

Collective Bargaining and Wage Determination in Italian Manufacturing *

Introduction

The aim of this paper is to present preliminary work on the role of unions and collective bargaining in the process of wage determination at firm level. There is considerable evidence to support the view that, at least in some countries, workers who are union members are paid higher wages than non-union workers.

This empirical result is usually obtained using data on wages of individual workers which makes it possible to control for the characteristics and labour quality of individual workers. In some studies the unionisation variable is not defined on the basis of union membership, but on the proportion of workers covered by collective agreement.

Coverage data are used in an attempt to control for wage spillovers between union members and the non-union workers covered by collective agreements. When collective bargaining takes place at establishment level and covers all workers, the union/non-union differential refers to the wage paid by different establishments on the basis of their being unionized or not (*i.e.* with or without collective bargaining). In British studies on unions this is often referred to as "union recognition" for wage bargaining purposes. The impossibility to control adequately for labour quality raises, in this case, a serious problem of omitted variable bias.

When coverage and not union membership is the relevant variable to be included, as in the case of Italy, the role of unions cannot be fully analysed simply on the basis of classifying establishments as union or non-union (with or without a recognized union).

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Even if recognized, the union's strength varies from place to place, and the collectively agreed wage can also vary according to the monopoly power of unions. This is what the present paper tries to investigate for Italian manufacturing industry.

Official statistics for individual workers and establishments are not available in Italy. There are, however, unofficial data which can be used to analyse the effects of unions and collective bargaining on wage differentials across firms. This is the case for the data collected at firm level by Assolombarda (the Employers' Association of Lombardy). These micro-data refer in particular to the components (make-up) of pay and to other characteristics of different firms. The composition of pay reflects the relative importance of the different levels (national and local) at which collective bargaining takes place. Assolombarda also collects data on union membership of employees. In so far as the percentage of organised workers can be considered as a proxy of union monopoly power, it may help to explain wage differentials among firms.

The paper is organized as follows: Section I describes the characteristics of the wage determination process and how it affects the composition of pay in Italian manufacturing. It then looks at how the methodology generally used to estimate the union/non-union differential can be fruitfully applied to the Italian case. Section II describes the data set and variables used. Section III presents regression estimates and in particular focuses on the relevance of union density and firm size to the level and composition of pay for both manual and non-manual workers.

I. Levels of Bargaining and the Composition of Pay

The industrial relations setting in Italy has specific characteristics. An important feature is the *scala mobile* – an automatic indexation system which links wages to a cost of living index. There is an *ad hoc* component of earnings (the so-called *contingenza*) which follows cost of living dynamics. The mechanism is such that a one per cent increase in the cost of living automatically raises the average earnings of workers in the manufacturing sector by roughly .45%. It can thus be said that the indexation system offers wage protection covering nearly half the rate of inflation.

On top of this, widespread centralised collective bargaining takes place at the sectoral level: there is one system for the metal-mechanical sector, one for the chemical sector, one for the textile sector, *etc.* All Italian workers are covered by at least one form of national collective agreement. In general, bargaining takes place every three years and the agreement sets wage levels for the different grades by which salaried workers are classified. These grades, or levels, reflect the qualifications, professional skills and responsibilities, *etc.*, attached to each job.

The classification of workers into different grades is made at firm level on the basis of guidelines agreed at the national bargaining table and incorporated into the sectoral agreement. There are about ten grades, depending on the sectoral agreement; approximately five for manual workers and six or seven for non-manual workers. There is some overlapping (*inquadramento unico*) between the highest manual grades and the lowest non-manual ones.

The wage rate effectively paid to each worker depends on two decisions taken at different levels: the first takes place at national level, where wage rates are defined; subsequently, at local level, the grade to be assigned to each group of workers is decided.

Where the local union is particularly strong and aggressive, it pushes the firms to classify workers into the high grades. In Italy a sort of "classification drift" can be observed, *i.e.* changes over time in the structure of workers by grade level that lead to an increase in the average wage.

