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BARRIERS TO NON-FORMAL PROFESSIONAL TRAINING IN SPAIN IN PERIODS OF ECONOMIC GROWTH AND CRISIS. AN ANALYSIS WITH SPECIAL ATTENTION TO THE EFFECT OF THE PREVIOUS HUMAN CAPITAL OF WORKERS

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ABSTRACT: We analyze the determining factors of access to non-formal professional training in Spain and their evolution in recent years. Specifically, a comparison is made between a moment during a period of economic growth (2007) and the current crisis period (2012). The data used is from the Economically Active Population Survey. The sample is divided according to gender and interaction variables are included to analyze the differential effects of human capital on the probability of receiving training in the two periods considered. The hypothesis is that there are significant barriers that make access to non-formal professional training difficult (we focus on previous human capital available) and that these barriers have not ceased to operate during the economic crisis.

JEL Codes: H52, I21

Keywords: Lifelong learning, professional training, access to training, barriers to training, human capital

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1. Introduction

One of the fundamental elements of economic development is the lifelong learning of the active population, and it is important for individuals as well as for companies and the society in general. It is also an activity to which large quantities of financial resources are dedicated. In individual development, training allows individuals to increase their probabilities both of finding work and of obtaining higher salaries throughout their lives (see international evidence in Ashenfelter and Lalonde, 1996; Haelermans and Borghans, 2012, and for Spain, in Caparrós *et al.*, 2010), as well as receiving other non-monetary benefits (McMahon, 1997; Vila, 2000; Escardíbul, 2002). When this affects lower-qualified (and lower-salaried) individuals it allows income distribution to be improved (although there is an on-going debate about the role of education in income distribution, see Hendel *et al.*, 2005). In companies, training favors the retention of employees and the firms benefit from the increases in productivity that education potentially produces.[1] Finally, for the society as a whole, training allows productivity to be increased and the quality of products to be improved so that their share of the international market and the income generated by economies are increased (Lucas, 1988, 1993).

Within the framework of the European Union, lifelong learning has been a part of the political agenda in Spain since the European Council in Lisbon in 2000. Initially an Action Programme was set up for education and training with the objective that 12.5% of the population between 25 and 65 years old would participate in lifelong learning by 2010. This objective was not achieved, neither for Europe as a whole (9.1%) nor for Spain (10.8%). The revised European strategy (the *Education and Training 2020* initiative) has led to the establishment of new objectives for 2020. A benchmark for lifelong learning, defined as 15% of the population of working age participating in education throughout their lives, has been fixed.

Finally, it is important to mention that lifelong learning is essential in Spain considering the educational "pyramid" of the active population. While 42.4% of the active population between 25 and 64 years old has a low level of education (up to school-leaving age), and 23.1% an upper-secondary level (post-compulsory secondary), it is

foreseen that in 2020 the labor market will only require 15% of the workforce to have a low level of education and 50% to have the upper-secondary level. For this reason lifelong learning should contribute towards increasing the educational level of the active population, especially those at the lowest level (Ministerio de Educación, 2011).

This communication examines the barriers to lifelong learning for the active population in Spain, comparing the period before the current economic crisis with the present crisis period. We analyze the probability that occupied individuals (between 25 and 64) received training during the years 2007, before the crisis, and 2012, during the crisis. The study has two objectives. The first is to know the determinants of lifelong learning and, consequently, to establish the existing barriers to training. Special attention is given to the role played by the previous levels of education of individuals and their interaction with other factors. The second objective is to find out whether the barriers to training have changed at the same time as the economic situation in Spain has changed drastically from continuous economic development to a long deep recession.

The most important aspects of the study are as follows. Firstly, very recent periods in time are considered. Secondly, two very clearly differentiated economic situations are analyzed, one of economic growth and the other of crisis. Thirdly, the database used (microdata from the Economically Active Population Survey) allows the selection of a large number of individuals and a relevant set of explanatory variables for lifelong learning. This is something new with regard to the majority of studies of the subject that have used either the European Community Household Panel (ECHP) or, more recently, the European Union Statistics on Income and Living Conditions (EU-SILC). Fourthly, explanatory variables related to previous human capital interact with a dummy which identifies the year of the data, in order to find out whether the effects of this capital on training vary significantly in the two years considered. Fifthly, men and women are considered separately given their different behavior in the labor market. Finally, the situation in Spain may be similar to that of other European economies in crisis, especially in the south of Europe, so the evidence presented in this study may facilitate the analysis of similar economic situations.

The communication has the following structure. Section 2 contains a review of the empirical literature regarding the determinants of and barriers to training. Section 3 explains the methodology of the analysis and describes the sample and the variables used. Section 4 explains and discusses the main results of the analysis, while section 5 contains the conclusions.

2. Review of the literature

In this section we present several studies related to existing barriers to the lifelong learning of individuals. The analysis is concerned with the determination of the factors that increase or decrease the probability of receiving training (simple correlations between variables are not considered). Most of the literature reviewed refers to training within the firm, whether financed by the company or not. Personal variables are taken into account (section 2.1) as well as those related to the job (2.2) and the characteristics of the firms (2.3). Among the personal variables we emphasize those studies related to the effect of the level of human capital (education) of the individuals on their probability of receiving training. Once the international evidence is presented studies carried out in Spain are reviewed in a specific section (2.4). The review presents a range of relevant analyses in this area of study but it cannot be exhaustive given the great quantity of research done on it.

2.1. Personal variables

Regarding personal variables the empirical studies usually analyze the effect of age, gender and level of education on the probability of receiving training. With reference to age, theory predicts that young workers will have a greater incentive to take training as they, as well as the firms if they are financing it, will have more time to recover their investment (Becker, 1962; Ben-Porath, 1967). As might be expected, the majority of the empirical evidence shows that the age of employees has a negative effect on the probability of receiving training, even if this is not in a linear form (see a review of the most relevant literature for developed countries in Fritsche, 2012). As Fritsche (2012) shows, in the case of Germany, the probability of receiving training increases with age

up to a certain level after which it decreases (the effect appears as an inverted U-shape in a graph). Even so, in some studies for some European countries, age only has a statistically significant effect for men (Arulampalam *et al.*, 2004; Booth, 1991; Albert *et al*., 2010). In addition, Drewes (2008) indicates that in Canada participation in training programmes falls sharply with age except when the training is related directly to the job, in which case the effect of age is more even. Finally, it is worthwhile considering the study by Watanabe (2010) in the United States that analyses the training investment decisions of young people in a period of recession. The author points out that this investment is not short-term and, consequently, the human capital of young workers continues to accumulate even in periods of recession.

