm policy caring for employee involvement². At this regard a thorny matter is how productivity gains are distributed and to what extent unions representatives take part in this decision; we expect distribution schemes to affect the firm's rent and the firm's willingness to share it. More generally, since the July Agreement itself is the result of concerted industrial relations, the industrial relation climate within the firm will influence the final wage.

2. THE MODEL: DECENTRALISED BARGAINING AND EFFICIENCY WAGES

We set up a model where the firm's i production function at time t is $Y_{it} = A_{it}(e_{it}L_{it})^\alpha$, Y is output, A is neutral technical progress, e is effort, L is employment. Effort is a positive function of the paid wage relative to the alternative wage, Ω , and rises with the productivity enhancing effect of the paying higher wages, captured by β , hence: $e = \left(\frac{W - \Omega}{\Omega}\right)^\beta$ and $\frac{\partial e}{\partial W} \frac{W}{e} = \varepsilon = \beta \left(\frac{W}{W - \Omega}\right)$. For

$\beta=0$, $e=1$ and efficiency wages are absent. We assume that both parts, when bargaining the wage at the sector level, take into account that the bargained wage will induce some effort and assume the effort to be the minimum one, i.e. that obtained in firms that show the lowest productivity response

¹ The cited literature on decentralized bargaining and efficiency wages is mostly concerned with theory.

² Konings and Walsh (1994), for example, find that higher wages, if 'voluntarily' paid (as is the case in presence of efficiency wages) have a positive return in terms of market share whereas, if 'involuntarily' paid, (through bargaining in presence of high union power) have a negative return in terms of market share.

to paying higher wages (Muysken-van Veen, 1996), hence at the sector level $\beta = \underline{\beta}$. The market structure is imperfectly competitive and the firm faces a downward sloping demand curve of elasticity φ : $Q_i = (P_i/\bar{P})^{-\varphi}$, where \bar{P} is the general price level, so that $\left(1 - \frac{1}{|\varphi|}\right)^{-1} = m$ is the firm mark-up³.

The first stage wage \bar{W}_{st} , which differs across sectors, is the result of a right to manage model where unions and employers bargain over the wage, while employment maximises the average firm's profit and is unilaterally decided by the employer confederation. Let union's power be γ , R be the reservation wage and s be total sector employment. Hence, for each sector we have:

$$\bar{W}_{st} = \arg \max_W [sL(W_{st} - R_t)]^\gamma [\Pi(W_{st}, L_{st})]^{1-\gamma}$$

subject to $\left(\frac{\partial \Pi}{\partial L}\right)_{st} = 0 = \alpha A_{st} (eL_{st})^{\alpha-1} e\tilde{m} - W_{st} = 0$

where $\Pi_{st} = P_{st}Y_{st} - W_{st}L_{st}$ and $Y_{st} = A_{st} \left[\left(\frac{W_{st} - R_t}{R_t} \right)^\beta L_{st} \right]^\alpha$

The wage solving the constrained maximisation gives satisfies the following expression according to which the wage bargained at the sector level is a mark up on the alternative wage; the mark up is increasing in union power and decreasing in the elasticity of labour demand to the wage and with the elasticity of profits to the wage which gives the mark up:

$$1) \frac{\bar{W}_{st} - R_t}{\bar{W}_{st}} = \frac{1}{\left| \frac{\partial L}{\partial W} \frac{W}{L} \right| + \frac{(1-\gamma)}{\gamma} \left| \frac{\partial \Pi}{\partial W} \frac{W}{\Pi} \right|}$$

Finally, substituting for the elasticities, the sector wage can be expressed as follows:

$$\bar{W}_{st} = \frac{\gamma m + (1-\gamma)\alpha}{\alpha(1-\underline{\beta})} R_t$$

The second step bargaining is formalised in an analogous way; however, since a missed firm level agreement exclusively concerning the wage, as the one we are assuming, is unlikely to give rise to

³ Analogously, at the sector level, $Q_S = (P_S/\bar{P})^{-\tilde{\varphi}}$ and $\left(1 - \frac{1}{|\tilde{\varphi}|}\right)^{-1} = \tilde{m}$ is the sector average mark up which may differ from the firm mark up. In fact, since, in the empirical analysis we can rely on sector output prices only, we assume that all firms in the sector set the same price so that $P_S=P$

lock outs or strikes but simply implies that the wage agreed at the first level applies, the firm's fall

back is the level of profit obtainable when $W_{it} = \bar{W}_{st}$, i.e. $\bar{\Pi}_{it} = P_{it} A_{it} \left(\left(\frac{\bar{W}_{st} - R_t}{R_t} \right)^{\beta_i} L_{it} \right)^\alpha - \bar{W}_{st} L_{it}$.

Notice that the fall back profit is greater or, at the minimum, equal to the average sector profit derived at the first stage bargaining since $\beta_i \geq \underline{\beta}$. Finally, notice that we have assumed β to be firm specific; the most important factors that are likely to affect β are the characteristics of the profit sharing scheme, in particular the criteria of the distribution of the additional productivity value, and the industrial relation climate. We will return to this issue in the next sections.