Although workers can be classified through collective bargaining at local level, not all firms have local collective bargaining, as is the case for very small firms. Unfortunately, there are no official statistics on the proportion of firms in which collective bargaining takes place: where it exists, the two parties – the firm and the union – bargain on different issues, besides the classification of workers. They also bargain on working hours, incentive schemes, *etc.* In general, the agreement sets wage increases that take the form of wage premiums and bonuses (usually paid on an annual basis).

Finally, the firm itself can decide further wage increases. They are called *superminimi individuali* (individual wage-drift) and are awarded to individual workers on the basis of merit, effort, participation, *etc.* Sometimes they are decided between the firm and the individual worker. Each level of bargaining, either collective or individual, refers to a different component of pay, which exhibits its own dynamics over time.

Table 1 presents the average values of different pay components for the sample of firms used in the empirical investigation. The figures give an idea of the relative importance of different components and of their variability across firms. The data could have been disaggregated by occupational grade but the averages of the blue-collar and white-collar grades are sufficient to understand the link between the composition of pay and the structure of collective bargaining.

The three columns refer to different levels of bargaining: the first refers to the national level and represents the minimum average pay for a given structure (by occupational grade level) of employed workers. This figure accounts for more than 70 per cent of total average pay and its variability across firms is fairly limited. It mainly reflects the different classification procedure followed at the firm level.

Local collective bargaining (column 2) accounts for no more than 15 per cent of total pay; the rest, roughly ten per cent, is merit pay or other forms of concessions made by firms (column 3). This form of "drift" varies considerably for different occupational grade levels. It is extensive for very highly qualified workers and very limited for the less qualified. On average it is higher for white-collar workers (about 20 per cent of total pay) and lower for blue-collar workers (around three per cent). The drift varies across firms, and the same is true for pay components agreed at local level. These are the two components of pay which make up the variations across both firms and different grade levels.

From Table 1, we observe that the average wage differential between blue-collar and white-collar workers is around 32 per cent (last column). The same differential calculated only on the component of pay fixed at national level (first column) is much less than that: only ten per cent. It rises to 16 per cent when considering the wage component bargained at firm level, whilst the individual drift determined by the firm itself is much higher for white-collar (seven times that of blue-collar) workers. Internal occupational wage differentials are very much due to this form of drift (ASAP, 1990). Nationally-determined wage rates present very little variation among different categories of workers. Moreover, the level of *contingenza* is roughly similar for different occupational levels, given that the indexation system is based on a fixed cost of living point equal for everybody (*punto unico*).

This flat-rate system of indexation, combined with an inflation which for ten years (1975-85) was constantly in the two-figure range, caused an exceptional reduction of differentials by skill (Dell'Aringa-Lucifora, 1990). This levelling affected white-collar much more markedly than blue-collar workers. One reason for the high wage drift for highly qualified workers could be found in firms' attempts to contrast the levelling effect of the *scala mobile* system and to restore, at least in part, previous differentials.

Local bargaining also tends to be egalitarian – wage increases agreed at firm level do not differentiate much according to the level of qualification. However, the results of local bargaining in terms of wage levels and wage increases are quite different from firm to firm. Some firms have no collective bargaining at all, others do but infrequently and, in any case, over limited wage increases, while others bargain frequently and over large wage increases.

The same applies to the wage drift determined unilaterally by firms, which varies considerably between firms.

TABLE 1

THE COMPOSITION OF MONTHLY EARNINGS
IN MANUFACTURING INDUSTRY
(means (S. D.) in thousands of lire)

| Components of pay | Wage rate + <i>contingenza</i> | Bonuses and premiums | Bonuses and premiums (merit pay) | Total pay |
|----------------------|--------------------------------|--------------------------|----------------------------------|----------------|
| Level of bargaining | National agreements | Agreements at firm level | Concessions by the firm | |
| Blue-Collar Workers | 1,352 (107) | 269 (142) | 55 (49) | 1,675 (126) |
| White-Collar Workers | 1,491 (128) | 312 (185) | 411 (195) | 2,214 (260) |
| Total | 1,415 (168) | 294 (164) | 223 (144) | 1,931 (258) |

Source: Assolombarda (1989)

II. Data and Description of Variables

The data set used in this paper comes from a survey conducted by Assolombarda in 1989 and based on a sample of 150 firms distributed throughout the province of Milan. The firms responded to a postal questionnaire on pay levels and on other characteristics such

as unionization, absenteeism, turnover, strikes, composition of employed workers by gender and skill, collective bargaining arrangements, etc.