With regard to gender, apart from the different effect of age in relation to gender presented previously, the literature reviewed does not show conclusive results. Even so, there is a predominance of studies in which being a woman reduces the probability of receiving training, especially when this is financed by the firm (see a review in Biagetti and Scicchitano, 2009; Fritsche, 2012). In this area it is noticeable that the existence of family obligations reduces the probability of women receiving training but not that of men (Fritsche, 2012). Similarly, using data for 25 European countries from the European Union Statistics on Income and Living Conditions (EU-SILC), Biagetti and Scicchitano (2009) point out that unmarried employees have a greater probability of receiving formal lifelong training, especially in the case of women.

There is hardly any discussion about the effect of the variable for the previous education of individuals on their probability of receiving training. Practically all of the studies reviewed in Fritsche (2012), and Fritsche's own study in Germany, as well as the analysis of Jones *et al.* (2008) in the United Kingdom, or Drewes (2008) in Canada, show that previous education increases the probability of receiving training. In some analyses, where a distinction is made between different levels, the results show that those with a lower level of education have less probability of receiving training while for those with a higher level of education this probability increases.

This effect of previous education is understandable given that people with a higher level of education usually occupy jobs and carry out their activities in sectors where higher

qualification levels are necessary. In addition, firms believe they will be able to obtain productivity from training if it is provided to those with higher levels of education as they have already shown their aptitude for education and willingness to be trained (Mincer, 1994). However Leuven and Oosterbeek (1999), in their analysis of Canada, the Netherlands, Switzerland and the United States, and Maximiano and Oosterbeek (2007) in the Netherlands, find there are no differences in the willingness of firms to train individuals with higher or lower levels of education. From this it can be assumed that the smaller amount of training of the less educated is due to personal characteristics, not business decisions, something also found by Asplund (2005). In their study in the Netherlands for 1994-2006, Fouarge *et al.* (2013) find that it is not differences in the productivity of training between the more or less qualified employees that causes the lower level of investment in training for the latter, productivity is similar in their study[2], but less willingness among them to train themselves due to personal reasons and their giving less priority to the future. A "virtuous circle" is therefore formed in investment in training in which workers with higher levels of education receive more training, in such a way that the gap between employees with different levels of education widens (Lynch and Black, 1998).

2.2. Occupational Factors

For variables related to the job, the majority of studies take into account the type of contract and working hours, as well as the experience of individuals in the firm and the type of occupation. For the first of these elements, Albert *et al.* (2010) show, in various European countries, that having a temporary contract reduces the probability of receiving training. With regard to the length of the working day, Albert *et al.* (2010) in Germany, Jones *et al.* (2008) in the United Kingdom, Leuven and Oosterbeek (1999) for various developed countries, as well as Maximiano and Oosterbeek (2007) in the Netherlands, indicate the positive effect of working full-time on the probability of receiving training. Similarly, for the United Kingdom, Booth *et al.* (2002) indicate that working part-time reduces the probability of receiving training and rather more so in the case of women. As Biagetti and Scicchitano (2009) point out in their review of European studies, the effects of the type of contract and working hours shown are especially true in the case of training provided by the firm, even if there are exceptions

(see Arulampalam *et al.*, 2004). In their study of 21 countries of the European Union, Biagetti and Scicchitano (2009) show that workers with a temporary or part-time contract have a greater probability of participating in training programmes.

The empirical evidence shows diverse results for experience in the same firm. Albert *et al.* (2010) show that in different European countries experience has a negative effect, especially from four to seven years onwards. However, other studies raise the number significantly, to as much as twenty years - see Renaud *et al.* (2004) in Canada and Thangavelu *et al.* (2011) in Singapore. These results and the lack of effect found in other studies (Fristche, 2012) do not allow precise conclusions to be drawn about the effect of experience in the same firm on the probability of receiving training, although they do show a clear negative effect for those individuals with a greater number of years in the company.

Finally, as can be expected regarding occupation, the evidence from various countries shows that workers in highly-qualified jobs, or at a higher hierarchical level, have a greater probability of receiving training (see strong evidence from studies in developed countries in Biagetti and Scicchitano, 2009; Williams *et al.*, 2009; Albert *et al.*, 2010; Fitsche, 2012).

2.3. Characteristics of the firm

The variables that are commonly evaluated in this area are the size of the firm and the sector in which it carries out its activities. According to Biagetti and Scicchitano (2009) and Albert *et al.* (2010), in the majority of the European countries analyzed working in medium-sized or large organizations, and especially the latter, has a positive effect. This result is confirmed by studies by Drewes (2008) in Canada, Jones *et al.* (2008) in the United Kingdom, Maximiano and Oosterbeek (2007) in the Netherlands, Watanabe (2010) in the United States, and Fritsche (2012) in Germany. This is understandable if we take into account the fixed costs to the firm of obtaining information and organizing the training to be provided, and that training can reduce the cost of supervision, which is greater in large firms (Stegmaier, 2012). Other causes associated with the lower

provision of training by small firms are concerned with the lower level of education of the employees, the use of temporary workers or a lower level of technological change (Castany, 2010).

Regarding the productive sector, the studies reviewed show the following results. In the United Kingdom, Albert *et al*. (2010) indicate that working in the industrial sector favors training, while in almost all the European countries analyzed working in the financial sector has a positive effect. On the contrary, the effect is negative if the firm is in the construction sector. Finally, related to the business organization, Stegmaier (2012) shows that the presence of works councils favors the provision of training by firms in Germany.

2.4. Spain

There is also empirical evidence in Spain about the personal and occupational factors and characteristics of firms that affect the provision of lifelong learning.

With regard to the first, several authors analyze the role of the previous human capital of individuals in their probability of receiving training. With data from the European Community Household Panel for 1994, Peraita (2005) shows that the distribution of training financed by the firm among the workforce is unequal and is concentrated on the more qualified workers. Therefore, the probability of an employee with a low level of education receiving training is reduced drastically. This author also suggests that the compression of the Spanish wage structure does not encourage the provision of training by the firms. The positive effect of the previous levels of education of employees is also shown in the study by Caparrós *et al.* (2009), with data extracted from the Spanish section of the ECHP (1995-2000). In their study they consider training financed by the firm and by the employee separately. In both cases the level of education of the individuals has a positive effect, but in the first type the highest level of training, in terms of the probability of receiving training and the number of hours received, is among those with a university education, whereas in the second case the maximum is among those with upper vocational education. Similarly, the greatest positive effect of education, both on the probability of receiving training and on the number of hours, is

that on women. The positive effect of the previous level of education on the training of workers provided by the firm is also shown in Alba-Ramírez and Tugores (2000), with data from the first wave of the ECHP, and in Albert *et al.* (2010), in the last case independently of whether the training is financed by the firm or not.

