

***TRAINING IN IMPERFECTLY COMPETITIVE LABOUR MARKETS:
The Importance of the Scope of Collective Bargaining****

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Abstract

This paper focuses on analysing the factors which can determine firm training decisions, focusing on the scope of collective bargaining as a proxy of union strength at plant level. We have organized this article in three parts: first of all we review the literature taking into account the traditional theory of Becker based on a perfect competitive context, and the new approaches of Acemoglu and Pischke in an imperfectly competitive labour market. Next, in the second part we develop a descriptive analysis of the data of the Encuesta de Coyuntura Laboral (ECL), to continue with the empirical estimation. Finally we summarize the main points that confirm the importance of the type of collective agreement in training. The results suggest that when a firm has a firm agreement there is an increase in both the probability to provide training and the hours dedicated to training. This conclusion can be explained by the imperfect labour market theory of Acemoglu and Pischke.

Key words: training, unions and imperfectly competitive labour markets.

1.- INTRODUCTION

The objective of this article consists of analyzing the eventual importance of the scope of collective bargaining to understand the amount of training in firms.

A relatively recent line of research –represented by Acemoglu and Pischke (1999) – has developed models whereby it is possible to understand the amount of human capital investments when labour markets are imperfectly competitive. Specially, when labour market frictions reduce the wages of skilled workers when compared to wages of unskilled workers, firms may provide and pay for general training, which is in contradiction with the traditional statement of Becker (1964).

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The compression of the wage structure may induce firms to provide and pay for general training and, therefore, some typical labour market institutions causing wage compression may increase one of the components of human capital investment and even contribute to total human capital accumulation. Considering collective bargaining as a typical institution of imperfectly competitive labour markets and wage compression as a typical objective of unions, we should observe more training in those firms where bargaining is developed at firm level.

To test this hypothesis we will use Spanish data. The Spanish case provides a unique labour relations context to check the effect of the scope of collective agreements on the provision of training. The main reason is that there are no workers without collective bargaining coverage, because of the Spanish labour market regulation. We leave aside the known positive effect of unions on the provision of training, in order to compare strictly different scopes of the collective agreements; establishment or firm agreements (internal bargaining) versus above firm-level agreements (external bargaining). The database is the *Encuesta de Coyuntura Laboral* (ECL) or Survey of Economic Situation launched by the Spanish Ministry of Employment. The ECL is a quarterly longitudinal survey on firms so as to obtain information on stocks and worker turnover at the establishment level, and, of course, the scope of the collective bargaining and the amount of training (in hours) done by the workers of the establishment. For the purpose of this study, we use data on establishments having 500 or more workers during the period 1/1993-1/2002¹. We will see that in those firms with internal bargaining workers spend more hours on training than in the rest of firms, confirming the Acemoglu-Pischke predictions.

The remainder of the paper is as follows. In the second section, we describe the rationale of the influence of labour market institutions on training through wage compression, a typical effect of unions and collective bargaining. We discuss the importance of the scope of collective bargaining, not only in general but also focusing on the Spanish peculiarities which allow for strict comparison of the effect of collective bargaining scope. In the third section, we describe the main features of the data base and present the empirical analysis. The last section summarizes the main results of the article.

2. TRAINING AND COLLECTIVE BARGAINING

2.1. Wage Compression, Labour Market Institutions and Training

Until very recently the common belief was that wage compression reduces investments in human capital (Lindbeck et al., 1993). As unions explicitly pursue wage compression, the

¹ This is the only stratum of establishments for which detailed longitudinal information on gross flows is made available.

result is that stronger unions will decrease training. On one hand, we have research on the US labour market that confirms this prediction (see, among others authors, Mincer (1983), Duncan and Stafford (1980), and Barron et al. (1987)). In this context, Mincer (1983) predicted lower training in union firms than non-union firms. His explanation was that wage and fringe benefit increases obtained by unions reduce turnover. At the same time unions press for seniority rules to be used as criteria for promotions and wage scales. The effect of the use of seniority rules would be a lower incentive for workers to enroll in training activities. However, the unionized firm will have more incentives to invest in specific training. Therefore, the effect on the total size of training is ambiguous under the Mincer's hypothesis.