As some sectors were not properly represented, only 75 firms from the metal-mechanical and chemical sectors have been chosen for the empirical analysis.

Table 2 summarizes data by providing mean values of selected firm characteristics with the sample stratified in five employer-size categories.

The wage variable is reported as monthly earnings (month of October) and includes a monthly pro-quota of premiums and bonuses paid on an annual basis. The definition of earnings is close to the concept of yearly earnings, which is important given that "drift" at local level takes the form of payments usually made once a year. As far as size is concerned, it should be noted that our measurement of employer size at firm or enterprise level differs from most studies done on this subject, since size has been measured at establishment or plant level. Apparently, both the size of the establishment and that of the firm would seem to play two independent and positive roles (Brown-Medoff, 1989). Only one union variable is included in the analysis, and it indicates the percentage of the firm's workers that is unionized. The sample does not allow us to make an adequate separation between firms with local collective bargaining and those without, as only ten out of 75 do not have local collective bargaining. This is too limited a number to draw any significant conclusions. Therefore the sample turned out not to be representative enough from this point of view, which explains why a union/non-union dummy variable has not been introduced into the regression analysis.

The percentage of unionized workers is meant to reflect the monopoly power of unions. It should be clear that union density as measured in this paper does not play the same role that the "extent of unionism variable", when measured at industry level, plays in the literature on the union/non-union differential (Lewis, 1983).

Some significant links between different characteristics of firms are readily apparent from Table 2. Earnings of both blue-collar and white-collar workers increase with size, at least until the medium size range. Earnings seem to be rather similar for medium and very large firms. The percentage of blue-collar workers decreases with size (there are more services to be produced in large organizations) and

TABLE 2
EMPLOYER SIZE AND SAMPLING MEANS OF RELEVANT VARIABLES

| Definition | Employer size (number of employees) | | | | | Total |
|---|-------------------------------------|-------|---------|---------|-------|-------|
| | 0-49 | 50-99 | 100-499 | 500-999 | 1000+ | |
| Number of firms | 20 | 13 | 27 | 10 | 5 | 75 |
| Monthly earnings (thousands of lire) | | | | | | |
| Blue-collar | 1,592 | 1,639 | 1,731 | 1,720 | 1,710 | 1,675 |
| White-collar | 2,031 | 2,211 | 2,294 | 2,309 | 2,336 | 2,214 |
| All workers | 1,748 | 1,841 | 2,009 | 2,090 | 2,160 | 1,931 |
| Gender (1 if female; 0 if male) | 23 | 27 | 21 | 25 | 43 | 29 |
| Qualification (1 if blue-collar; 0 if white-collar) | 66 | 58 | 52 | 46 | 38 | 55 |
| Sector (1 if chemical; 0 if metal-mechanical) | 30 | 15 | 30 | 60 | 20 | 23 |
| Percentage unionized (.100) | | | | | | |
| Blue-collar | 41 | 54 | 60 | 61 | 49 | 53 |
| White-collar | 11 | 21 | 23 | 24 | 19 | 20 |
| All workers | 35 | 40 | 42 | 43 | 30 | 39 |

the different composition of the work force must be taken into account when analysing the effect of size on earnings. Finally, unionisation increases with firm size. As expected, large firms are more unionized, which poses a problem of separating the effect of size from that of union density on differentials across firms.

III. Some Preliminary Estimates

Estimates from different wage regressions are presented in Tables 3-6. Only the specifications which have given the best results appear in the tables. The explanatory vector includes four employer-size dummies. They correspond to the following categories: 50-99, 100-499, 500-999, 1000 and over. The less-than-50 category is omitted from estimation and thus serves as a reference group. A sectoral dummy is included for the two sectors considered: metal-

metal-mechanical and chemical. The proportion of female and blue collar-workers respectively employed in the firm are included to capture compositional (but not only compositional) effects. Finally, the percentage of unionized workers is included in order to disentangle wage effects of size and unionization.