Regarding other personal variables, gender does not affect the probability of receiving training (Peraita, 2005; Albert *et al*., 2010), while age does, in that the probability of receiving training is greater for younger employees (Peraita, 2000; Biagetti and Scicchitano, 2009).

For occupational factors Caparrós *et al.* (2004, 2009) as well as Albert *et al*. (2010) show, using data from different waves of the ECHP, that those with temporary contracts have less probability of being trained, whether this is financed by the firm or not. This result was already found by Dolado *et al.* (1999) in the first wave of the ECHP, as well as by Albert *et al*. (2005) with data from the Survey on the Quality of Life at Work (of the Ministry of Labor). Nevertheless, Alba-Ramírez and Tugores (2000) obtained mixed results for the effect of having a permanent contract on the probability of receiving training, in relation to the time period considered, using data from the Economically Active Population Survey (EPA in its acronym in Spanish). Finally, Caparrós *et al.* (2009) show that having a part-time contract only penalizes women, with regard to the probability of receiving training and the number of days, when training is financed by the firm. Albert *et al.* (2010) indicate that having a full-time job increases the probability of receiving training for all employees.

In their study of the effect of the type of work on training, Caparrós *et al.* (2009) point out that those who work in occupations that require higher qualifications, such as managers and professionals, technicians and administrative workers, receive more training financed by firms and the effect is similar for men and women. A similar result is shown by Biagetti and Scicchitano (2009) using data from the European Union Statistics on Income and Living Conditions (EU-SILC). Similarly Peraita (2000) shows the negative effect of having an unskilled occupation, in relation to the rest of the occupations, on the probability of being trained by the firm. Moreover, Albert *et al.* (2010) point out the negative effect of having a manual occupation, skilled or not.

Finally, the negative effect of working experience when it is more than 20 years can be observed on the probability of individuals receiving training. Nevertheless, seniority in the firm increases this probability if the training is provided by the firm (Albert *et al.*, 2010).

For variables related to the firm, Caparrós *et al.* (2004), Peraita (2000, 2005) and Castany (2010) show that there is a smaller probability that employees in firms of a smaller size receive training. Caparrós *et al.* (2009) show there is less probability of receiving training, and less quantity of training, financed by firms, in organizations with less than 100 workers, and especially in those with less than 20, for both men and women. In addition, Albert *et al.* (2010) point out that the probability of receiving training increases when the firm has more than 20 employees (50 if the training is paid for by the firm). With regard to the business sector, employees in services connected with the public sector, as well as the financial sector, find their probability of receiving training increased, while it is small for workers in the construction sector (Caparrós *et al.*, 2009; Albert *et al.*, 2010).

3. Data and econometric strategy

This section firstly describes the database and then presents the econometric model used to develop the empirical analysis.

3.1. Data

The Economically Active Population Survey (EPA), is carried out quarterly from a representative sample, which in the second quarter of 2012 consisted of 171,390 individuals of whom 80,154 formed part of the active population and 61,097 were occupied. The dependent variable selected in this study, the non-formal training received by employees, was derived from a question in the EPA questionnaire put as follows: "Have you done any form of study or training apart from that in official study plans during the last four weeks? (This means: courses provided by academies, training at work, courses for the unemployed, seminars, conferences, and private lessons

received).” The EPA presents considerably more detailed information than the European Union Statistics on Income and Living Conditions (EU-SILC) with regard to the most important explanatory variable in our analysis, the highest level of education reached. It is of particular advantage to have complete information available on levels corresponding to formal vocational training. It also has detailed information on participation in training activities, both formal and non-formal. However, this information is not as extensive with regard to the characteristics of occupational and lifelong training and its financing as that gathered by the European Community Household Panel (ECHP), which has not been replicated in the EU-SILC. Logically, the fact that the last wave of the ECHP is for 2001 means it has lost its usefulness for the purposes of our study.

According to data from the EPA, the percentage of occupied women who participated in non-formal training activities during the second quarter of 2012, selected in our analysis, was 11.83%. For men the percentage was 8.97%. A description of all the explanatory variables, in 2007 and 2012, for men and women, can be seen in table A1 in the appendix.

3.2. Econometric strategy

As has been indicated previously, the probability that a worker participates in a non-formal training activity is analyzed. As is shown in equation (1), in the proposed model (P_i^*) is a continuous latent variable that represents those employees who have done some type of non-formal studies or training during the previous four weeks. Therefore P_i^*=1 in the affirmative case (the individual *i* has received training) and “0” in the opposite case. H_i represents a set of variables related to the previous level of education of the individuals, x_i is a vector of other explanatory variables, β and δ are vectors of unknown parameters and ε_i represents the term for independently distributed random error.

$$P_i = \begin{cases} 1 & \text{if } P_i^* > 0, \text{ with } P_i^* = \widehat{H}_i'\beta + x_i'\delta + \varepsilon_i \\ 0 & \text{otherwise} \end{cases} \quad (1)$$

Specifically, the education variable H_i refers to the following levels of education: compulsory secondary education (called *ESO* in Spain) or lower levels, post-compulsory secondary vocational studies (*CFGM*), post-compulsory secondary academic studies (Baccalaureate), higher vocational studies (*CFGS*) and university education. Other personal variables refer to age (in ranges), marital status (unmarried, married, widow/er or separated) and nationality (Spanish, citizens of other European Union states and citizens of states outside the European Union).

The work variables taken into account are working experience (in year ranges), seniority in the firm (also in year ranges), type of employment contract (permanent or not), duration of the working day (full-time or not), and socio-professional category (professional, routine non-manual worker, small proprietors, skilled manual worker, unskilled manual worker, agricultural proprietor, agricultural worker). Finally different sectors of activity are considered, as well as the regions (or Autonomous Communities) of Spain (see table A1 in the appendix) in which the individuals carry out their work activities.

Men and women are considered separately in the regression analysis because the explanatory variables of non-formal training may act differently according to gender. Similarly, in order not to only evaluate the effect of previous human capital on the relative probability of receiving non-formal training, but also how this effect has changed in the two periods under consideration (before and during the current economic crisis), the analysis is done for all of the sample, both 2007 and 2012, but also including, as well as the dummy variable that represents the 2012 wave, terms for interaction between the level of education and the dummy variable referring to the year (as recommended by Dowd, 2004).