On the other hand, we have results from other labour markets where imperfect labour-market competition is a very realistic assumption and they frequently find a positive unions' influence on training. See Arulampalam and Booth (1998), Green (1993), Green et al. (1999), and Booth et al. (2003) for the UK, Kennedy et al. (1994) for Australia. Even some authors find the same type of influence for the US, as Lynch (1992), Veum (1995), Osterman (1995) Frazis et al. (1995).

Recently Acemoglu and Pischke (1998) have brought up the issue of training in imperfectly competitive labour markets, providing a theoretical reasoning for a positive influence of labour market institutions on training through increases in wage compression. According to these authors, if labour market frictions compress wages structure, firms may provide and pay for general training. The rationale for this unexpected result under the traditional human capital theory is due to labour market imperfections (in this case, the unions). The result is that trained workers do not obtain their marginal product when they change jobs, converting general skills into specific ones. The Acemoglu-Pischke model proposes that firms will have incentives to invest in general training and, in imperfectly competitive labour markets, there will be an increase in one of the investment components in human capital, and possibly increasing total human capital accumulation.

2.2. Unions and Collective Bargaining in Spain

The Spanish case provides an interesting context to check this prediction because of a peculiar institutional framework. In Spain, all workers are *de facto* covered by a collective agreement because of the *erga omnes* principle of the Spanish Labour Law. This principle ensures the *ex-ante* application to every worker of the conditions settled by the parties in the collective bargaining at each level.

In Spain, there are multiple levels of bargaining: national economy-wide bargaining (only used in the eighties); industry-level bargaining between the representative of employer associations and workers associations resulting in sectoral agreements whose geographical scope might be the whole nation but is usually the province; and finally firm-level bargaining between employer and worker representatives.

Employers and unions decide the level of bargaining, not the State. Unions and employers associations encourage industry and above firm-level agreements where their ability to impose organizational objectives is greater than at firm/plant level. In fact, most workers depend on province-industry level agreements. Some authors (as Jimeno, 1992) have observed a sort of specialization by levels. Bargaining at the industry level is mostly about wages and working hours, while firm-level bargaining (almost exclusively in large firms) is more detailed and it includes absenteeism, productivity, etc., although explicit bargaining over employment is rarely observed. Previous researches have confirmed that the role played by firm level agreements is similar to union coverage in American or British labour markets. In this way, García-Serrano and Malo (2002) find evidence about a typical voice effect in those firms with this type of collective agreements; decreasing total turnover and increasing dismissal rates; Canal and Rodríguez (2004) confirm that in firms with firm-level bargaining there is a higher wage compression as in those firms with recognised unions in the United Kingdom or in the United States.

Therefore, we expect that where firm-level bargaining exists there will be an increase in training, because it is a channel for the direct intervention of organized labour and its documented effect on the firms' wage compression. The existence of such effect on training would improve the knowledge about the impact of workers' representation institutions beyond the institutional contexts characterised by the dichotomy between unionized and non-unionized firms (because in the Spanish case there is not, by definition, non-unionized firms). In addition, we go beyond the previous research analyzing the effect of unions on general or specific training, estimating the effects on total training, and, therefore, on the total human capital accumulation.

3. EMPIRICAL ANALYSIS

3.1. Description of the Database and Main Variables

The data for this research comes from the *Encuesta de Coyuntura Laboural* (ECL) or Survey of Economic Situation. In particular, this paper uses quarterly information on the large plants (more than 500 employess) for the period 1997:1-2002:1. Only from this quarter we have information on training suitable for our analysis.

