

Bayo-Moriones, Alberto; Galdón-Sánchez, José Enrique; Martínez-de-Morentin, Sara

Working Paper

The process of wage adjustment: An analysis using establishment-level data

IZA Discussion Papers, No. 5998

Provided in Cooperation with:

IZA – Institute of Labor Economics

Suggested Citation: Bayo-Moriones, Alberto; Galdón-Sánchez, José Enrique; Martínez-de-Morentin, Sara (2011) : The process of wage adjustment: An analysis using establishment-level data, IZA Discussion Papers, No. 5998, Institute for the Study of Labor (IZA), Bonn, <https://nbn-resolving.de/urn:nbn:de:101:1-201110263363>

This Version is available at:

<https://hdl.handle.net/10419/55079>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.

IZA DP No. 5998

**The Process of Wage Adjustment:
An Analysis Using Establishment-Level Data**

Alberto Bayo-Moriones
Jose Enrique Galdon-Sanchez
Sara Martinez-de-Morentin

September 2011

The Process of Wage Adjustment: An Analysis Using Establishment-Level Data

Alberto Bayo-Moriones

Universidad Publica de Navarra

Jose Enrique Galdon-Sanchez

*Universidad Publica de Navarra
and IZA*

Sara Martinez-de-Morentin

Universidad Publica de Navarra

Discussion Paper No. 5998
September 2011

IZA

P.O. Box 7240
53072 Bonn
Germany

Phone: +49-228-3894-0
Fax: +49-228-3894-180
E-mail: iza@iza.org

Any opinions expressed here are those of the author(s) and not those of IZA. Research published in this series may include views on policy, but the institute itself takes no institutional policy positions.

The Institute for the Study of Labor (IZA) in Bonn is a local and virtual international research center and a place of communication between science, politics and business. IZA is an independent nonprofit organization supported by Deutsche Post Foundation. The center is associated with the University of Bonn and offers a stimulating research environment through its international network, workshops and conferences, data service, project support, research visits and doctoral program. IZA engages in (i) original and internationally competitive research in all fields of labor economics, (ii) development of policy concepts, and (iii) dissemination of research results and concepts to the interested public.

IZA Discussion Papers often represent preliminary work and are circulated to encourage discussion. Citation of such a paper should account for its provisional character. A revised version may be available directly from the author.

ABSTRACT

The Process of Wage Adjustment: An Analysis Using Establishment-Level Data

This article presents a study of the influences on the factors that shape wage adjustments. The cost of living, comparability with other firms' wages, the fulfilment of collective agreements at sector level, the need to recruit and retain employees, the performance of the organisation, and the climate of industrial relations are included as factors of interest. The analysis was carried out using a sample of Spanish manufacturing plants. Our results show that the structural characteristics of the establishment such as its size or foreign ownership, as well as the wage setting arrangements and trade unions, play a role in explaining the importance of the factors mentioned in shaping wage adjustments. The human resource management policies adopted by the employer seem to be less relevant, although the qualification of workers and the use of pay for performance have a significant impact on the process of wage adjustment.

JEL Classification: J30, J40

Keywords: pay settlements, collective bargaining, wage negotiation

Corresponding author:

Alberto Bayo-Moriones
Departamento de Gestión de Empresas
Universidad Publica de Navarra
Campus de Arrosadia
Pamplona, 31006
Spain
E-mail: abayom@unavarra.es

Introduction

The analysis of wage determination is a topic that has received significant attention from researchers. Hence, the study of the determinants of wage levels and wage differentials has been approached from both theoretical and empirical points of view (see Werner and Ward, 2004). However, wage determination continues to attract the interest of academics as there are still unanswered questions regarding this issue.

One topic of interest in the literature on wage determination is the analysis of pay settlements. According to the terminology of collective bargaining, a pay settlement is an adjustment in the wages paid to a group of workers that is carried out with a certain periodicity (see Forth and Millward, 2000). It has been recognised that pay settlements revolve around certain variables, which are grouped into two categories: factors internal to the establishment and factors external to it. Blanchflower and Oswald (1988) introduced this baseline classification and identified several factors taken into account by employers when they adjust the wages of their employees. Subsequent studies have drawn on this work and analysed the relevance of internal and external variables in the size of pay settlements (see Ingram et al., 1999; Forth and Millward, 2000; or Brown et al. 2004; among others)¹. These studies provide support for the fact that wage adjustments at plant level revolve around factors such as the cost of living or

the performance of the organisation. But what shapes the weight given to these factors by employers when determining pay settlements?

Labour regulation concerns have been highlighted as major influences on the factors that influence pay settlements. In particular, a strong regulatory framework is associated with a high incidence of external factors, whereas low regulation is linked to a greater freedom for the employer to link wages to the internal circumstances of the organisation. Ingram et al. (1999) analyse these issues in the British context and show that, despite the process of deregulation carried out by British governments in recent decades, external pressures continue to be very relevant in pay setting processes. Their results suggest that, besides labour market regulation, other circumstances could influence the weight given to internal and external factors in pay settlements. In this article, we want to shed light on this issue and analyse the circumstances that shape the importance given by employers to different factors when wages are adjusted. To do so, we use establishment data and examine the process of wage adjustment at workplace level. The relevance of the establishment component in the determination of wages has been widely acknowledged (see Groshen, 1991). Given the importance of the establishment features in pay determination, we want to test the significance of this component when it comes to pay settlements.