4. Results

As we have mentioned, the model was estimated differentiating male (the results of the estimation appear in Table 1) and female workers (Table 2). The different patterns of

behavior on the labor market and in training processes are reflected in some variables; the first important difference stems from how the crisis affects the probability of receiving training for men and women. It can be seen that the variable "wave2012", that points to the observations for 2012, is significant in both groups, but with opposite signs: for men the probability of receiving training is slightly greater in 2012 in relation to 2007, but for women it is smaller. Below we present and discuss the results for the rest of the explanatory variables of the model, structured in three groups, educational, personal, and occupational variables.

Educational Variables

The effect of education levels previously completed is very similar in the cases of men and women: male and female workers who have low educational qualifications have less probability of having access to training than those who have reached higher levels. At equal levels (post-compulsory secondary education and higher education) academic studies (baccalaureate and university studies respectively) result in a greater probability of receiving training than vocational studies (CFGM and CFGS, also respectively). The positive effect of university education on training is very strong, especially for women.

The introduction into the model of an interaction between educational variables and the variable for the wave to which the observation belongs allows the identification of the effect of the economic crisis on the level of education acting as a barrier to non-formal training. It can be seen how this effect decreases in the case of the sample of men: all the coefficients of the interaction are significant and negative. On the other hand, in the case of women the effect of the interaction is not significant except for the level of upper-secondary vocational education. Therefore, the barriers placed by previous education to access to non-formal training are maintained almost intact for women but are reduced significantly for men during the years of economic crisis. This is one of the factors that explain the different effects of the crisis, for men and for women, on the probability of having access to non-formal training.

Personal variables

The effect of age on the probability of having access to training is slightly different by gender. For women we can see the inverted "U" shape described by Fritsche (2012), the upper plateau of the inverted "U" corresponding to the 35 to 54 year age range. For men a neutral effect for age appears until the range that begins at 45 years, at which a reduction in their probability of receiving training can be seen that becomes stronger in the 55-64 year range.

Being a foreign citizen, from the European Union or elsewhere, has a negative effect on the probability of having access to non-formal training. Even so, in the case of men the greater negative effect is on citizens from states outside the European Union, while for women the negative effect is greater for those from states in the European Union. This different effect could be due to there being a different occupational pattern among foreign citizens in relation to gender.

The variable for marital status shows a remarkable fact in the case of women: being single is beneficial for access to training. Given that the reference category is "married" we could alternatively say that being married is especially prejudicial for women in relation to their training. This phenomenon does not appear for men. Being divorced benefits participation in training in relation to being married, for men as well as for women.

Occupational variables

As regards years of work experience, an inverted "U" shape can be seen for men as well as for women in which the upper plateau is confined to the period between one and ten years. The probability of having access to training is significantly less for workers with less than one year and more than ten years of experience in any area of work.

The sector of activity is also an important explanatory factor in having access to training. For both men and women training is concentrated in the industrial sectors

(Industry II and III in the classification used) and in the service sector (transport, the financial sector, real estate, public administration, education and health). The effect of the sector "public administration, education and health" is especially important for women, due as much to the high coefficient estimated for this sector as to the high level of female participation in it (34.84% of female employment in 2012, double the percentage of 17.35% for male employment – see table A1 in the Appendix).

We find a differentiated effect for the type of contract (permanent or non-permanent) for men and for women. For the first the effect of permanent employment on non-formal training is positive, while for the second permanent employment reduces the probability of training. Permanent employment is one of the defining attributes of the insiders in the Spanish labor market (see Bentolila et al., 2011). For men it seems that this situation of greater protection and more consolidated rights opens the doors to training, while for women exactly the opposite happens, perhaps mainly due to personal and family choices. We also find a differentiated effect for the type of working day: while full-time work increases the probability of training for women it seems to reduce it for men. Nevertheless this result should be viewed with some caution due to the small proportion of men that work part-time (4.84% in 2012)

No differentiated patterns appear for men and women with regard to the socio-professional category of the worker. The categories of "professionals" and "routine-non manual employees" are situated above all the others in having a positive effect on the probability of having access to non-formal training. There is an especially notable negative effect of being a manual worker, skilled or unskilled, on access to training.

Seniority in the firm does not appear, in our estimation, to be a significant variable in explaining the probability of training for workers. Only for men does there appear a very moderate positive effect for seniority in the firm of more than twenty years, which reinforces the idea that, at least for men, training is connected with being an insider.

We finally look at the Autonomous Community of residence of the worker. Two regions, the Basque Country and Navarre, stand out because of their strong positive effect on the probability of having access to training, for men as well as women. Other

regions, such as the Valencian Community, Extremadura, Murcia and, only for men, Aragon, also have significant positive coefficients. At the other extreme, communities such as Cantabria and Catalonia and, only for men, Madrid and Asturias appear in our estimation to be connected with less probability that workers have access to non-formal training.

5. Conclusions

We put forward two objectives for this communication. The first is to establish the determining factors of lifelong training and, consequently, the barriers to workers having access to this type of training. In the process we pay special attention to the role of the level of education attained by the employees as a determining key factor. The second is to analyze the effect of the dramatic change in the Spanish labor market, caused by a deep lasting recession, on the patterns of access by workers to lifelong training.

As regards the first objective, the analyses allow us to confirm the strong effect of the previous level of education on the probability of having access to training, and that this effect is similar for male and female workers. Thus, not having a high level of education acts as one of the most important barriers to training.

For the second objective it is important to mention that, when comparing 2007 and 2012, the probability of receiving training has increased slightly for men. On the contrary this probability has been reduced for women. Part of the explanation for this phenomenon lies in the effect of the barriers to training related to previous level of education. For women the economic crisis has hardly changed the effect of this barrier, but for men its effect has been reduced significantly.

The analysis of the set of factors determining access to training beyond the previous level of education allows to conclude that there are different patterns for men and women. While for the former lifelong training constitutes part of a set of rights to which they have access as part of being insiders in the labor market for women precisely this

condition seems to reduce their probability of having access to training. Perhaps due to personal and family conditions women, once they have achieved favorable positions on the labor market, tend to relatively separate themselves from training processes.

The implications of the results of our analysis for public training policy are immediate. The extension of training, as an objective of the *Education and Training 2020* strategy, should take into account the need to lower the barriers associated with the previous level of education, focusing the application of instruments on groups who, because of the fact that they have a lower level of education, find themselves removed from training processes. This orientation of policy, being recommendable for the population as a whole, seems to be even more desirable in the case of women. They have seen how, during the crisis, barriers to access to training caused by level of education have been maintained, while those that men must overcome have been reduced.