In addition, establishments who have answered the questionnaire in some but no all of the quarters of the period 1997:1-2002:1 have also been selected. These characteristics of the sample allow us to build a non-balanced panel of establishments, which represent around 15 percent of

total non-agriculture employment². The number of observations is 24,586. The average size of firms is 1,247 workers and the maximum is 19,922.

To determine the scope of the collective bargaining, the ECL questionnaire asks to the establishments which type of agreement they have. The possible answers are as follows: bargaining at a plant or firm level; and bargaining at a higher (sectorial or national) level. Table 1 shows that 33.5 per cent of the sampled plants have plant/firm-level collective agreements.

The information of the survey allows us to analyze two relevant issues related to training. The first is about the level of training hours per worker. This is an indicator of the intensity of training activities in each firm. The second one is the number of firms giving training to their workers. This measure gives us information about the involvement of firms in training activities.

For the sake of simplicity we have aggregated the distribution of hours of training per worker in the following groups: establishments without training in the quarter; establishments with less than 100 hours per worker in the quarter; establishments with more than 100 hours per 100 workers. The threshold of 100 hours has been chosen because of the distribution form.

Only 28 per cent of establishments have a positive amount of training hours (Table 1). Looking at the average size of the plant, there are not remarkable differences, although larger firms have the highest average size. To analyze the relationship between size and number of training hours we have considered three size groups: 1,000 or less employees (64.5 per cent of the sample), more than 1,000 but less or equal to 2,000 (23.7 per cent of the sample), and more than 2,000 employees (11.7 per cent of the sample). We confirm that larger firms have more training hours per worker, although the relationship is not so clear for establishments with less than 2,000 employees.

Considering the type of contract of workers, we see a clear relationship with training hours. Those establishments with more training hours (above 100 per 100 workers) have a lower proportion of workers with temporary or part-time contracts. As the survey allows us to distinguish between training for full-time and part-time workers, we disaggregate both categories. Firms have a different training pattern for full-time and part-time workers. Training hours are not only higher for full-time workers, but even there, there is an increasing trend for them, while the evolution for part-time workers is considerably lower and smoother.

Finally, we consider the scope of the collective agreement, which is a proxy of the presence of organized labour at the firm level as we explained above.

² This employment share is consistent with that coming from other sources. For instance, the Structure, Consciousness and Class Biography Survey (*Encuesta de Estructura, Conciencia y Biografía de Clase*, ECBC), carried out in 1991, shows that the employment share of private firms with 1,000 employees or more was 10 percent. The Working Conditions Survey (*Encuesta de Calidad de Vida en el Trabajo*, ECVT), carried out in 2001, indicate that some 21 percent of non-agriculture employment corresponds to firms with 500 or more workers.

The data confirms that firm's collective agreement have a positive influence on training both in length as well as intensity. Therefore we can see that, among firms that offer no training courses, the proportion of firms with collective agreements is lower than those that have agreements of another type (29.5% compared to 70.4%). Meanwhile this relationship is inverted in those firms that spend more time training their employees (over 100 hours). Here we see that the highest share is taken up by firms with collective agreements (53.8% compared to 46% of firms that have agreements of another type). (Table 1)

3.2. Econometric Analysis

The econometric model used to analyze the determinants of the hours of training is a tobit model. As firms have zero or more training hours and zeros have a meaning (no training at all in the firm in a given quarter) our dependent variable has a tobit form. As we have panel data, we estimate a random-effects tobit model. The empirical equation to be estimated is the following:

$$y_{it} = \alpha + x_{it}\beta + u_i + \varepsilon_{it}$$

The observed data are left-censored. In other words, we can not observe any value below zero training hours.

In addition, we have estimated a probit model summarizing the information of the dependent variable in only two values: 0 for those firms without training in a given quarter, and 1 for those firms with positive training hours in a given quarter. The rationale is to analyze the determinants of having training hours rather than the size of training hours. Again, using the panel structure of the database we have estimated a random-effects probit model.

In both models, the variables in the x_{it} vector are the establishment characteristics which can be obtained from the information provided in the ECL database.