The results confirm that each of the two factors play an independent role. They could also interact in the process of wage determination, and for this reason several interaction terms have been added and tried in the regression analysis, but in this case the empirical results were not satisfactory as they turned out to be highly sensitive to the specification adopted.

Separate regressions have been estimated for white-collar, blue-collar and all workers. The results presented in Table 3 show that the estimated wage premium for the largest size category is about 14 per cent, less than that found in similar studies for other countries (Mellow, 1983). The size-differential is probably underestimated, as small firms without collective bargaining are not well represented in the sample. As discussed below, firm size appears to be extremely important in explaining the pay component which is determined through collective bargaining at firm level, as it is likely that small firms which do not bargain with local unions are also those which pay the lowest wages.

Wage differentials do not increase uniformly with size. Their magnitude increases significantly for firms with over 100 and over 1000 employees. In between, for a vast range (100-1000) which includes all the medium-sized firms, wages seem not to be affected by size. This applies to both white- and blue-collar workers. The composition of employment (by skill and gender) affects, as expected, the level of wages. The percentage of blue-collar workers does not capture only a compositional effect. Indeed, on average, firms employing more blue-collar workers tend to pay lower wages to both categories. The blue-collar percentage probably reflects the effect of technological factors on the level of wages. Union density has a significant effect only on the blue-collar workers' wages; the estimated coefficient on the union density variable for white-collar and all workers equations is correctly signed, but not statistically significant. The estimated coefficient indicates that an increase of roughly ten per cent of union density is needed to increase the level of wages by one per cent.

TABLE 3

REGRESSION ESTIMATES OF THE IMPACT OF EMPLOYER SIZE AND UNIONIZATION RATES ON LOG EARNINGS,
(t-statistics in parentheses)

| Explanatory variables | Regressions | | |
|--------------------------|------------------|------------------|------------------|
| | All workers | Blue-collar | White-collar |
| Constant | 14.54 (315.9) | 14.31 (446.7) | 14.54 (234.2) |
| Employer Size | | | |
| 50-99 | 0.03 (1.08) | 0.02 (1.06) | 0.07 (1.98) |
| 100-499 | 0.08 (3.01) | 0.06 (3.14) | 0.09 (2.75) |
| 500-999 | 0.08 (2.24) | 0.05 (1.80) | 0.07 (1.62) |
| 1000 + | 0.14 (3.19) | 0.08 (2.36) | 0.12 (2.19) |
| Sector Dummy | 0.07 (2.56) | 0.02 (0.93) | 0.07 (2.16) |
| Female (%) * | -0.08 (1.50) | -0.10 (3.52) | 0.05 (0.54) |
| Blue Collar (%) * | -0.30 (4.90) | -0.08 (1.77) | -0.15 (2.12) |
| Union Members (%) **, ** | 0.09 (1.21) | 0.12 (2.18) | 0.14 (1.53) |
| S.E.E. | 0.08 | 0.06 | 0.10 |
| R ² | 0.58 | 0.34 | 0.28 |

* Percentages of employed workers.

** Union membership refers to all workers.

TABLE 4

REGRESSION ESTIMATES OF THE IMPACT OF EMPLOYER SIZE AND UNIONIZATION RATES ON LOG COMPONENTS OF PAY: ALL WORKERS
(measured in thousands of lire)
(t-statistics in parentheses)