In order to carry out the analysis, we draw on the theories of pay determination and the empirical literature on employer wage differentials. This framework provides

insights into employer attitudes toward pay decisions (see Forth and Millward, 2000). On the basis of the aforementioned theories, we identify six factors that influence management decisions on pay adjustments: the cost of living, comparison with the salaries paid by other firms, the fulfilment of sector-level collective agreements, the need to recruit and retain workers, the performance of the firm, and the need to maintain a good industrial relations climate. Then, we examine the variables that determine the importance given to these factors by employers when adjusting wages. More precisely, we include three groups of explanatory variables in the analysis: structural factors and market conditions, human resource management (from now on, HRM) policies, and wage-setting arrangements and the influence of trade unions. The study is based on a data set on HRM practices and industrial relations, which comes from a survey conducted in 2006 on a representative sample of Spanish manufacturing establishments.

The paper is structured as follows. In the following section, we examine the factors that may shape wage adjustments. Then, we make hypotheses regarding the influence of a set of explanatory variables on the importance given to these factors. Section four describes the data set and the methodology used in the analysis. In section five, we present the results of the empirical analysis. Some conclusions are outlined in the final section.

The Pressures on Wage Adjustments

From a theoretical point of view, wage determination is a complex process in which many influences play a role. Hence, wages are shaped by individual and job characteristics, but they also depend on the features of the organisation. The circumstances that condition the economic context such as the regulation of the labour market and the institutional aspects of pay setting are also relevant to pay determination. As a result, wage setting is the result of combining all these factors, and it is difficult to isolate the individual contribution of each².

In practice, wages in the workplace are frequently determined through pay settlements (see Forth and Millward, 2000). An analysis of pay settlements can help us to understand better wage determination processes within the workplace, since employers commonly adjust the wages of a whole group of employees simultaneously and with a fixed periodicity (see Brown et al., 2004). As we have already mentioned, pay settlements revolve around several factors that reflect both the internal characteristics of the organisation and external circumstances (see Blanchflower and Oswald, 1988). In what follows, we offer an account of the factors considered in our study as potential influences upon wage adjustments. In order to select these factors, we draw on previous studies of pay settlement influences and theories of pay determination

(see Blanchflower and Oswald, 1988; Ingram et al., 1999; Forth and Millward, 2000; and Brown et al., 2004; among others).

Regarding the factors external to the establishment, the first influence included in the analysis is the cost of living. The cost of living is a variable that both employers and employees take as a reference when negotiating and determining wage adjustments. Although the precise role of the inflation rate on pay settlements is still not completely understood, it is widely accepted that most settlements reflect this value to some extent (see Ingram et al., 1999; and Brown et al. 2004). Both under strict and flexible regulatory conditions, and in periods of high and low inflation, the cost of living seems to exert a strong influence on pay settlements (see Ingram et al., 1999).

Comparability with the wages paid by other establishments is also a significant factor when employers adjust their wages. On the one hand, comparability may be used by the employer as a standard for how wages should be settled in line with what other organisations are doing. On the other hand, employees can take the wages paid elsewhere in the market as a base from which to make demands regarding their own remuneration.

In some organisations, working conditions and, particularly, pay policies are the result of bargaining processes between employers and workers' representatives, resulting in the application of sector-level agreements that regulate the employment relationship. Collective bargaining at the industry level establishes the framework

within which wages are determined, and it imposes restrictions on the employers' pay decisions. Hence, the fulfilment of sector collective agreements as an additional pertinent external factor in wage adjustments is also included.

As we have already mentioned, pay settlements are also dependent on the internal conditions of the plant. One such condition is the establishment's need to recruit and retain workers. The level of wages offered by the company and the wage adjustments made to existent employment contracts affect the possibility of hiring and retaining workers. It should be noted that, although the need to recruit and retain workers depends on the internal conditions of the plant, this variable is also influenced by the situation of the labour market. As a consequence, the hiring and retaining factor reflects both the internal contingencies of the plant and the external environment in which it operates.

An organisation's ability to pay is a constraint on the determination of wage outcomes by the employer. The rent sharing model states that pay determination is the result of a distribution of workplace rents between organisational agents (see Blanchflower et al., 1990). As a consequence, we take into account the influence of the performance of the organisation in pay settlements as an indicator of the employer's ability to pay.

Finally, the industrial relations climate also has a bearing on wage determination processes. The industrial relations climate refers to the quality of the relationship

between employees and employers in the workplace (see Deery et al., 1999). The existence of conflict in relationships in the establishment may impose restrictions on pay setting by employers due to the different interests pursued by each party during the bargaining process. Moreover, it is possible that a deteriorating industrial relations climate increases the threat of industrial action, and the employer may use wage increases in order to improve the working environment (see Jimenez-Martin, 2006).

Establishment Features and the Factors that Influence Pay Settlements

We have already described the factors taken into account by employers when they adjust wages. In what follows, we make hypotheses concerning the influence of a set of variables on the importance given to those factors. We group the variables into the following categories: structural characteristics and market conditions, HRM policies and human capital variables, and wage setting arrangements and the influence of trade unions.

Structural Characteristics and Market Conditions

The first category of variables included in our study represents basic features of the workplace and the market in which the company performs its activity. In particular, we take into account the size of the establishment, the issue of foreign ownership and the degree of competition in the product market.

The relationship between firm size and wages has been widely studied in the past. As a consequence, there is abundant empirical literature on this topic, revealing the existence of a positive effect of firm size on wages (see Belfield and Wei, 2004; or Lallemand et al., 2005, among others). Regarding pay settlements, we expect to find a significant incidence of size on the factors taken into account by employers when wages are adjusted. First, occupational groups become larger as the size of the establishment increases. Large occupational groups may contain workers with different characteristics, and it could be difficult to determine a general wage adjustment that precisely reflects such varied characteristics (see Forth and Millward, 2000). Moreover, large organisations may opt for a standardisation of practices in order to reduce transaction costs. If they look for homogeneity and standardisation in pay outcomes, they could use a reference variable such as the cost of living in order to determine their pay settlements. Hence, it is possible that a positive relationship may emerge between the size of the establishment and the importance given to the cost of living.