Our main variable of interest is the scope of collective bargaining, because it is the proxy for the presence of organized labour at the establishment level and this is the variable related to wages' compression (as it is shown by Canal and Rodríguez, 2004). The theoretical prediction of Acemoglu-Pischke model is a positive correlation between hours of training and "internal" bargaining. We obtained such positive relationship in the descriptive analysis, but the econometric analysis is necessary in order to 'clean' this relationship from the combined effects of other variables.

First, we comment the results of the probit model (Table 2) We see that the existence of 'internal' bargaining has a positive influence on having training hours, as we expected, and the magnitude of the effect is important. These results support those results obtained by Abellan et al. (1997) that show that firm agreements are related with more training.

Considering that this variable is a proxy of organised labour presence in the firm, this finding is consistent with many econometric studies in Britain which find a positive correlation

between training incidence and measures of union presence such as union coverage for collective bargaining or union density (Booth et al., 2003; Green *et al.*, 1999). Therefore we have the same result in different institutional contexts.

Concerning the variable that measures the percentage of temporary workers compared to permanent ones, we can say that although in a previous analysis we could expect that firms would invest more in training for their permanent workers the estimate results does not confirm this idea. On the contrary the type of contract has no effect whatsoever on the probability of receiving training. In fact, the percentage of temporary workers compared to permanent ones does not have much influence on the possibility of the firm offering training to its workers. The coefficient associated to this variable is not significant. This result confirms previous results obtained by Tugores and Alba (2002) who state that the probability of receiving training by the firm is not related to the worker having an open-ended contract.

Given this remarkable result that would appear to contradict previous results (as those obtained by Arulampalam and Booth, 1998, for example and Albert et al. (2005)), what can we attribute this to?

A research that Rigby (2002) carried out among 200 Spanish firms shows that in Spain two complementary systems of training are carried out. On one hand we have the specific training that the firm considers to be a priority which is carried out through the company planning or courses offered by employers' associations. On the other hand we have the training carried out by unions. This is meant for the majority of the workers whereas the former is more selective and meant for the more highly qualified workers.

As stated above the variable that measures union presence in the firm has considerable influence on the probability of receiving training thus revealing that union based training is very important in Spain. This could explain in part the minor differences that exist for a temporary or open-ended worker to have access to training, since it is not the firm that pays for worker training. Consequently, the analysis of future training output as an element to consider when deciding on offering training loses its value.

However, the type of contract is relevant for full-time/part-time workers. The coefficient variable for part-time workers is significant and negative.

As expected there is a negative influence of worker turnover on training. The coefficient is not excessively high which could be in part attributed to the aforementioned point.

The sector showing the highest training is the energy and industrial sector followed by information technology and R + D. The rest of sectors shows negative coefficients respect to the industrial sector.

Black et al. (1999) supports the idea that larger firms offer more training because they have lower training costs due to the larger number of employees in the training programs. Peraita (2000) stated that the probability of receiving training is directly related in a positive

manner to the number of employees. This seems to be pretty coherent. However we must not forget that the ECL sample we are handling only refers to firms with over 500 workers, in other words only large firms. This limitation does not allow for an effective analysis to see whether size and training indeed go together or not. As we explained in the descriptive analysis, larger firms (with more than 2000 workers) are more likely to offer training. This does not occur in the second group (1000-2000 workers) that presents a positive although not significant coefficient.

We will now proceed to comment on the results obtained from the tobit model estimation (table 3). The results of the estimates show that in a firm that has a collective agreement, there will be a greater effect on the size of the training than on the probability of it existing. This means that there are many firms with collective agreements that do not offer training but those firms that do offer training will do so in a greater, more intense manner.

Once again, we find the lack of importance related to the type of contract (permanent or temporary), when determining the participation in the training as well as the length. The length of the training is negatively influenced by the number of part-time workers.

Now, worker turnover has no influence on the amount of training. This means that turnover is considered when deciding on offering training but not so much when deciding on the intensity it will have.