Notes

1. Traditional Human Capital Theory points out that firms are willing to (partly) finance the training of workers because the retention of employees in the firm allows them to recover the investment with salary payments that are less than the increase in productivity (Becker, 1962). In fact the costs and benefits of training are shared between employers and employees and this division can be optimal and lead to optimal levels of investment (Hashimoto, 1981). Even so, given the existence of asymmetric information and imperfect competition in markets that distort the fixing of salaries (in such a way that trained workers may not receive all the marginal product when they change firm), and given the costs of mobility, Acemoglu and Pischke (1998, 1999) indicate that, in practice, the firms that train may consider general training in a more or less a similar way to specific training. Consequently, as Ballot *et al.* (2006) point out, firms are willing to pay for training, even if it is of a general type, because the benefits are appropriated by the companies and by workers unequally and in favor of the former due to the gains in productivity generated by the training. See previous studies for the United States in Loewenstein and Spletzer (1998), as well as Booth and Bryan (2002) in Europe and Booth and Katic (2011) in Australia.

2. International evidence with regard to the productivity gains from training for workers with different levels of education is not conclusive (see a review in Fouarge *et al.*, 2013).

References

Acemoglu, Daron; Pischke, Jörn-Steffen. 1998. "Why Do Firms Train? Theory and Evidence", in *Quarterly Journal of Economics*, Vol. 113, No. 1, pp. 79-119.

Acemoglu, Daron; Pischke, Jörn-Steffen. 1999. "Beyond Becker: Training in imperfect labour markets", in *Economic Journal*, Vol. 109, No. 143, pp. 112–142.

Alba-Ramírez, Alfonso; Tugores, María. 2000. "Un estudio microeconómico sobre los determinantes y efectos de la formación en España", in F. Sáez (ed.), *Formación y Empleo* (67-88). Madrid: Fundación Argentaria.

Albert, Cecilia; García Serrano, Carlos; Hernanz, Virginia. 2005. "Firm-Provided Training and Temporary Contracts", in *Spanish Economic Review*, Vol. 7, No. 1, pp. 67-88.

Albert, Cecilia; García-Serrano, Carlos; Hernanz, Virginia. 2010. "On-the-job training in Europe: Determinants and wage returns", in *International Labour Review*, Vol. 149, No. 3, pp. 315–341.

Arulampalam, Wiji; Booth, Alison L.; Bryan, Mark L. 2004. "Training in Europe", in *Journal of the European Economic Association*, Vol. 2, No. 2-3, pp. 346-360.

Ashenfelter Orley C.; Lalonde, Robert J. (Eds.). 1996. *The economics of training*. Cheltenham, Edward Elgar.

Asplund, Rita. 2005. "The Provision and Effects of Company Training: A Brief Review of the Literature", in *Nordic Journal of Political Economy*, Vol. 31, pp. 47-73.

Ballot, Gérard; Fakhfakh, Fathi; Taymaz, Erol. 2006. "Who benefits from training and R&D, the firm or the workers?", in *British Journal of Industrial Relations*, Vol. 44, No. 3, pp. 473–495.

Becker, Gary S. 1962. "Investment in Human Capital: A Theoretical Analysis", in *Journal of Political Economy*, Vol. 70, pp. 9-49.

Ben-Porath, Yoram. 1967. "The Production of Human Capital and the Life Cycle of Earnings", in *Journal of Political Economy*, Vol. 75, No. 4, pp. 352-365.

Bentolila, Samuel; Dolado, Juan J.; Jimeno, Juan F. 2011. "Reforming an Insider-Outsider Labor Market: The Spanish Experience", in *IZA Discussion Paper 6186*. Bonn: The Institute for the Study of Labor (IZA).

Biagetti, Marco; Scicchitano, Sergio. 2009. "Inequality in workers' lifelong learning across European countries: Evidence from EU-SILC data-set," *MPRA Paper 17356*, University Library of Munich, Germany.

Booth, Alison L. 1991. "Job-related formal training: who receives it and what is it worth?", in *Oxford Bulletin of Economics and Statistics*, Vol. 53, No. 3, pp. 281-294.

Booth, Alison L.; Francesconi, Marco; Frank, Jeff. 2002. "Temporary Jobs: Stepping Stones or Dead Ends?", in *Economic Journal*, Vol. 112, No. 480, pp. 189–213.

Booth, Alison L.; Bryan, Mark, L. 2002. *Who Pays for General Training? New Evidence for British Men and Women.* IZA Discussion Paper No. 486. Bonn, Institute for the Study of Labor (IZA).

Booth, Alison L.; Katic, Pamela. 2011. "Men at work in a land down-under: Testing some predictions of Human Capital Theory", in *British Journal of Industrial Relations*, Vol. 49, No. 1, pp. 1-24.

Caparrós, Antonio; Navarro, Lucía M.; Rueda, Mario F. 2004. "Efectos de la temporalidad sobre la formación recibida durante el empleo", in *Cuadernos de Economía*, Vol. 27, No. 74, pp. 51-73.

Caparrós, Antonio; Navarro, Lucía M.; Rueda, Mario F. 2009. "Análisis de la incidencia y duración de la formación laboral financiada por empresas y trabajadores", in *Cuadernos de Economía*, Vol. 32, No. 89, pp. 83-112.

Caparrós, Antonio; Navarro, Lucía M.; Rueda, Mario F. 2010. "Rentabilidad salarial de la formación laboral: un análisis con datos de panel", in *Estudios de Economía Aplicada*, Vol. 28, No. 2, pp. 1-20.

Castany, Laia. 2010. "The role of size in firms' training: evidence from Spain", in *International Journal of Manpower*, Vol. 31, No. 5, pp. 563-584.

Dolado, Juan José; Felgueroso, Florentino; Jimeno, Juan F. 1999. "Los problemas del mercado de trabajo juvenil en España: empleo, formación y salarios mínimos", in *Ekonomiaz*, Vol. 43, No. I, pp. 136-157.

Dowd, A. C. 2004. "Income and financial aid effects on persistence and degree attainment in public colleges", in *Educational Policy Analysis Archives*, Vol. 12, No. 21, pp. 1-33.

Drewes, Torben. 2008. *Adult Education and Training from a Longitudinal Perspective*. Trent University. Learning Research Series, March.