The next factor of interest for pay settlements is foreign ownership. Multinational companies operate in different countries, where they may encounter different institutional settings. Due to the challenge of operating in an international environment, multinationals develop more complex HRM systems. As a result, we expect to find differences between establishments that belong to a multinational group and domestic plants in relation to the formulation of compensation strategies.

Multinational companies operate in dispersed locations, so there may be a considerable distance between each subsidiary and the headquarters of the corporation. Because of this distance, the relationship between the effort of workers in the subsidiary establishment and the performance of the whole organisation may become difficult to discern. As a consequence, it is possible that, in comparison with domestically-owned plants, multinationals display a weaker association between wages and the performance of the organisation.

Another factor of interest in the determination of wages is the degree of competition in the product market. When product market competition is high, the employer will be more concerned about productivity levels and the need to control labour costs. We expect that those establishments facing strong competition give more importance to the need to hire a workforce that ensures high productivity levels. In other words, we predict a positive correlation between the degree of competition and the importance given to the need to recruit and retain workers in pay settlements. Moreover, when the employer has to compete with other organisations in recruiting and retaining suitable workers, it is expected that the wages offered by the competing firms are a variable of concern in pay settlements. In order to attract new employees and retain them in the organisation, the establishment should offer wage adjustments that are attractive to workers, since otherwise they could be employed by one of the

competitors. Hence, a positive correlation is expected between the degree of competition and the importance given to such comparability in wage adjustments.

According to the bargaining theories of wage determination, if an organisation generates income, wage settlements may take that income into account in the form of higher wages (see Groshen, 1991). The income generated by a firm depends, in turn, on the degree of competition in the product market. Hence, the number of competitors affects the income obtained by the establishment and, consequently, its ability to convert such income into higher wages for employees. Taking into account the predictions of the bargaining model, we hypothesise that employers who face strong competition in the product market will be more concerned about performance in making pay decisions.

Human Resource Management Policies

The HRM strategies adopted by an employer are also expected to correlate with wage outcomes. In what follows, we account for several variables that reflect the HRM policies and human capital features of the establishment, and we describe their expected influence on the importance given to our factors of interest.

First, the neo-classical model of the labour market predicts higher wages for workers with greater education and training levels, since education and training are associated with increased productivity among employees. Workers with high

productivity levels have a significant influence on the results of the organisation, and a loss of this type of worker may be particularly harmful for the employer. When employers hire highly educated workers or provide them with training, they should be more concerned about the need to retain them in order to avoid productivity losses, as well as about the remuneration offered by other employers with whom they are competing for such workers. As a consequence, we expect that both the education level and the provision of training have a positive effect on the importance given to the need to recruit and retain employees when setting pay. In addition, the two variables should be positively correlated with the importance of the wages paid by other firms.

Many firms have internal labour markets, where employees' careers develop within a single organisation. Hiring for the lower levels of the hierarchy is done at a small number of entry ports, and jobs at higher levels are filled through internal promotion. Enduring employment relations, established career paths and on-the-job training are among the most cited features of these companies (see Brickley et al., 1997). The existence of internal promotion as well as employment stability can be an incentive for applicants to enter the firm, as well as for workers to stay in the organisation. Thus, it is possible that organisations with internal labour markets need not use pay as a mechanism for hiring and retaining employees. We also expect that the existence of an internal labour market within an establishment implies that the

comparability with wages in other firms may be considered a less important variable for pay determination.

The pay policy adopted by the employer is also a potential determinant of the importance given to the factors of interest in wage adjustments. One significant aspect of pay policy is the relationship between the wage level of the establishment and the remuneration of comparable workers. Offering wages that are above those paid in other organisations is a mechanism to attract new employees and retain the ones who already work in the establishment. Hence, we expect that those employers who pay high wages will be less concerned with the need to recruit and retain workers in pay settlements. Moreover, when wages are above the market level, the comparability with the remuneration of other plants becomes a less important factor in wage adjustments.

Another relevant aspect of the wage policy of an establishment is the use of pay systems based on the performance of workers. These systems are aimed at increasing workers' extrinsic motivation by making them benefactors of the gains obtained at individual, group or company level. The use of this type of incentive reflects the employer's interest in sharing gains with employees as a means to increasing their motivation and, consequently, their effort. In other words, linking pay with performance may be part of the compensation and motivation policy adopted by the organisation. If this is the case, it is possible that the adoption of a system of pay for performance

correlates positively with the importance given to the performance of the organisation in pay settlements.

Wage-Setting Arrangements and Trade Unions

We expect that wage bargaining arrangements play a significant role in pay setting processes at establishment level. In Spain, collective bargaining is the legally recognised mechanism to set wages and, more generally, working conditions. Regarding the structure of collective bargaining, two main levels of negotiation are identified: the sector level, which includes both national and regional agreements, and the firm level (see Canal-Domiguez and Rodriguez-Gutierrez, 2004). Previous evidence has shown that the degree of centralisation of collective bargaining affects wage levels (see Card and de la Rica, 2006; or Plasman et al., 2007; among others). Our aim is to examine how this effect applies to the issue of wage adjustments.

Regarding the importance given to the cost of living, we think that this is a variable of concern to employees when negotiating wage increases. The inflation rate determines the purchasing power of wages, so employees want to obtain wage rises that at least cover the variation in the level of prices. If wages are set through collective bargaining, either at sector or firm level, workers can express this demand through their representatives, and fight for salaries that maintain their purchasing power. Consequently, we expect that the cost of living is considered more important for pay

setting decisions in establishments where any type of collective agreement exists, in comparison with establishments where pay is determined by some other mechanism.