Since the wage determined at the sector level is based on the right to manage model, firms are, on average, on their labour demand curve. Whether the second level bargaining then takes place or not, depends on the firm 'ability to pay' the premium, ability which arises if the incentive mechanism is effective; precisely, according to the agreement, the amount of wage premium depends on the additional productivity. Again, this implies that the second level bargaining is agreed only if the payment of the wage drift does not force a reduction of employment; this assumption, which we

write as: $\left. \frac{\partial L}{\partial W} \right|_{\bar{w}} = 0$ tout-mont assuming that in the second stage the bargaining is 'strongly' efficient (Mc Donald and Solow, 1981)⁴. The final wage is therefore the solution of the following maximization:

$$\max_W [L(W_{it} - \bar{W}_{st})]^{\gamma_i} [\Pi(W_{it}, L_{it}) - \bar{\Pi}_{it}]^{1-\gamma_i}.$$

The first order condition yields:

$$W_{it} - \bar{W}_{st} = \frac{\Pi_{it} - \bar{\Pi}_{it}}{\frac{1-\gamma_i}{\gamma_i} \frac{\partial \Pi_{it}}{\partial W_{it}}}$$

Substituting for $\frac{\partial \Pi_{it}}{\partial W_{it}} = L_{it}(\varepsilon_i - 1)$ we obtain⁵:

$$2) W_{it} = \bar{W}_{st} + \frac{\gamma_i}{(1-\gamma_i)(1-\varepsilon_i)} \frac{(\Pi_{it} - \bar{\Pi}_{it})}{L_{it}}$$

According to the resulting wage equation, the wage drift is therefore a share of the **additional** 'ability to pay' (measure by operating profits per worker) due to the increased effort induced by the higher wage. The share is larger the higher the union power (usual result) and the higher the elasticity of effort to the relative wage. Notice also that both the union power and the elasticity of effort to the wage are firm specific.

Substituting for ε and re-arranging, the wage equation can also be written as

⁴ The same assumption is made by Margolis and Salvanes (2001).

⁵ Notice that the usual negative impact of a rise in the wage (-L) is counterbalance by the effect working through the impact that such a wage increase will have on the workers' effort.

$$3) W_{it} = \frac{1 - \beta_i(1 - \gamma_i)}{(1 - \gamma_i)(1 - \beta_i)} \bar{W}_{st} + \frac{\gamma_i}{(1 - \gamma_i)(1 - \beta_i)} \bar{\Phi}_{it} + \frac{\gamma_i}{(1 - \gamma_i)(1 - \beta_i)} \left(\frac{\Pi}{L} \right)_{it}$$

where $\bar{\Phi}_{it} = \left(\frac{P\bar{Y}}{L} \right)_{it} = \frac{P_{it} A_{it} \left(\left(\frac{\bar{W}_{st} - R}{R} \right)^{\beta_i} L_{it} \right)^\alpha}{L_{it}}$ is the labour productivity that the firm would

obtain with no decentralised bargaining; again, it is greater or equal the sector average labour productivity and, contrary to \bar{W} , is a function of β_i which is firm specific.

Finally we normalise both sides of equation 3) to the sector price level in order to operate in real terms.

3. EMPIRICAL MODEL, METHODOLOGICAL ISSUES AND DATA

Given equation (3) we estimate the following regression:

$$4) w_{it} = Z_i a_0 + T_i a_1 + tS_{it} a_2 + (\pi - l)_{it} b + v_{it}$$

where w is the log of the real labour cost per employee, Z_i is a vector of firms fixed effect, T_i are time dummies and tS are sector specific time trends, $(\pi - l)$ is the log of operating profits (added value less wage costs) to the level of employment

The first stage wage and the firm labour productivity when $W = \bar{W}$ are therefore captured by sector dummies, size dummies, time dummies and interacted time and sector dummies; moreover we control for the firm skill structure, for the type of prevailing industrial relations, for the market of operation and for the market share.

The data-set is composed of 100 manufacturing firms, located in Northern Italy (province of Bergamo) with more than 50 employees. For each firm we have balance sheet data from 1990 to 1999 and information from a detailed survey conducted in 1999 on various aspects of the firm's organisation, workplace practices and industrial relations. In particular we know whether the firm on the unions' representative signed a decentralised contract, if profit sharing is associated to evaluation procedures aimed at determining the wage premium; moreover, we have information on types of industrial relations, on the degree of employee empowerment and on involvement practices.

Table 0 reports some descriptive statistics.

The estimation strategy must account for a few methodological issues.