Escardíbul, Josep-Oriol. 2002. *Beneficios no monetarios de la educación sobre el consumo. Un estudio aplicado al caso español*. Madrid, Instituto de Estudios Fiscales. Investigaciones. Núm. 6/02.

Fouarge, Didier; Schils, Trudie; de Grip, Andries. 2013. "Why do low-educated workers invest less in further training?", in *Applied Economics*, Vol. 45, No. 18, pp. 2587-2601.

Fritsche, Sebastian. 2012. "Determinants of Training Participation. A Literature Review and Empirical Support from Personal-, Job-, Employer- and Health related Factors in Germany", in *Network for Studies on Pensions, Aging and Retirement (NETSPAR) Theses*. Vol. 2012-025. [Available at: http://arno.uvt.nl/show.cgi?fid=128033].

Hashimoto, M. 1981. "Firm-Specific Human Capital as a Shared Investment", in *American Economic Review*, Vol. 71, No. 3, pp. 476-482.

Haelermans, Carla; Borghans, Lex. 2012. "Wage effects of on-the-job training: A meta-analysis", in *British Journal of Industrial Relations*, Vol. 50, No. 3, pp. 502–528.

Hendel, Igal; Shapiro, Joel; Willen, Paul. 2005. "Educational opportunity and income inequality," in *Journal of Public Economics*, Vol. 89, pp. 841–70.

Jones, Melanie K.; Latreille, Paul L.; Sloane, Peter J. 2008. "Crossing the tracks? Trends in the training of male and female workers in Great Britain", in *British Journal of Industrial Relations*, Vol. 46, No. 2, pp. 268-282.

Leuven, Edwin; Oosterbeek, Hessel. 1999. "Demand and supply of work-related training: evidence from four countries", in *Research in Labor Economics*, Vol. 18, pp. 303–30.

Loewenstein, Mark A.; Spletzer, James R. 1998. "Dividing the costs and returns to general training", in *Journal of Labor Economics*, Vol. 16, No. 1, pp. 142–171.

Lucas, Robert E. 1988. "On the mechanics of economic development", in *Journal of Monetary Economics*, Vol. 22, No. 1, pp. 3-42.

Lucas, Robert E. 1993. "Making a miracle", in *Econometrica*, Vol. 61, No. 2, pp. 251-272.

Lynch, Lisa M.; Black, Sandra E. 1998. "Beyond the incidence of employer-provided training", in *Industrial and Labor Relations Review*, Vol. 52, No. 1, pp. 64–81.

Maximiano, Sandra; Oosterbeek, Hessel. 2007. "On the determinants of workers' and firms' willingness to train", in *Conference paper, European Association of Labour Economists (EALE)*, Oslo.

McMahon, Walter W. 1997. *Education and development: Measuring the social benefits*. Oxford, Oxford University Press.

Mincer, Jacob A. 1994. "Human Capital: A Review", in Clark Kerr and Paul D. Staudohar (eds): *Labor Economics and Industrial Relations: Markets and Institutions*. Harvard (Mass.), Harvard University Press, pp. 109–141.

Ministerio de Educación. 2011. *El aprendizaje permanente en España*. Madrid, Ministerio de Educación.

Peraita, Carlos. 2000. "Características de la Formación en la Empresa Española", in *Papeles de Economía Española*, Vol. 86, pp. 295-307.

Peraita, Carlos. 2005. "Firm-sponsored training in regulated labour markets: evidence from Spain", in *Applied Economics*, Vol. 37, No. 16, pp. 1885-1898.

Renaud, Stéphane; Lakhdari, Mehdi; Morin, Lucie. 2004. "The Determinants of Participation in Non-Mandatory Training", in *Relations Industrielles/Industrial Relations*, Vol. 59, No. 4, pp. 724-743.

Stegmaier, Jens. 2012. "Effects of Works Councils on Firm-Provided Further Training in Germany", in *British Journal of Industrial Relations*, Vol. 50, No. 4, pp. 667-689.

Thangavelu, Shandre M.; Haoming, Liu; Cheolsung, Park; Heng, Ang Boon; Wong, James. 2011. "The determinants of training participation in Singapore", in *Applied Economics*, Vol. 43, No. 29, pp. 4641-4649.

Vila, Luis E. 2000. "The non-monetary benefits of education", in *European Journal of Education*, Vol. 35, No. 1, pp. 21-32.

Watanabe, Satoshi P. 2010. "Determinants of employer-sponsored training participation for young workers during economic downturns: Evidence from the past", in *Journal of Industrial Relations*, Vol. 52, No. 4, pp. 491-505.

Williams, Mark; Gallie, Duncan; Inanc, Hande. 2009. "The vulnerability of the low-skilled", in: *The low pay, low skill, and low income (LOPSI) cross-cutting workshop*, 26-27 Jun 2009, Milan, Italy. http://eprints.lse.ac.uk/46692/

Table 1. Estimation of the logistic regression model. Waves of year 2007 and 2012. Men.

	Coeff.		s.d.	Exp(b)
Level of education completed. Reference category: Compulsory secondary (ESO)				
Vocational upper-secondary education (*CFGM*)	0,521	***	0,080	1,684
Academic upper-secondary education (baccalaureate)	0,652	***	0,065	1,919
Higher vocational education (*CFGS*)	0,853	***	0,065	2,347
University	1,012	***	0,062	2,751
Vocational upper-secondary education (*CFGM*) * wave2012	-0,207	*	0,117	0,813
Academic upper-secondary education (baccalaureate) * wave2012	-0,288	***	0,096	0,749
Higher vocational education (*CFGS*) * wave2012	-0,236	***	0,091	0,790
University * wave2012	-0,259	***	0,074	0,772
Age. Reference category: 35-44 years				
25-34 years	0,040		0,048	1,041
45-54 years	-0,151	***	0,045	0,860
55-64 years	-0,695	***	0,062	0,499
Nationality. Reference category: Spanish				
Foreign citizen: European Union	-0,225	*	0,128	0,799
Foreign citizen: non-European Union	-0,317	***	0,080	0,729
Marital status. Reference category: married				
Marital status: single	0,004		0,038	1,004
Marital status: widow/er	0,433	**	0,198	1,542
Marital status: divorced	0,241	***	0,068	1,272
Work experience. Reference category: more than 20 years				
Less than one year	0,271	**	0,148	1,311
1-5 years	0,434	***	0,077	1,544
6-10 years	0,304	***	0,065	1,355
11-20 years	0,158	***	0,046	1,171
Sector of activity. Reference category: commerce and hotels and catering				
Agriculture, forestry and fishing	-0,554	**	0,263	0,575
Industry I (food and beverages, textile, leather, wood and paper industries)	-0,010		0,081	0,990
Industry II (extractive Industries, petroleum refining, chemical industry, rubber products, metallurgical industry, energy and water)	0,310	***	0,064	1,364
Industry III (machinery, electrical equipment, transport equipment, various manufacturing industries)	0,187	***	0,071	1,205
Construction	0,106	*	0,061	1,112
Transport	0,179	***	0,064	1,196
Financial intermediation, Real estate activities	0,313	***	0,055	1,368
Public Administration, education and health	0,553	***	0,051	1,739
Other services	0,127		0,083	1,136
Type of contract: permanent	0,099	**	0,041	1,104
Full-time	-0,282	***	0,068	0,754
Socio-professional category. Reference category: routine non-manual workers				
Professionals	0,200	***	0,042	1,221
Small proprietors	-0,461	***	0,070	0,631
Skilled manual workers	-0,212	***	0,049	0,809
Unskilled manual workers	-0,265	***	0,091	0,767
Agricultural proprietors	0,005		0,292	1,005
Agricultural workers	0,097		0,292	1,102