As far as the performance of the organisation is concerned, we expect to observe a positive correlation between the importance given to this factor and the setting of working conditions at the firm level via collective agreement or another mechanism of wage determination. Under collective bargaining at the firm level, the employer can adapt wages to the particular circumstances of the organisation, whereas the presence of a sector agreement imposes more restrictions on pay setting processes (see Gerlach and Stephan, 2006). Moreover, several studies have found the existence of a wage premium associated with the presence of a firm-specific contract (see Card and de la Rica, 2006). On the other hand, when wage adjustments are set unilaterally by employers or negotiated on an individual worker-employer basis, the firm will have a greater ability to make wages flexible so that they are closely linked to the performance of the firm.

We expect to find a positive effect between the existence of any type of collective bargaining and the importance given to the climate of industrial relations when wages are adjusted. Two arguments can be used to support this hypothesis. First, it is possible that the employer wants to create a good working environment and uses bargaining with the employees in order to achieve harmonious industrial relations within the workplace. Second, collective bargaining may result in a deterioration of the employment relationship because the parties involved in negotiations pursue different

interests. As a consequence, the employer could be more concerned about the importance of the industrial relations climate in pay settlements and use wage increases as a mechanism for restoring a good working environment (see Jimenez-Martin, 2006).

Although we expect to observe differences in the pressures on wage increases depending on the mechanism of pay setting that operates in the organisation, it is also possible that the influence of the unions present in the establishment has an effect on the factors that determine pay adjustments. In other words, besides being influential in the possibility that a firm-collective agreement is reached (as Card and de la Rica (2006) point out), trade union power within the establishment can ensure that certain factors are regarded as more important than others when wages are adjusted. Union influence could be a proxy for the share of power between the employer and the employees regarding wage setting processes. Whereas the presence of a firm contract is the result of the initiative of both employer and employees, reflecting the interests of both parties and the probability that they may reach an agreement, trade union influence only represents workers' power.

First, trade unions are concerned about the living standard of workers. If their influence in the establishment is high, they will try to obtain wage rises that reflect the expected increase in the cost of living. Consequently, we expect a positive relationship between union influence and the importance given to inflation in pay settlements.

Trade unions participate in negotiations in different firms, so the information on bargaining outcomes can be transferred across union members in different negotiation units. When unions have power to influence working conditions, it is more likely that they would use the information obtained from other firms to demand wages similar to those paid in other organisations. Consequently, it is possible that the influence of trade unions in a plant correlates positively with the importance given to the comparability with other firms in wage adjustments.

In addition, trade unions are concerned about maximising the purchasing power of the workers they represent. They try to negotiate the highest possible wages without taking into consideration the ability of the organisation to pay. Moreover, linking wages to performance introduces uncertainty in compensation. Employees may be regarded as risk averse when it comes to wages. When trade unions have influence in the establishment, workers can express this concern regarding wage uncertainty. Consequently, we predict that the presence of strong unions in the establishment renders the process of trying to adjust wages to the performance of the company more difficult.

Data Description and Methodology

Drawing on the preliminary work of Blanchflower and Oswald (1988), we base our study on management perceptions of the factors that influence their wage adjustments at the establishment level. According to these authors, questionnaire

information such as that used in this study can help to test the predictions of the wage determination theories.

We use a data set gathered in 2006 through personal interviews with managers in Spanish manufacturing plants with fifty or more employees, which represents a unique source of information about a range of HRM practices in Spanish firms. Information was collected at the plant level, as this is the unit at which decisions about the implementation of the relevant practices are taken. Furthermore, knowledge of the issues included in the questionnaire is expected to be greater at plant level and, as a consequence, the data obtained should be more reliable.

The process of development of the database was as follows. Once the objectives and scope of our study were defined, and in order to properly design the questionnaire, a thorough examination of the literature related to the purpose of the project was carried out. With the information gathered, a first draft of the questionnaire was drawn up jointly by the members of the research group and the firm in charge of the fieldwork. The questionnaire was pre-tested in nine plants and then modified in several ways to come up with its final version. The data was drawn from personal interviews with one of the managers at the plant. It was thought that questions should be addressed to the general manager or to the human resource manager. In practice the human resource manager was the figure most frequently interviewed. Most of the information on HRM refers exclusively to blue-collar workers, that is, those workers involved directly in the

production process. The reason for restricting the analysis to this category of employees lies in the existence of a variety of internal labour markets with different features within the same organisation. Limiting the study to manual workers makes comparisons across establishments easier.

The range of potential respondents for the purposes of the survey comprised all Spanish manufacturing establishments which had fifty or more employees in 2005. The aim was to obtain a sample of one thousand units, in order to arrive at conclusions that could be extrapolated to the entire Spanish manufacturing industry. After stratification by sector, size and location, a random selection of workplaces was obtained from the Spanish Central Directory of Firms (Directorio Central de Empresas, DIRCE) of the Spanish National Statistics Institute (Instituto Nacional de Estadística, INE), using data from 2005.

The interviews with those managers that agreed to answer our questionnaire were performed by specially-trained professionals in computer-assisted telephone interviews (CATI). The establishments were first contacted by letter or email, the content of which indicated the goals of the survey and included a copy of the questionnaire. The final sample comprises 1,001 establishments, which matches expectations regarding the size of the data set and yields a response rate of 34.1 per cent. Since our analysis focuses on pay settlements, we only take into account those plants in which there have been generalised wage increases for production workers in

any of the three years previous to the collection of the data³. Hence, for the purposes of the study, a sub-sample of 600 observations is available.