- Profits are endogenous for two considerations: first of all, there is a precise negative accounting relationship between operating profits and wages: as wages rise profits decline, *ceteris paribus* (Martins, 2002). Secondly, in presence of efficiency wages, an opposite force comes into play since a rise in the relative wage rises effort hence labour productivity and revenue, *ceteris paribus*. While the first correlation, if not accounted for, biases the coefficient on profits downward, the second one may produce an upward bias so that the effects of controlling for profit endogeneity tells some information on the degree of efficiency wage productivity enhancing effects.
- Firm's profits are also correlated with various firm characteristics; some of these are observable and controlled for: sector, size, share and location of the market, workforce

- composition in terms of occupation; others are unobservable (e.g. quality of management, personal characteristics of managers and employees – for example experience, age).
- Some unobservable firm's or workers' characteristics may be time variant and correlated with the error term and/or with other explanatory variables. For example, if the skill composition of the workforce changes over time and thereby affects firm's productivity and profits; estimated coefficients may be biased since we observe the skill composition the only in the final year (1999).

To assess the extent of these issues, we compare pooled OLS with fixed effects and fixed effects IV. Moreover, to account for possible changes in the workforce skill composition we control for workers' turnover.

From equation 3) it is clear that it is not possible to identify the parameters of interests: the estimated coefficient on the operating profits per worker is increasing with γ - union power - and β - the productivity enhancing effect of the efficiency wage- but the two effects cannot be distinguished. In order to throw some lights on the effectiveness of the incentive mechanisms, we start from the assumption that, for a given wage premium, the workers' effort is responsive to the 'fairness' of the reward, which hinges on a fair relationship between amount of effort and compensation. So we expect β to rise if there are mechanisms that explicitly link the wage premium to an assessment of the worker's profitability. Notice that such mechanisms may also favour the firm's willingness to share the rent since the reward is accurately targeted. Moreover, we expect the positive role of assessment procedures, both on employees' effort and on the firm's willingness to share the rent, to be enhanced if the firm organisation is based on a coherent system of practices favouring employee empowerment and involvement.

Notice also that β affects the firm labour productivity Φ implying that not only it affects the slope coefficient of profits per employee but may also determine a fixed effect on the wage.

In order to test the productivity enhancing effect of adopting individual evaluation assessments we analyse two sub-samples:

- a) firms that have signed the pay for performance contract at the second stage bargaining
- b) firms that have signed the second-level contract **and** adopted performance assessment procedures aiming at wage premium determination

4. RESULTS

Table 1 reports the estimated equation using the whole sample of firms. Results are shown for three periods: 90-99 94-99 and 97-99, where the last one is included to verify the re-negotiation effects.

- a) relative to the pooled OLS, controlling for fixed effects the coefficient rises indicating that unobservable firm characteristics are normally negatively correlated with profitability;
- b) controlling for the profitability endogeneity the coefficient rises further indicating that the downward bias dominates;
- c) once unobservable fixed effects and endogeneity are controlled, the temporal sub-samples show, (last three columns) that the elasticity of the real wage to the operating profit per employee rises from 8% in period 90-99 to 11% in the period successive the July Agreement from '94 to '99; in the final span, from 1997 to 1999, the elasticity declines slightly even if the period available is in fact quite short for conclusive results.

The rise in the coefficient of profits per employee for the years following the July Agreement is coherent both with a rise in union power as well as with the rise of β induced by the efficiency wage consideration. In order to attempt to distinguish between these two effects, higher union power and enhancing productivity effect of a wage premium, Tables 2 and 3 give the estimated wage equation

for the two groups of firms: those signed the decentralised contract and those that signed the decentralised contract and adopted a formal assessment of the performance aimed at determining the wage premium.

Results are summarised, for convenience, in Table 4.

Using the whole sample period and controlling for unobservable fixed effects, the sub-group of firms that agreed a decentralised wage bargaining shows, relative to the whole firm sample, a slightly higher coefficient on profits per employee; the coefficient rises further if the decentralised bargaining is joined by performance assessment procedure. However, once the endogeneity of profits is taken into account, the size of the coefficients is reversed, i.e. the degree of profit sharing is lowest in firms that have decentralised bargaining together with performance assessment. This result holds also on the restricted sample period. This ‘unexpected’ result may be due to several factors: (i) quite simply one can argue that the productivity enhancing effect of the wage premium is not well captured by the presence of performance assessment mechanisms; however, alternative and more efficient mechanisms do not seem to emerge from the survey. (ii) The presence of performance assessment mechanisms is a valid indicator of the enhancing productivity effect of the wage premium but the higher β is associated to a lower union power, this decline dominates and the coefficient drops.