| Explanatory variables | Regressions | | |
|-----------------------|---|--|---|
| | National agreements (minimum + <i>contingenza</i>) | Local bargaining (bonuses, premiums, etc.) | Concessions by firms (merit pay, etc.) |
| Constant | 1,350 (20.7) | 250.4 (3.49) | 386.9 (6.49) |
| Employer Size | | | |
| 50-99 | -20.2 (0.49) | 101.5 (2.06) | -8.8 (0.22) |
| 100-499 | -12.0 (0.33) | 153.8 (3.55) | 25.6 (0.71) |
| 500-999 | -24.4 (5.50) | 164.1 (2.85) | 29.6 (0.62) |
| 1000 + | 32.8 (5.56) | 174.8 (2.50) | 74.1 (1.28) |
| Sector Dummy | 7.0 (0.20) | 92.6 (2.26) | 42.3 (1.25) |
| Female (%) * | -0.6 (0.88) | -1.5 (1.65) | 0.7 (1.01) |
| Blue-Collar (%) * | -1.1 (1.32) | -1.8 (1.90) | -2.8 (3.47) |
| Union Members (%) ** | 1.6 (1.62) | 1.3 (1.10) | -1.5 (1.58) |
| S.E.E. | 109.9 | 130.0 | 107.8 |
| R ² | 0.07 | 0.37 | 0.44 |

* Percentages of employed workers.

** Union membership refers to all workers.

TABLE 5

REGRESSION ESTIMATES OF THE IMPACT OF EMPLOYER SIZE AND UNIONIZATION RATES ON COMPONENTS OF PAY: BLUE-COLLAR WORKERS
(in thousands of lire)
(t-statistics in parentheses)

| Explanatory variables | Regressions | | |
|--------------------------|---|--|---|
| | National agreements (minimum + <i>contingenza</i>) | Local bargaining (bonuses, premiums, etc.) | Concessions by firms (merit pay, etc.) |
| Constant | 1,310.7 (23.5) | 176.3 (2.83) | 136.3 (5.83) |
| Employer Size | | | |
| 50-99 | -24.1 (0.6) | 78.8 (1.81) | -17.1 (1.05) |
| 100-499 | 2.9 (0.15) | 120.2 (3.11) | -21.5 (1.48) |
| 500-999 | 29.8 (0.61) | 133.0 (2.62) | -24.3 (1.28) |
| 1000 + | 14.9 (0.30) | 145.5 (2.25) | -34.3 (1.41) |
| Sector Dummy | -42.2 (1.33) | -73.9 (1.99) | 1.8 (0.13) |
| Female (%) * | -0.4 (0.78) | -1.2 (2.10) | -0.3 (1.25) |
| Blue-Collar (%) * | 0.6 (0.92) | -1.1 (1.39) | 0.4 (1.33) |
| Union Members (%) **, ** | 0.7 (1.10) | 1.4 (2.04) | -0.7 (2.87) |
| S.E.E. | 103.7 | 116.0 | 43.5 |
| R ² | 0.05 | 0.33 | 0.20 |

* Percentages of employed workers.

** Union membership refers to all workers.

TABLE 6

REGRESSION ESTIMATES OF THE IMPACT OF EMPLOYER SIZE AND UNIONIZATION RATES ON COMPONENTS OF PAY: WHITE-COLLAR WORKERS
(in thousands of lire)
(t-statistics in parentheses)

| Explanatory variables | Regressions | | |
|--------------------------|---|--|---|
| | National agreements (minimum + <i>contingenza</i>) | Local bargaining (bonuses, premiums, etc.) | Concessions by firms (merit pay, etc.) |
| Constant | 1,405.9 (16.70) | 193.1 (2.03) | 443.1 (3.56) |
| Employer Size | | | |
| 50-99 | -12.5 (0.25) | 104.3 (1.87) | 68.1 (0.91) |
| 100-499 | -3.1 (0.07) | 173.6 (3.43) | 46.2 (0.70) |
| 500-999 | -17.1 (0.29) | 178.7 (2.70) | 13.3 (0.15) |
| 1000 + | 28.6 (0.39) | 177.9 (2.15) | 58.0 (0.53) |
| Sector Dummy | 5.0 (0.12) | 94.0 (2.04) | 41.8 (0.70) |
| Female (%) * | 1.2 (1.10) | -0.6 (0.47) | 0.7 (0.46) |
| Blue-Collar (%) * | 1.1 (1.25) | -1.5 (1.59) | 0.5 (1.5) |
| Union Members (%) **, ** | -0.2 (0.37) | 1.5 (1.74) | -1.9 (0.03) |
| S.E.E. | 132.0 | 149.0 | 194.8 |
| R ² | 0.03 | 0.35 | 0.03 |

* Percentages of employed workers.