We consider the following pressures on wage adjustments as dependent variables in the empirical analysis: the cost of living, comparability with other firms' wages, the fulfilment of collective agreements at the sector level, the need to recruit and retain employees of the establishment, the performance of the organisation, and the need to maintain a good industrial relations climate. The variables capture the importance given to each factor when wages are increased on a scale ranging from 0 (unimportant factor) to 10 (very important factor). For the purposes of our analysis, these variables are ipsatised in order to obtain homogeneous scores across the different establishments and facilitate the interpretation of the regression results.

Three groups of variables are included in the regressions as explanatory factors. The first set refers to the workplace structural factors and the conditions of the product market: the size of the plant, belonging to a multinational corporation, and the degree of competition in the market. The second category includes variables related to the HRM strategy and the characteristics of the human capital in the organisation: the provision of training, the percentage of workers with a university degree, the presence of internal promotions and the percentage of permanent workers (these two variables represent the existence of internal labour markets), the wage level paid by the employer and the use of pay for performance systems. The last group comprises the wage-setting arrangement

that operates in the establishment (i.e. plant or firm collective agreement, sector collective agreement or another mechanism of wage determination) and the influence of trade unions. The definitions, means and standard deviations of all variables are included in Table 1. Since we have a multiple equation system with the same set of predictors, we carried out multivariate regression using the mvreg command in Stata.

Results

In this section, we report the results of our empirical analysis. The findings are documented in Table 2. As far as the importance given to the cost of living is concerned, we observe that establishments with 500 or more employees give more importance to this factor when adjusting wages than smaller plants. This result seems to be in line with the idea that, as the size of the establishment increases, the employer uses the cost of living as a reference variable in order to determine wage increases.

Regarding the relationship between the human resource variables and the factor of interest, we observe that both the percentage of workers with a degree and the use of pay for performance have a negative impact on the importance given to the cost of living. A plausible explanation for the results mentioned could be the following. The cost of living is a major influence on pay settlements for establishments that are heterogeneous and that operate in very different environments. Inflation could be interpreted as the “default” variable at the time of setting pay. However, it is possible

that, under some circumstances, this variable has a weaker effect on wage adjustments. This could occur when establishments adopt pay for performance systems and hire a workforce with high qualification levels. Under these conditions, the employer gives a lower weight to the cost of living variable and focuses on other factors when deciding the size of the wage adjustment. In addition, the percentage of permanent workers exerts a positive effect on the significance of the dependent variable in pay settlements. Permanent workers are commonly seen as the insiders of the organisation, that is, the ones with a higher influence over the determination of working conditions. Given that workers want to maintain the purchasing power of their wages, insiders have the power to demand pay adjustments that are closely linked to the cost of living.

Finally, the results concerning the effect of the wage bargaining arrangements and the influence of trade unions provide only partial support for our predictions. Establishments under a plant or firm collective agreement are more concerned about the cost of living than plants covered by bargaining at the sector level, but we expected to observe a positive influence of any type of collective bargaining on the significance attributed to the cost of living. This result seems to reinforce the idea that inflation is a factor of major importance for pay setting even under decentralised wage arrangements (see Ingram et al., 1999). Moreover, it reflects the problems that Spanish employers have faced when trying to moderate wages and achieve low inflation under decentralised bargaining (see Royo, 2007).

Turning to the comparability with the wages paid in other firms, competition in the product market does not seem to influence the importance given to this factor. Whereas we observe a positive correlation between the percentage of workers with a degree and the importance given to comparability, this effect is not found for the provision of training. Hence, it seems that employers need to compete with other establishments if they want to hire and retain a highly qualified workforce. However, they do not give the same importance to the loss of workers who have received training. We do not find support for the hypothesis that the presence of an internal labour market is negatively correlated with the importance given to comparability. We claimed that trade unions have information on the wages paid by other firms, so they may use this information when negotiating their payment conditions. The empirical analysis shows that, contrary to this expectation, the influence of trade unions is negatively correlated with the importance given to the comparability factor in pay settlements.

The next dependent variable is the need to fulfil sector-level collective agreements. First, employers in establishments that have between 100 and 499 workers give less importance to this factor when they adjust their wages. In addition, those plants that belong to a multinational company seem to be more concerned about the need to fulfil the conditions set out in the sector-level collective agreement. We obtain the same negative relationship for the internal promotions variable and we interpret this result in the following terms. When an internal labour market is developed in an

organisation, certain terms of the employment relationship are determined internally. Under these circumstances, the employer may give less importance to the conditions established in the agreements reached at industry level, and rely on their own norms when setting wages and other aspects of the employment relationship. When we look at the results obtained for the institutional variables, we find that the presence of a collective agreement at the plant or firm level exerts a negative influence on the importance given to the fulfilment of the sector level agreement. Moreover, the empirical analysis shows that trade union influence results in greater concern about the factor of interest. This finding suggests that unions act as a surveillance mechanism that controls the application of agreed working conditions.

As far as the need to recruit and retain employees is concerned, we find the following relationships for the structural variables and the market conditions. Employers in establishments with 500 or more workers give less importance to this factor when they settle their wages in comparison with plants of a small size. In addition, multinational companies are less concerned about the need to hire and retain workers than domestic firms. Finally, the degree of competition is a positive determinant of the importance given by the employer to the need to recruit and retain workers, which may be due to the productivity concerns referred to above.

Regarding the HRM variables, none of them emerges as a significant determinant of the importance given to the need to recruit and retain workers. The only

exception is the percentage of workers with a degree, which correlates positively with the factor of interest. As far as the institutional variables are concerned, we do not observe any significant correlation between the mechanisms of pay determination and the importance given to recruiting and retaining workers in pay settlements. On the contrary, the influence of unions exerts a negative impact on the relevance given to the need to recruit and retain workers.