In order to gain some insight along this story, Table 5 reports the probits estimated to compute the inverse Mill’s ratios. Quite interestingly they show that the two groups of firms, those having decentralised bargaining and those having both decentralised bargaining and performance assessment, are similar in terms of size and sector but have quite diverse industrial relations. In particular, the probability of signing a decentralised contract significantly rises if industrial relations are based on consultation and declines if they are of a pure ‘notification’ type; moreover the older the firm the more likely that it signs a decentralised contract. On the other hand, the probability of decentralised bargaining joint to performance assessment, rises the younger the firm and the more industrial relations are based on notifications or on bargaining. While the first type of industrial relations means that unions’ representatives are only informed ex-post about various decisions regarding the firm and employees, unilaterally taken by the management⁶ and therefore is coherent with a low union power, a type of industrial relation based on bargaining means that decisions are bargained between management and unions’ representative; although, in this case, unions have, in principle, a greater contractual power, the case seems to envisage potentially hostile relations. Moreover, in the great majority of the cases, negotiations are on traditional aspects but not on the incentive system.

5. CONCLUSIONS

We have derived an estimable wage equation on the assumption of a two-level bargaining and efficiency wages. The existing theoretical literature on a wage determination where bargaining and efficiency wages interact finds that the mark up on the alternative wage obtainable when bargaining and efficiency wages are both present is higher than the mark up obtained if the wage is only bargained.

Given the objectives of the so called July Agreement signed by the Italian social parties and government in 1993, which saw the firm performance as being the common interest of firms and unions and thereby introduced a firm level bargaining linked to performance to favour efficiency, we used it as an experiment to test the theoretical result of the reinforcing wage effect of bargaining and efficiency wage.

⁶ On some aspects unions must be consulted by law.

After deriving an estimable wage equation we estimated it on a sample of Italian firms located in Northern Italy for which survey data on various organisational aspects and industrial relations were available together with balance sheets from 1990 to 1999.

Once the panel estimation accounts for unobservable fixed effect and profit endogeneity, the result do not confirm the hypothesis. In particular we find that the subgroups of firms in which the wage premium is bargained with the unions and in which there exist mechanisms that tie the premium to the effort (performance assessments) the elasticity of rent sharing to profits per employee is lower compared to the group of firms in which decentralised bargaining exists independently of the assessment procedures.

It turns out that the two groups of firms have quite different industrial relations: in particular the explanation of the results seems to lie in the fact that when efficiency wage consideration are present, union power is either low or too high.

The conclusion we put forward is that the complementarity result between bargaining and efficiency wage implicitly assumes that union power and the enhancing productivity effects of the wage premium are independent; in fact industrial relations are important for both factors.

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DISTRIBUTION OF DECENTRALISED BARGAINING BY FIRM SIZE AND SECTOR

Firms size (employees)	Second step bargaining		TOTAL
	NO	YES	
50-99	32.5	16.7	19.0
100-199	58.8	36.9	40.0
200-499	8.8	30.0	26.9
>500	0	16.4	16.4
TOTAL	100	100	100

From size 200 employee onwards, large adoption of decentralised bargaining

	Second step bargaining		TOTAL
	NO	YES	
Metalworking	57.9	47.6	49.1
Chemical	7.0	21.7	19.6
Textile	31.6	14.5	17.0
Other	3.5	16.1	14.3
TOTAL	100	100	100

Chemical sector large adoption of decentralised bargaining, less in textile, half of the firms in the metalworking.

DISTRIBUTION OF JOINT DECENTRALISED BARGAINING AND PERFORMANCE ASSESMENT BY FIRM SIZE AND SECTOR

Firms size (employees)	Second step bargaining AND performance assessment		TOTAL
	NO	YES	
50-99	25.0	6.4	14.0
100-199	44.8	35.8	39.4
200-499	18.2	39.7	30.9
>500	12.1	18.2	15.7
TOTAL	100	100	100

Mostly medium size firms (100-500)

	Second step bargaining AND performance assessment		TOTAL
	NO	YES	
Metalworking	51.2	46.1	48.2
Chemical	14.9	26.3	21.6
Textile	25.8	11.5	17.3
Other	8.1	16.2	12.9
TOTAL	100	100	100

Large percentage of chemicals and minor sectors.