** Refers to blue-collar membership.

Tables 4-5-6 summarize the results of the same regression analysis applied to each of the components of pay, *i.e.* minimum rate plus *contingenza*, premium payments collectively agreed and individual pay. The assumption implicit in estimating separate regressions is that each component is determined independently, which is probably not the case. For this reason the OLS estimates of Tables 4-5-6 might suffer from simultaneity bias.

The results show that firm size affects only the part of earnings which is collectively bargained at firm level. Firm size does not explain differences in wage rates (differences due to "classification drift") or differences in "individual" pay across firms. What matters is the effect of size on the results of local collective bargaining: the larger the firm, the larger, *coeteris paribus*, the pay premium that unions are able to extract though bargaining with the firms.

Union density has some independent role to play but again, although correctly signed, it turned out to be statistically significant only in the case of blue-collar workers. The possible sign detected on the union variable in the first column probably means that a high percentage of union members push the firm to classify blue-collar workers in the highest hierarchical grades, *i.e.* a "classification drift" occurs. Where unions are less present and organised workers are few, individual wage drift is higher. This can also be seen by the fact that the coefficient of the unionized percentage is negative, and statistically significant in the "individual wage drift" equation in the third column. Individual wage drift probably originated from a "spillover" and/or a "threat effect" on the wage obtained in the more unionized firms. As individual wage drift is only a tiny fraction of blue-collar pay, the higher individual wage drift observed in less unionized firms cannot compensate in any way for the higher premium payments obtained by collective bargaining in the more unionized firms. For this reason the latter pay, on average, higher total wages.

Although less significant, the coefficients of the unionized percentage show the same signs in the regression referring to white-collar workers.

The general fit of the equation is less good in the case of white-collar workers. In particular, we observe that the individual wage drift, which is an important component of white-collar pay, is not explained by the variables included in the equations.

Conclusions

The conclusion of this paper appears to be one of common sense: the extent of unionization at firm level has a positive effect on the pay components that are collectively bargained, while it has a negative effect on the component of pay (mainly "merit" pay) which is set by the firm. It is interesting to note that the net effect of unionization on total pay is moderately positive and statistically significant, at least for manual workers. Firm size plays a similar role. In large firms the component of pay that is locally bargained is greater than in small firms.

On the other hand, differences in individual wage drift across firms are not explained by firm size, and this is particularly true for the category of workers – mainly white-collar – that mostly benefits from this method of payment. On the whole, total pay is higher in large firms. The general conclusion is that, although union density plays an independent role from size, collective bargaining at firm level has an impact on wages that increases with size.

Finally, one should remember that the data has neither allowed us to ascertain the existence of a union/non-union differential wage nor to control adequately for labour quality and other characteristics of individual workers.

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REFERENCES

- ASAP (1990), *Rapporto sui salari*, Franco Angeli, Milano.
- ASSOLOMBARDA (1989), "Flessibilità dei salari in Lombardia", mimeo, Milano
- BLANCHFLOWER, D. (1984), "Union Relative Wage Effects: A Cross Section Analysis Using Establishment Data", *British Journal of Industrial Relations*, Vol. 22. pp. 311-332.
- BROWN, C. AND MEDOFF J. (1989), "The Employer Size - Wage Effect", *Journal of Political Economy*, Vol. 97, pp. 1027-1059.
- DELL'ARINGA, C. and LUCIFORA, C. (1990), "Trade Unions and Wages in Italian Industry", in R. Brunetta-C. Dell'Aringa, (eds.) *Labour Relations and Economic Performance*, Macmillan, London
- LEWIS, H.G. (1983), "Union Relative Wage Effects: A Survey of Macro Estimates", *Journal of Labor Economics*, Vol. 1, pp. 127,
- MELLOW, W. (1983), Employer Size, Unionism, and Wages, in "New Approaches to Labour Unions", *Research in Labour Economics*, Supplement 2, pp. 253-282.
- STEWART, M.B. (1987), "Collective Bargaining Arrangements, Closed Shops and Relative Pay", *Economic Journal*, Vol. 97, pp. 140-156.