Turning to the consideration of the performance of the firm in pay settlements, we observe the following results. First, we predicted a negative influence of the multinational variable on the importance given to the performance of the organisation, and this is confirmed by the empirical analysis. For the degree of competition in the product market, we do not observe a significant effect on the dependent variable. Regarding the HRM policies, we find a positive impact of the provision of pay for performance on the importance given to our factor of interest in wage adjustments. For the rest of the HRM variables, we do not obtain any significant relationship with the consideration of firm performance in pay settlements. This factor appears to be more important in establishments that sign their own collective agreement in comparison with plants covered by agreements at the sector level. Despite the fact that they give flexibility to employers to adapt to their specific conditions, the presence of a mechanism of pay setting other than collective bargaining does not seem to affect the consideration given to the performance of the organisation. The influence of trade

unions correlates negatively with the dependent variable, and this can be explained by the fact that unions do not care about the ability of the employer to pay or they try to avoid wage uncertainty.

The last influence on wage increases considered in our study is the need to maintain a good industrial relations climate. According to the empirical analysis, establishments with more than 500 employees give a lower importance to this variable when setting pay than plants of a small size. A positive relationship emerges between the provision of pay for performance and the importance given to the industrial relations climate. The use of pay for performance systems is more likely in establishments where trust, consensus and information-sharing exists between employers and workers (see Heywood et al., 1998). Hence, the fact that performance pay is used in a workplace may be associated with interest on the part of both employers and employees in maintaining a good industrial relations climate, so that this climate is a significant variable when it comes to wage adjustments. In contrast to our expectations, the importance given to the industrial relations climate does not seem to be related to the wage-setting arrangement that operates in the establishment.

Conclusions

In this paper, we have used data from Spanish manufacturing establishments to analyse the determinants of the importance given to several factors when wages are

adjusted. Drawing on the theories of pay determination and the empirical literature on the pressures on pay settlements, we have identified six significant factors in these processes: the cost of living, comparison with the salaries of other firms, the fulfilment of sector-level collective agreements, the need to recruit and retain workers, the performance of the firm, and the need to maintain a good industrial relations climate.

We have grouped the explanatory variables into three categories that represent circumstances related to the establishment that, in our opinion, may be relevant to the analysis of wage adjustments. These categories are: structural characteristics and market conditions, HRM policies and human capital variables, and wage-setting arrangements and trade union influence.

Regarding the first set of explanatory variables, our results show that they contribute to explaining the process of wage adjustment in an industrial establishment. In particular, the size of the establishment and belonging to a multinational corporation correlate significantly with the importance given to factors such as the fulfilment of sector-level agreements and the need to recruit and retain employees. The influence of trade unions and wage-setting arrangements also play a significant role in determining the factors that shape pay settlements.

However, when we look at the impact of the HRM variables, they do not seem to be significantly related to the influences on wage adjustments. Hence, with few exceptions, the decisions concerning the adoption of HRM practices and the processes

of pay setting are unrelated to one another in the Spanish manufacturing industry. Although we cannot give an unequivocal argument for this result, we can think of several reasons that may explain the lack of any link between HRM decisions and wage setting.

First, it is possible that employers do not integrate pay decisions in the broader HRM policy of the organisation. They may decide to manage employee payments independently from other personnel practices. Whereas the provision of training and the involvement of workers in decision-making are regarded as an investment in human capital, wage adjustments may be perceived as a cost to the organisation, so the management strategy adopted in each case is different.

Second, it could be that employers want to integrate wage setting decisions in the HRM policy of the organisation, but they find institutional constraints on doing so. Hence, trade unions may want to control the process of wage adjustment, but they might not limit the use of other HRM practices by the employer. If unions participate in pay setting and impose restrictions on the process, but the employer is free to adopt other HRM decisions, the two processes are driven by different forces.

Overall, our results seem to indicate that Spanish employers have some room for manoeuvre to link their wage adjustment decisions to workplace characteristics. Hence, significant correlations emerge between the factors of influence in pay settlements and structural characteristics and market conditions. Besides the relevance of collective

bargaining as a determinant of pay settlements in Spain, and the low levels of affiliation, the influence exerted by trade unions also contributes to explaining these processes. Trade union pressure results in the lower importance of factors relating to the internal conditions of the establishment, such as the need to recruit and retain workers and the performance of the organisation. These results suggest that trade unions create difficulties in trying to link wage adjustments to the particular circumstances of the plant. In contrast, however, unions serve as a surveillance mechanism that monitors the fulfilment of sector-level collective agreements.

Obviously, our work is subject to the usual limitations related to the use of cross-sectional data, since causality relationships cannot be proved. An additional limitation of the study concerns the factors included as determinants of wage adjustments. Certainly, other variables may also have an effect on pay settlements. This is the case of the previous wage level of the establishment and the going rate within the industry. Future research on the topic should account for the effect of these factors in pay settlements, and use longitudinal instead of cross-sectional data.

Acknowledgements

The authors would like to thank Fundacion BBVA for funding the survey conducted at Spanish establishments. The first author acknowledges financial support from the Ministerio de Educación y Ciencia (project SEJ2007-66511). The second and third authors also acknowledge financial support from the Ministerio de Educación y Ciencia (project ECO2008-02641).

Notes

1.All the studies mentioned focus on the analysis of the British context. The reason for the amount of research in relation to Britain is the existence of databases, such as the WERS (Workplace Employment Relations Survey) and the CBI (Confederation of British Industry) Pay Databank survey, which provide information on the factors behind pay settlements at the establishment level.