Table 1

ALL FIRM SAMPLE

Dependent variable: $\log(W/N)$, deflated by sector output price

	Pooled OLS						Fixed effect OLS						Fixed effect IV*					
	1990-1999		1993-1999		1997-1999		1990-1999		1993-1999		1997-1999		1990-1999		1993-1999		1997-1999	
Inm0ln	0.040	0.00**	0.041	0.00**	0.028	0.05*	0.049	0.00**	0.044	0.00**	0.042	0.04*	0.080	0.00**	0.110	0.00**	0.093	0.00**
anno	0.013	0.01**	0.016	0.10^	0.012	0.68	0.013	0.00**	0.015	0.02*	-0.005	0.79	0.004	0.33	0.008	0.25	-0.013	0.45
size3	-0.059	0.00**	-0.026	0.11	-0.033	0.17	.	.	.	.	.	.	.	.	.	.	.	.
size4	0.020	0.31	0.043	0.06	0.024	0.49	.	.	.	.	.	.	.	.	.	.	.	.
ind1	-24.052	0.04*	21.581	0.33	24.202	0.73	.	.	.	.	.	.	.	.	.	.	.	.
ind3	-5.089	0.73	5.685	0.83	16.164	0.85	.	.	.	.	.	.	.	.	.	.	.	.
ind5	-10.668	0.43	11.428	0.66	12.068	0.88	.	.	.	.	.	.	.	.	.	.	.	.
mktint	-0.002	0.91	0.020	0.29	0.031	0.28	.	.	.	.	.	.	.	.	.	.	.	.
hshrmkt	0.071	0.00**	0.051	0.00**	0.034	0.18	.	.	.	.	.	.	.	.	.	.	.	.
varG145	0.017	0.00**	0.022	0.00**	0.022	0.00**	.	.	.	.	.	.	.	.	.	.	.	.
varG146	0.004	0.00**	0.004	0.00**	0.004	0.01**	.	.	.	.	.	.	.	.	.	.	.	.
varG147	0.004	0.03*	0.004	0.06^	0.003	0.35	.	.	.	.	.	.	.	.	.	.	.	.
varG148	0.004	0.00**	0.003	0.00**	0.004	0.00**	.	.	.	.	.	.	.	.	.	.	.	.
varG149	0.005	0.00**	0.005	0.00**	0.005	0.00**	.	.	.	.	.	.	.	.	.	.	.	.
indrelinf	0.002	0.56	0.001	0.88	-0.001	0.88	.	.	.	.	.	.	.	.	.	.	.	.
indrelcon	0.018	0.00**	0.017	0.00**	0.015	0.05*	.	.	.	.	.	.	.	.	.	.	.	.
indrelneg	-0.002	0.61	-0.006	0.22	-0.010	0.19	.	.	.	.	.	.	.	.	.	.	.	.
varB24	0.005	0.51	0.008	0.32	0.004	0.75	.	.	.	.	.	.	.	.	.	.	.	.
varB25	-0.012	0.02	-0.006	0.30	0.002	0.84	.	.	.	.	.	.	.	.	.	.	.	.
varB26	0.008	0.29	0.003	0.75	0.000	0.99	.	.	.	.	.	.	.	.	.	.	.	.
annoind1	0.012	0.04	-0.011	0.33	-0.012	0.73	0.011	0.01**	-0.007	0.34	0.014	0.49	0.003	0.58	-0.002	0.80	0.028	0.16
annoind3	0.003	0.72	-0.003	0.84	-0.008	0.85	0.005	0.39	0.001	0.87	0.008	0.75	-0.007	0.28	-0.001	0.88	0.015	0.54
annoind5	0.005	0.44	-0.006	0.65	-0.006	0.88	0.009	0.09^	-0.004	0.60	0.011	0.64	-0.002	0.71	0.001	0.94	-0.020	0.39
anno91	0.064	0.018*	.	.	0.057	0.00**	.	.	.	.	.	.	.	.	.	.	.	.
anno92	0.081	0.00**	.	.	0.081	0.00**	.	.	.	.	.	.	.	.	.	.	.	.
anno93	0.077	0.00**	.	.	0.078	0.00**	.	.	.	.	.	.	-0.019	0.24	.	.	.	.
anno94	0.057	0.01**	.	.	0.050	0.00**	.	.	.	.	.	.	-0.006	0.70	.	.	.	.
anno95	0.026	0.24	-0.021	0.31	0.021	0.21	-0.025	0.06	.	.	.	.	-0.025	0.09^	-0.018	0.28	.	.
anno96	0.034	0.12	-0.001	0.97	0.030	0.07^	-0.003	0.81	.	.	.	.	-0.012	0.38	-0.005	0.72	.	.
anno97	0.033	0.14	0.011	0.59	0.029	0.08^	0.007	0.60	-0.016	.	.	.	0.004	0.78	0.007	0.63	.	.
anno98	0.008	0.75	-0.004	0.84	-0.010	0.61	0.000	1.00	-0.013	0.34	.	.	-0.009	0.54	-0.008	0.59	-0.014	0.21
Observation	613		402		200		613		402		200		397		311		169	
groups							77		76		75		70		69		65	
F	38.36		30.78		15.23		12.92		4.7		1.09							
Wald X ²													Wald X2 (11)		Wald X2 (9)		Wald X2 (6)	
Prb>F	0		0		0		0		0		0.37		Prob>X2 = 0.00		Prob>X2 = 0.00		Prob>X2 = 0.00	
Adj R-Squared	0.65		0.67		0.63													

Variable definition in the appendix

P values reported

*instruments are $\ln m0ln(-1)$, $\ln w(-1)$, $\ln lnw(-1)$, $\ln kn$, $\ln kn(-1)$, investment rate, investment rate (-1), $\ln salen$, $\ln salen(-1)$ share of export in sales