Table 1 (continued)

	Coeff.		s.d.	Exp(b)
Seniority in the firm. Reference category: 1 to 5 years				
Less than one year	0,048		0,051	1,049
6 to 10 years	-0,044		0,046	0,957
11 to 20 years	-0,016		0,047	0,984
More than 20 years	0,089	*	0,054	1,093
Autonomous Community. Reference category: Andalusia				
Aragon	0,163	**	0,072	1,177
Asturias	-0,323	***	0,104	0,724
Balearic Islands	-0,001		0,098	0,999
Canary Islands	-0,003		0,076	0,997
Cantabria	-0,271	***	0,101	0,762
Castile and Leon	-0,046		0,059	0,955
Castile - La Mancha	-0,016		0,065	0,984
Catalonia	-0,213	***	0,060	0,808
Valencian Community	0,139	**	0,060	1,150
Extremadura	0,181	**	0,081	1,199
Galicia	-0,029		0,060	0,972
Madrid	-0,138	**	0,068	0,871
Murcia	0,161	*	0,083	1,175
Navarre	0,429	***	0,084	1,536
Basque Country	0,228	***	0,066	1,256
La Rioja	0,043		0,108	1,044
Ceuta and Melilla	-0,084		0,175	0,919
wave2012	0,082	*	0,059	1,085
Constant	-2,815	***	0,102	0,060
N	67.361			
-2 Log Likelihood	36546,059			
Chi2 test	3286,76			
Nagelkerke R. Square	0,107			

Note: *** significant at 1%; ** significant at 5%; * significant at 10%.
Source: own elaboration from EPA microdata, 2007 (second trimester) and 2012 (second trimester).

Table 2. Estimation of the logistic regression model. Waves of year 2007 and 2012. Women.

	Coeff.		s.d.	Exp(b)
Level of education completed. Reference category: Compulsory secondary (ESO)				
Vocational upper-secondary education (*CFGM*)	0,691	***	0,079	1,995
Academic upper-secondary education (baccalaureate)	0,629	***	0,073	1,876
Higher vocational education (*CFGS*)	0,808	***	0,075	2,244
University	1,116	***	0,063	3,054
Vocational upper-secondary education (*CFGM*) * wave2012	-0,240	**	0,117	0,787
Academic upper-secondary education (baccalaureate) * wave2012	0,122		0,106	1,130
Higher vocational education (*CFGS*) * wave2012	0,001		0,105	1,001
University * wave2012	0,042		0,080	1,043
Age. Reference category: 35-44 years				
25-34 years	-0,145	***	0,046	0,865
45-54 years	-0,006		0,043	0,994
55-64 years	-0,299	***	0,060	0,742
Nationality. Reference category: Spanish				
Foreign citizen: European Union	-0,646	***	0,146	0,524
Foreign citizen: non-European Union	-0,201	***	0,073	0,818
Marital status. Reference category: married				
Marital status: single	0,215	***	0,034	1,239
Marital status: widow/er	0,022		0,111	1,023
Marital status: divorced	0,213	***	0,050	1,238
Work experience. Reference category: more than 20 years				
Less than one year	0,188		0,127	1,206
1-5 years	0,442	***	0,069	1,555
6-10 years	0,244	***	0,061	1,276
11-20 years	0,031		0,044	1,032
Sector of activity. Reference category: commerce and hotels and catering				
Agriculture, forestry and fishing	-0,286		0,306	0,751
Industry I (food and beverages, textile, leather, wood and paper industries)	0,087		0,095	1,091
Industry II (extractive Industries, petroleum refining, chemical industry, rubber products, metallurgical industry, energy and water)	0,254	***	0,097	1,289
Industry III (machinery, electrical equipment, transport equipment, various manufacturing industries)	0,203	*	0,111	1,224
Construction	0,155		0,115	1,167
Transport	0,351	***	0,078	1,421
Financial intermediation, Real estate activities	0,122	**	0,053	1,129
Public Administration, education and health	0,614	***	0,045	1,848
Other services	0,111	*	0,062	1,118
Type of contract: permanent	-0,197	***	0,036	0,821
Full-time	0,072	*	0,037	1,074
Socio-professional category. Reference category: routine non-manual workers				
Professionals	0,226	***	0,038	1,254
Small proprietors	-0,319	***	0,071	0,727
Skilled manual workers	-0,296	***	0,104	0,744
Unskilled manual workers	-0,319	**	0,139	0,727
Agricultural proprietors	-0,450		0,363	0,637
Agricultural workers	-0,296		0,389	0,744

Table 2 (continued)

	Coeff.		s.d.	Exp(b)
Seniority in the firm. Reference category: 1 to 5 years				
Less than one year	0,032		0,046	1,033
6 to 10 years	0,031		0,043	1,032
11 to 20 years	0,047		0,045	1,048
More than 20 years	0,068		0,053	1,071
Autonomous Community. Reference category: Andalusia				
Aragon	0,103		0,073	1,108
Asturias	-0,059		0,092	0,942
Balearic Islands	-0,038		0,095	0,962
Canary Islands	-0,071		0,075	0,931
Cantabria	-0,183	*	0,096	0,833
Castile and Leon	0,090		0,057	1,094
Castile - La Mancha	-0,043		0,067	0,958
Catalonia	-0,136	**	0,057	0,873
Valencian Community	0,167	***	0,060	1,182
Extremadura	0,207	**	0,082	1,230
Galicia	0,068		0,057	1,070
Madrid	-0,074		0,064	0,929
Murcia	0,176	**	0,087	1,192
Navarre	0,390	***	0,083	1,477
Basque Country	0,334	***	0,063	1,397
La Rioja	0,136		0,104	1,146
Ceuta and Melilla	-0,167		0,202	0,846
wave2012	-0,199	***	0,071	0,819
Constant	-2,975		0,081	0,051
N	53.090			
-2 Log Likelihood	36694,922			
Chi2 test	3681,60			
Nagelkerke R. Square	0,126			

Note: *** significant at 1%; ** significant at 5%; * significant at 10%.
Source: own elaboration from EPA microdata, 2007 (second trimester) and 2012 (second trimester).