2.After several interviews with business managers, Bewley (1999) pointed out that “the majority of employers said that (wage) increases were a compromise between the influences of profitability, wages surveys, and growth in the cost of living. No fixed formula applied, the appropriate level of raises being a matter of judgement”.

3.The questionnaire provides information on pay settlement influences for plants that have increased wages, but not for ones that have not changed or have decreased them. We think that this does not compromise the purposes of our study for two main reasons. First, wage increases and wage decreases may be driven by different forces (see Ingram et al., 1999); and second, wage decreases and zero settlements were very unlikely in the Spanish context during an expansionary period, as was the case when the survey data was collected.

References

- Belfield, C. R., and Wei, X. (2004). "Employer Size-Wage: Evidence from Matched Employer-Employee Survey Data in the UK," *Applied Economics*, 36 (3): 185-193.
- Bewley, T. F. (1999). *Why Wages Don't Fall During a Recession*, Cambridge/London: Harvard University Press.
- Blanchflower, D. G., and Oswald, A. J. (1988). "Internal and External Influences Upon Pay Settlements," *British Journal of Industrial Relations*, 26 (3): 363-370.
- Blanchflower, D. G., Oswald, A. J., and Garrett, M. D. (1990). "Insider Power in Wage Determination," *Economica* 57: 143-170.
- Brickley, J. A., Smith, C. W. Jr., and Zimmerman, J. L. (1997). *Managerial Economics and Organizational Architecture*. Boston, Massachusetts: Irwin/McGraw-Hill.
- Brown, D., Ingram, P., and Wadsworth, J. (2004), "The Price is Right? Pay Settlements and Nominal Wage Rigidity in Britain," *British Journal of Industrial Relations*, 42 (3): 507-525.
- Canal-Dominguez, J. F., and Rodriguez-Gutierrez, C. (2004). "Collective Bargaining and Within-Firm Wage Dispersion in Spain," *British Journal of Industrial Relations*, 42 (3): 481-506.

- Card, D., and de la Rica, S. (2006). "The Effect of Firm Level Contracts on the Structure of Wages: Evidence from Matched Employer-Employee Data," *Industrial and Labour Relations Review*, 59 (4): 573-592.
- Deery, S. J., Erwin, P., and Iverson, R. (1999), "Industrial Relations Climate, Attendance Behaviour and the Role of Trade Unions," *British Journal of Industrial Relations*, 37 (4): 533-558.
- Forth, J., and Millward, N. (2000). "Pay Settlements in Britain," Discussion Paper no. 173, National Institute of Economic and Social Research, London.
- Gerlach, K., and Stephan, G. (2006). "Pay Policies of Firms and Collective Wage Contracts - an Uneasy Partnership?," *Industrial Relations*, 45 (1): 47-63.
- Groshen, E. L. (1991). "Sources of Intra-Industry Wage Dispersion: How Much do Employers Matter?," *Quarterly Journal of Economics*, 106 (3): 869-884.
- Heywood, J. S., Huebler, O., and Jirjahn, U. (1998). "Variable Payment Schemes and Industrial Relations: Evidence from Germany," *Kyklos*, 51: 327-57.
- Ingram, P., Wadsworth, J., and Brown, D. (1999). "Free to Choose? Dimensions of Private-Sector Wage Determination, 1979-1994," *British Journal of Industrial Relations*, 31 (7): 33-49.
- Jimenez-Martin, S. (2006). "Strike Outcomes and Wage Settlements in Spain," *Labour*, 20 (4): 673-698.

- Lallemand, T., Plasman, R., and Rycx, F. (2005). "Why Do Large Firms Pay Higher Wages? Evidence from Matched Worker-Firm Data," *International Journal of Manpower*, 26 (7-8): 705-723.
- Plasman, R. A., Rusinek, M., and Rycx, F. (2007). "Wages and the Bargaining Regime Under Multi-Level Bargaining: Belgium, Denmark and Spain," *European Journal of Industrial Relations*, 13 (2): 161-180.
- Royo, S. (2007). "Varieties of Capitalism in Spain: Business and the Politics of Coordination," *European Journal of Industrial Relations*, 13 (1): 47-64.
- Werner, S., and Ward, S. G. (2004). "Recent Developments in Compensation Research: An Eclectic Review," *Human Resource Management Review*, 14 (2): 201-227.