Table 2: decentralised bargaining

	Pooled OLS						Fixed effect OLS						Fixed effect IV*					
	1990-1999		1993-1999		1997-1999		1990-1999		1993-1999		1997-1999		1990-1999		1993-1999		1997-1999	
IMR	-0.040	0.26	-0.028	0.47	0.060	0.34	0.445	0.10 [^]	-0.167	0.68	1.837	0.20	0.580	0.00**	-0.330	0.46	-0.350	0.79
lnmoln	0.051	0.00**	0.049	0.00**	0.042	0.01**	0.050	0.00**	0.024	0.03*	0.028	0.26	0.050	0.00**	0.069	0.00**	0.072	0.00**
anno	0.014	0.01**	0.017	0.07 [^]	0.010	0.76	0.016	0.00**	0.017	0.01**	-0.002	0.91	0.008	0.09 [^]	0.010	0.12	-0.012	0.51
size3	-0.073	0.00**	-0.032	0.14	-0.008	0.83	.	.	.	.	.	.	.	.	.	.	.	.
size4	-0.013	0.55	0.019	0.45	0.025	0.53	.	.	.	.	.	.	.	.	.	.	.	.
ind1	-27.217	0.02*	21.863	0.30	9.958	0.89	.	.	.	.	.	.	.	.	.	.	.	.
ind3	6.201	0.68	12.478	0.64	-5.454	0.95	.	.	.	.	.	.	.	.	.	.	.	.
ind5	-17.462	0.21	16.852	0.52	35.673	0.70	.	.	.	.	.	.	.	.	.	.	.	.
mktint	-0.061	0.00**	-0.050	0.02*	-0.029	0.43	.	.	.	.	.	.	.	.	.	.	.	.
hshrmkt	0.098	0.00**	0.101	0.00**	0.072	0.01**	.	.	.	.	.	.	.	.	.	.	.	.
varG145	0.012	0.00**	0.015	0.00**	0.015	0.04*	.	.	.	.	.	.	.	.	.	.	.	.
varG146	-0.001	0.50	-0.001	0.56	-0.001	0.77	.	.	.	.	.	.	.	.	.	.	.	.
varG147	0.005	0.00**	0.005	0.01**	0.005	0.10 [^]
varG148	0.004	0.00**	0.004	0.00**	0.004	0.01 [^]
varG149	0.003	0.00**	0.003	0.00**	0.003	0.00**	.	.	.	.	.	.	.	.	.	.	.	.
indrelinf	0.006	0.15	0.006	0.25	0.006	0.51	.	.	.	.	.	.	.	.	.	.	.	.
indrelcon	0.039	0.00**	0.041	0.00**	0.045	0.00**	.	.	.	.	.	.	.	.	.	.	.	.
indrelneg	0.026	0.00**	0.024	0.00**	0.025	0.04*	.	.	.	.	.	.	.	.	.	.	.	.
varB24	0.003	0.72	0.012	0.21	0.000	0.98	.	.	.	.	.	.	.	.	.	.	.	.
varB25	-0.012	0.03*	-0.005	0.41	0.001	0.94	.	.	.	.	.	.	.	.	.	.	.	.
varB26	0.013	0.09 [^]	0.008	0.34	0.002	0.90	.	.	.	.	.	.	.	.	.	.	.	.
annoind1	0.014	0.02*	-0.011	0.30	-0.005	0.89	0.014	0.00**	-0.011	0.12	0.026	0.30	0.005	0.31	-0.003	0.68	0.029	0.19
annoind3	-0.003	0.69	-0.006	0.64	0.003	0.95	0.000	0.97	-0.007	0.44	0.015	0.62	-0.005	0.38	-0.006	0.52	0.019	0.47
annoind5	0.009	0.22	-0.009	0.51	-0.018	0.70	0.008	0.13	-0.015	0.09 [^]	0.014	0.66	-0.003	0.64	-0.009	0.35	-0.039	0.16
anno91	0.064	0.02*	.	.	.	.	0.061	0.00**	.	.	.	.	.	.	.	.	.	.
anno92	0.068	0.01**	.	.	.	.	0.071	0.00**	.	.	.	.	.	.	.	.	.	.
anno93	0.076	0.00**	.	.	.	.	0.077	0.00**	.	.	.	.	-0.014	0.40	.	.	.	.
anno94	0.063	0.00**	.	.	.	.	0.054	0.00**	.	.	.	.	-0.009	0.53	.	.	.	.
anno95	0.037	0.11	-0.013	0.51	.	.	0.036	0.05*	-0.014	0.30	.	.	-0.027	0.06 [^]	-0.019	0.23	.	.
anno96	0.045	0.05*	0.006	0.74	.	.	0.042	0.02*	0.004	0.73	.	.	-0.005	0.71	0.001	0.93	.	.
anno97	0.034	0.16	0.008	0.69	.	.	0.031	0.09 [^]	0.004	0.76	.	.	0.000	0.98	0.005	0.74	.	.
anno98	0.015	0.55	0.001	0.97	-0.005	0.83	0.002	0.93	-0.014	0.32	-0.017	0.24	-0.010	0.51	-0.008	0.57	-0.012	0.33
anno99	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Observations	481		311		153		481		311		153		332		261		141	
groups							57		57		57		53		53		53	
F	31.02		24.19		9.95		11.68		2.43		0.75							
Wald X ²													Wald X2 (12)		Wald X2 (10)		Wald X2 (7)	
Prb>F	0.00		0.00		0.00		0.00		0.01		0.63		Prob>X2 = 0.00		Prob>X2 = 0.00		Prob>X2 = 0.00	
Adj R-Squared	0.67		0.68		0.60													