4. CONCLUSIONS [to be completed and re-written after discussions]

This paper has explored which are the most important factors that determine the probability and the intensity of training, using the *Encuesta de Coyuntura Laboural* (ECL) or Survey of Economic Situation. In particular, this paper uses quarterly information on large firms for the period 1997:1-2002:1.

We can take out some interesting results from the empirical estimation. First, empirical analysis show that organised labour is associated with more training, and perhaps this was the most important variable to determine training in Spain, especially considering that the probability to receive training for permanent workers seems to be the same as for fixed-term workers. This result is according to the predictions of the Acemoglu-Pischke model.

Second, our results suggest that the supply of training in our country is very different from the UK. For example, especially when we consider the relationship between the type of labour contract and training. In Spain we find that the type of labour contract is unlikely to affect upon receiving training at his work, while in Britain many studies have proved the opposite. However, if we consider training dealings with part and full-time workers, the differences we discuss above are less important. In both countries we can say that the training probability for part-time workers is significantly lower than the training probability of full-time workers. Finally, we note that turnover negatively affects to training.

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Table 1. Hours of training per worker in a quarter and characteristics of the firms

	Zero hours	<100	≥100	TOTAL
Size of the firm (Average)	1,254	1,145	1,344	1,247
% Workers Full-time	88,37%	93,37%	96,73%	90,03%
% Temporary Workers	31,96%	26,87%	16,92%	29,32%
Main activity of the firm:				
-Industry and energy	20.35%	25,84%	41.93%	23.76%
-Building	2.1%	2.13%	2,40%	2.20%
-Trade and hotel business	14.9%	7.58%	4.49%	12.55%
-Transport and teleco.	8.4%	4.99%	13.09%	8.42%
-Financial institution.	9.8%	10.09%	10.72%	9.97%
-Informatics and I+D	1.7%	0.55%	2.26%	1.57%
-Social services	42.51%	41,61%	20,75%	41.5%
Collective Agreement:				
-Firm level.	29,56%	36,61%	53,81%	33,53%
-Above level.	70,44%	63,39%	46,19%	66,47%
Observations and percentages	17,733 (72,1%)	3982 (16.1%)	2871 (11.6%)	24,586 (100%)

Table 2. Random-effects probit model on the probability of having training in the firm.

Independent variables	Coefficients	Std. Err.
Constant	-1,145	0,094
Time trend	0,015	0,002
Ptctp	-0,020	0,016
Sector2	-0,270	0,145
Sector3	-1,148	0,096
Sector4	-0,323	0,078
Sector5	0,107	0,070
Sector6	-0,271	0,191
Sector7	-0,418	0,068
Bargain	0,737	0,044
Ptefij	0,000	0,000
Turnover	-0,008	0,002
Cornisa cantabrica	0,415	0,113
Madrid	-0,348	0,093
Levante	-0,203	0,090
Andextr	-0,082	0,094
Ebro	-0,235	0,096
Islas	-0,083	0,109
Firmsize1	0,035	0,043
Firmsize2	0,167	0,068

Source: ECL, 1997:1-2001:1

Table 3. Random-effects tobit model on the number of training hours in the firm.

Independent variables	Coefficients	Std. Err.
Constant	-0,544	0,258
Time trend	0,038	0,006
Ptctp	-0,068	0,049
Sector2	-1,771	0,336
Sector3	-3,653	0,221
Sector4	-0,169	0,202
Sector5	-2,470	0,202
Sector6	-1,420	0,369
Sector7	-2,415	0,180
Bargain	1,453	0,117
Ptefij	0,001	0,000
Turnover	-0,002	0,007
Cornisa cantabrica	-0,897	0,197
Madrid	-4,434	0,203
Levante	-3,815	0,220
Andextr	-3,872	0,226
Ebro	-3,846	0,228
Islas	-7,605	0,264
Firmsize1	-0,413	0,117
Firmsize2	-0,148	0,152