Tables

Table 1: Variable Definitions and Descriptive Statistics

| Variable | Definition | Mean | Std. Dev. |
|--|---|--------|-----------|
| <i>Cost of Living</i> | Importance given to the cost of living when wages are increased. Standard variable | 0.226 | 0.148 |
| <i>Comparability</i> | Importance given to the comparison with other firms when wages are increased Standard variable | 0.105 | 0.077 |
| <i>Collective Agreement Fulfilment</i> | Importance given to the fulfilment of sector agreements when wages are increased. Standard variable | 0.244 | 0.177 |
| <i>Need to Recruit and Retain</i> | Importance given to the need to recruit and retain employees when wages are increased. Standard variable | 0.113 | 0.081 |
| <i>Performance of the Organisation</i> | Importance given to the economic or financial performance of the organisation when wages are increased. Standard variable | 0.152 | 0.092 |
| <i>Industrial Relations Climate</i> | Importance given to the need to maintain a good climate of industrial relations when wages are increased. Standard variable | 0.161 | 0.080 |
| 50 to 99 Employees | 1 if the establishment has between 50 and 99 workers; 0 otherwise | 0.484 | 0.500 |
| 100 to 499 Employees | 1 if the establishment has between 100 and 499 workers; 0 otherwise | 0.464 | 0.499 |
| 500 Employees or More | 1 if the establishment has 500 workers or more; 0 otherwise | 0.053 | 0.224 |
| Multinational | 1 if the establishment belongs to a multinational corporation; 0 otherwise | 0.213 | 0.409 |
| Competition | 1 if there are no competitors in the product market; 2 if there are few competitors in the product market; 3 if there are quite a few competitors in the product market; 4 if there are many competitors in the product market | 3.120 | 0.770 |
| Training | Percentage of workers that have received off-the-job training | 82.195 | 211.512 |
| Workers with Degree | Percentage of workers with a university degree | 33.552 | 27.730 |
| Internal Promotions | 1 if external applicants are the only source (no internal recruitment); 2 if external applicants are given preference; other things being equal; over external applicants; 3 if applications from internal and external applicants are treated equally; 4 if internal applicants are given preference; other things being equal; over external applicants; 5 if internal applicants are the only source (no internal recruitment) | 4.291 | 0.854 |
| Permanent Workers | Percentage of permanent workers | 85.986 | 16.264 |
| Wage Level | 1 if wages in the establishment are far below the average in the sector and region; 2 if wages in the establishment are slightly below the average in the sector and region; 3 if wages in the establishment are similar to the average in the sector and region; 4 if wages in the establishment are slightly above the average in the sector and region; 5 if wages in the establishment are far above the average in the sector and region | 3.655 | 0.842 |
| Pay for Performance | 1 if any compensation system that links pay to performance at the individual, group, or plant or firm level is used; 0 otherwise | 0.532 | 0.499 |
| Sector Agreement | 1 if the establishment is covered by a collective agreement at sector level; 0 otherwise | 0.487 | 0.500 |
| Plant Agreement | 1 if the establishment is covered by a collective agreement at plant or firm level; 0 otherwise | 0.497 | 0.500 |
| Other Mechanism | 1 if wages are determined by a mechanism other than collective bargaining (i. e. unilateral setting by the employer or individual bargaining with employees); 0 otherwise | 0.016 | 0.126 |
| Union Influence | 1 if trade unions have a very low influence over production workers; 2 if trade unions have a low influence over production workers; 3 if trade unions have a medium influence over production workers; 4 if trade unions have a high influence over production workers; 5 if trade unions have a very high influence over production workers | 2.910 | 1.151 |

Table 2: Determinants of the Factors Taken into Account when Wages are Increased: Multivariate Regression

| | EXTERNAL FACTORS | | | INTERNAL FACTORS | | |
|-----------------------|----------------------|---------------------|---------------------------------|---|---------------------------------|------------------------------|
| | Cost of Living | Comparability | Collective Agreement Fulfilment | Ability to Recruit and Retain Employees | Performance of the Organisation | Industrial Relations Climate |
| Constant | 0.176*** (0.057) | 0.111*** (0.030) | 0.313*** (0.065) | 0.127*** (0.030) | 0.132*** (0.034) | 0.141*** (0.031) |
| 100 to 499 Employees | 0.018 (0.013) | 0.011 (0.007) | -0.032** (0.015) | 0.007 (0.007) | 0.002 (0.008) | -0.006 (0.007) |
| 500 Employees or more | 0.078*** (0.027) | 0.003 (0.014) | 0.001 (0.031) | -0.025* (0.015) | -0.022 (0.016) | -0.035** (0.015) |
| Multinational | 0.009 (0.015) | 0.010 (0.008) | 0.033* (0.017) | -0.026*** (0.008) | -0.022** (0.009) | -0.005 (0.008) |
| Competition | -0.012 (0.008) | 0.002 (0.004) | 0.013 (0.009) | 0.007* (0.004) | -0.003 (0.005) | -0.007* (0.004) |
| Training | 0.007 (0.017) | 0.003 (0.009) | 0.001 (0.020) | 0.001 (0.009) | 0.010 (0.011) | -0.002 (0.009) |
| Workers with Degree | -0.166*** (0.059) | 0.065** (0.031) | -0.026 (0.068) | 0.071** (0.031) | 0.059* (0.035) | -0.002 (0.032) |
| Internal Promotions | 0.001 (0.007) | 0.006 (0.004) | -0.013* (0.008) | 0.002 (0.004) | 0.004 (0.004) | 0.000 (0.004) |
| Permanent Workers | 0.071* (0.037) | -0.029 (0.020) | -0.056 (0.043) | -0.014 (0.020) | 0.022 (0.022) | 0.006 (0.020) |
| Wage Level | 0.008 (0.008) | -0.501 (0.405) | 0.001 (0.009) | -0.433 (0.411) | -0.005 (0.005) | 0.007 (0.004) |
| Pay for Performance | -0.027** (0.013) | -0.005 (0.007) | -0.003 (0.014) | 0.003 (0.007) | 0.019** (0.008) | 0.012* (0.007) |
| Plant Agreement | 0.033*** (0.012) | 0.004 (0.007) | -0.068*** (0.014) | -0.002 (0.007) | 0.025*** (0.007) | 0.007 (0.007) |
| Other Mechanism | 0.091 (0.057) | -0.001 (0.030) | -0.081 (0.065) | -0.039 (0.030) | 0.021 (0.034) | 0.009 (0.030) |
| Union Influence | -0.003 (0.005) | -0.001 (0.003) | 0.014** (0.006) | -0.006** (0.003) | -0.006* (0.003) | 0.002 (0.003) |
| R ² | 0.063 | 0.026 | 0.068 | 0.068 | 0.055 | 0.024 |
| N | 600 | 600 | 600 | 600 | 600 | 600 |

*** p<0.01, ** p<0.05, * p<0.10
Note: Standard errors in parentheses