Variable definition in the appendix

P values reported

*instruments are lnmoln(-1), lnw(-1), lnlnw(-1), lnkn, lnkn(-1), investment rate, investment rate (-1), lnalen, lnalen(-1) share of export in sales

Table 3: Decentralised bargaining AND performance assesment

	Pooled OLS						Fixed effect OLS						Fixed effect IV*						
	1990-1999		1993-1999		1997-1999		1990-1999		1993-1999		1997-1999		1990-1999		1993-1999		1997-1999		
IMR	0.017	0.73	0.065	0.12	0.130	0.03*	-0.691	0.63	4.257	0.02*	9.886	0.03*	3.770	0.00**	11.470	0.00**	16.800	0.00**	
lnmoln	0.050	0.00**	0.034	0.01**	0.015	0.37	0.065	0.00**	0.031	0.03*	0.008	0.63	0.040	0.00**	0.030	0.01**	0.030	0.16	
anno	0.006	0.39	0.006	0.58	-0.008	0.81	0.009	0.25	-0.005	0.54	-0.039	0.07^	-0.008	0.17	-0.028	0.00**	-0.065	0.00**	
size3	-0.031	0.27	-0.002	0.92	-0.004	0.91	.	.	.	.	.	.	.	.	.	.	.	.
size4	0.110	0.00**	0.136	0.00**	0.126	0.01**	.	.	.	.	.	.	.	.	.	.	.	.
ind1	-46.640	0.00**	3.958	0.87	13.028	0.86	.	.	.	.	.	.	.	.	.	.	.	.
ind3	-7.102	0.67	-6.695	0.80	-25.001	0.77	.	.	.	.	.	.	.	.	.	.	.	.
ind5	-35.109	0.06^	-11.369	0.72	-20.461	0.85	.	.	.	.	.	.	.	.	.	.	.	.
mktint	-0.252	0.00**	-0.204	0.00**	-0.191	0.00**	.	.	.	.	.	.	.	.	.	.	.	.
hshrmkt	0.203	0.00**	0.181	0.00**	0.177	0.00**	.	.	.	.	.	.	.	.	.	.	.	.
varG145	0.037	0.00**	0.039	0.00**	0.032	0.00**	.	.	.	.	.	.	.	.	.	.	.	.
varG146	-0.006	0.00**	-0.006	0.00**	-0.004	0.09	.	.	.	.	.	.	.	.	.	.	.	.
varG147	0.009	0.00**	0.008	0.00**	0.014	0.00**	.	.	.	.	.	.	.	.	.	.	.	.
varG148	0.003	0.00**	0.003	0.00**	0.003	0.03	.	.	.	.	.	.	.	.	.	.	.	.
varG149	0.002	0.01*	0.003	0.00**	0.003	0.02	.	.	.	.	.	.	.	.	.	.	.	.
indrelinf	-0.006	0.49	0.000	0.96	0.003	0.83	.	.	.	.	.	.	.	.	.	.	.	.
indrelcon	0.042	0.00**	0.038	0.00**	0.051	0.00**	.	.	.	.	.	.	.	.	.	.	.	.
indrelneg	0.002	0.82	0.015	0.11	0.024	0.08^	.	.	.	.	.	.	.	.	.	.	.	.
varB24	0.042	0.03*	0.025	0.16	0.021	0.40	.	.	.	.	.	.	.	.	.	.	.	.
varB25	-0.034	0.00**	-0.019	0.05*	-0.014	0.30	.	.	.	.	.	.	.	.	.	.	.	.
varB26	0.032	0.01**	0.022	0.05	0.020	0.23	.	.	.	.	.	.	.	.	.	.	.	.
annoind1	0.023	0.00**	-0.002	0.88	-0.006	0.86	0.023	0.00**	-0.002	0.80	-0.003	0.88	0.005	0.34	-0.011	0.12	0.000	0.99	
annoind3	0.004	0.65	0.004	0.79	0.013	0.76	0.002	0.84	0.010	0.28	0.025	0.26	0.003	0.56	0.020	0.01**	0.045	0.03*	
annoind5	0.018	0.06^	0.006	0.72	0.010	0.85	0.015	0.07^	-0.007	0.50	-0.005	0.87	-0.002	0.76	-0.017	0.03*	-0.001	0.96	
anno91	0.041	0.23	.	.	.	.	0.047	0.11	.	.	.	.	.	.	.	.	.	.
anno92	0.032	0.32	.	.	.	.	0.040	0.14	.	.	.	.	.	.	.	.	.	.
anno93	0.064	0.04*	.	.	.	.	0.073	0.01**	.	.	.	.	-0.006	0.71	.	.	.	.
anno94	0.065	0.03*	.	.	.	.	0.053	0.04*	.	.	.	.	0.000	1.00	.	.	.	.
anno95	0.040	0.18	-0.013	0.55	.	.	0.041	0.10^	-0.012	0.41	.	.	-0.035	0.01**	-0.037	0.00**	.	.	
anno96	0.047	0.11	0.004	0.83	.	.	0.043	0.08^	0.001	0.95	.	.	-0.004	0.74	-0.004	0.75	.	.	
anno97	0.054	0.07^	0.024	0.24	.	.	0.052	0.04*	0.021	0.13	.	.	0.013	0.31	0.012	0.26	.	.	
anno98	0.023	0.46	0.006	0.80	-0.007	0.73	0.010	0.72	-0.008	0.57	-0.016	0.12	-0.014	0.29	-0.015	0.18	-0.018	0.06^	
anno99
Observations	263		170		85		263		170		85		179		140		78		
groups							32.00		32.00		32.00		30.00		30.00		30.00		
F	24.56		26.88		13.25		7.86		3.25		1.30								
Wald χ^2													Wald χ^2 (12)		Wald χ^2 (10)		Wald χ^2 (7)		
Prb>F	0.00		0.00		0.00		0.00		0.00		0.27		Prb>X2 = 0.00		Prb>X2 = 0.00		Prb>X2 = 0.00		
Adj R-Squared	0.74		0.81		0.79														

Variable definition in the appendix

P values reported

*instruments are lnmoln(-1), lnw(-1), lnw(-1), lnkn, lnkn(-1), investment rate, investment rate (-1), lnalen, lnalen(-1) share of export in sales

Table 4 SUMMARY TABLE
Rent sharing (coefficient of log(MOL/N))

	Fixed Effects		Fixed effects IV	
	1990-99	1994-99	1990-99	1994-99
All sample	0.0486**	0.0437**	0.0799**	0.1098**
Decentralised contract	0.0498**	0.0242*	0.0546**	0.0689**
Decentralized contract and individual performance assessment	0.0649**	0.0305**	0.0424**	0.0347**
individual performance assessment	0.061**	0.042**	0.047**	0.073**

** < 0.01

* < 0.05

Table 5
probit

Dependent variable: decentralised bargaining

size1	-7.5277	0.00
size2	-6.6628	0.00
ind1	-1.5699	0.00
ind3	-0.5592	0.15
ind5	-2.6046	0.00
age	0.0285	0.00
varG148	0.0026	0.71
varG149	0.1479	0.00
indrelinf	-0.0768	0.01
indrelcon	0.1672	0.00
indrelneg	0.0389	0.05

observations 629
 pseudo R2 0.35

**Dependent variable: decentralised bargaining
 AND individual performance assessment**

size2	2.1024	0.00
size3	2.0576	0.00
size4	1.5365	0.00
ind1	-0.0015	0.99
ind3	2.1985	0.00
ind5	-0.6438	0.01
age	-0.0088	0.06
varG148	-0.0287	0.00
varG149	0.0183	0.00
indrelinf	0.1835	0.00
indrelcon	0.0233	0.67
indrelneg	0.2342	0.00

observations 463
 pseudo R2 0.36

VARIABLE DEFINITION

InmIn	log (operating profits/employees)
Inw	log average labour cost per employee
Insalen	log (sales/employees)
size3	size dummy: 200<employees <500
size4	size dummy: employees>500
ind1	dummy=1 if the firm operates in the metalworking sector
ind3	dummy=1 if the firm operates in the chemical sector
ind5	dummy=1 if the firm operates in the textile sector
mktint	dummy=1 if the firm operates mainly on international markets
hshrmkt	dummy=1 if the firm has a high market share
varG145	% of executives in workforce
varG146	% of professionals workforce
varG147	% of clerical workers in workforce
varG148	% of specialised manual workers in workforce
varG149	% of manual workers in workforce
indrelinf	number of subjects for which unions representatives are informed by the managers
indrelcon	number of subjects for which unions representatives are consulted by the managers
indrelneg	number of subjects which unions representatives bargain with the employer
varB24	dummy=1 if the questionnaire respondent agrees with "unions help find the best ways to improve the firm performance"
varB25	dummy=1 if the questionnaire respondent agrees with "we prefer talking directly to employees than to union representatives"
varB26	dummy=1 if the questionnaire respondent agrees with "we do not introduce changes before discussing the implications with the employees"
anno	time trend
annoind1	industry specific trend
annoind3	industry specific trend
annoind5	industry specific trend
anno91	time dummy
anno92	time dummy
anno93	time dummy
anno94	time dummy
anno95	time dummy
anno96	time dummy
anno97	time dummy
anno98	time dummy