Appendix

Table A1. Descriptive values of explanatory variables

Year 2007

	Men		Women	
	Mean	St. Dev.	Mean	St. Dev.
Compulsory secondary (ESO)	0,4905	0,500	0,3728	0,484
Vocational upper-secondary education (*CFGM*)	0,0772	0,267	0,0916	0,288
Academic upper-secondary education (baccalaureate)	0,1339	0,341	0,1352	0,342
Higher vocational education (*CFGS*)	0,1079	0,310	0,0999	0,300
University	0,1904	0,393	0,3005	0,458
Age: 25-34 years	0,2654	0,442	0,2984	0,458
Age: 35-44 years	0,3067	0,461	0,3251	0,468
Age: 45-54 years	0,2738	0,446	0,2626	0,440
Age: 55-64 years	0,1540	0,361	0,1139	0,318
Nationality: Spanish	0,9330	0,250	0,9267	0,261
Foreign citizen: European Union	0,0092	0,096	0,0083	0,091
Foreign citizen: non-European Union	0,0578	0,233	0,0650	0,247
Marital status: married	0,6798	0,467	0,6071	0,488
Marital status: single	0,2757	0,447	0,2844	0,451
Marital status: widow/er	0,0049	0,070	0,0253	0,157
Marital status: divorced	0,0396	0,195	0,0832	0,276
Work experience: less than one year	0,0049	0,070	0,0078	0,088
Work experience: 1-5 years	0,0382	0,192	0,0619	0,241
Work experience: 6-10 years	0,0898	0,286	0,1248	0,330
Work experience: 11-20 years	0,2615	0,439	0,2854	0,452
Work experience: more than 20 years	0,6025	0,489	0,5179	0,500
Sector of activity: Agriculture, forestry and fishing	0,0626	0,242	0,0324	0,177
Industry I (food and beverages, textile, leather, wood and paper industries)	0,0567	0,231	0,0484	0,215
Industry II (extractive Industries, petroleum refining, chemical industry, rubber products, metallurgical industry, energy and water)	0,0868	0,282	0,0253	0,157
Industry III (machinery, electrical equipment, transport equipment, various manufacturing industries)	0,0651	0,247	0,0219	0,146
Construction	0,1937	0,395	0,0184	0,134
Commerce and hotels and catering	0,1799	0,384	0,2539	0,435
Transport	0,0752	0,264	0,0305	0,172
Financial intermediation, Real estate activities	0,0982	0,298	0,1405	0,348
Public Administration, education and health	0,1449	0,352	0,3129	0,464
Other services	0,0367	0,188	0,1158	0,320
Type of contract: permanent	0,5824	0,493	0,5999	0,490
Full-time	0,9720	0,165	0,7839	0,412
Socio-professional category: Professionals	0,2188	0,413	0,2556	0,436
Routine non-manual workers	0,1931	0,395	0,5402	0,498
Small proprietors	0,1540	0,361	0,0986	0,298
Skilled manual workers	0,3184	0,466	0,0463	0,210
Unskilled manual workers	0,0538	0,226	0,0220	0,147
Agricultural proprietors	0,0322	0,177	0,0165	0,127
Agricultural workers	0,0256	0,158	0,0120	0,109

Year 2007 (continued)

	Men		Women	
	Mean	St. Dev.	Mean	St. Dev.
Seniority in the firm: Less than one year:	0,1559	0,363	0,1924	0,394
1 to 5 years	0,2277	0,419	0,2749	0,446
6 to 10 years	0,1724	0,378	0,1778	0,382
11 to 20 years	0,2157	0,411	0,1970	0,398
More than 20 years	0,2283	0,420	0,1578	0,365
Autonomous Community: Andalusia	0,1684	0,374	0,1494	0,356
Aragon	0,0472	0,212	0,0475	0,213
Asturias	0,0243	0,154	0,0265	0,161
Balearic Islands	0,0268	0,161	0,0301	0,171
Canary Islands	0,0500	0,218	0,0525	0,223
Cantabria	0,0256	0,158	0,0275	0,164
Castile and Leon	0,0985	0,298	0,0928	0,290
Castile - La Mancha	0,0751	0,264	0,0630	0,243
Catalonia	0,1092	0,312	0,1181	0,323
Valencian Community	0,0841	0,278	0,0869	0,282
Extremadura	0,0390	0,194	0,0342	0,182
Galicia	0,0629	0,243	0,0725	0,259
Madrid	0,0568	0,232	0,0655	0,247
Murcia	0,0343	0,182	0,0304	0,172
Navarre	0,0246	0,155	0,0264	0,160
Basque Country	0,0486	0,215	0,0527	0,223
La Rioja	0,0183	0,134	0,0190	0,136
Ceuta and Melilla	0,0061	0,078	0,0050	0,071
Number of cases	36.512		26.420	

Year 2012

	Men		Women	
	Mean	St. Dev.		Mean
Compulsory secondary (ESO)	0,4178	0,493	0,3270	0,469
Vocational upper-secondary education (*CFGM*)	0,0895	0,285	0,1008	0,301
Academic upper-secondary education (baccalaureate)	0,1377	0,345	0,1279	0,334
Higher vocational education (*CFGS*)	0,1302	0,337	0,1109	0,314
University	0,2248	0,417	0,3334	0,471
Age: 25-34 years	0,2016	0,401	0,2266	0,419
Age: 35-44 years	0,3137	0,464	0,3211	0,467
Age: 45-54 years	0,3061	0,461	0,2993	0,458
Age: 55-64 years	0,1786	0,383	0,1529	0,360
Nationality: Spanish	0,9371	0,243	0,9217	0,269
Foreign citizen: European Union	0,0198	0,139	0,0225	0,148
Foreign citizen: non-European Union	0,0431	0,203	0,0558	0,230
Marital status: married	0,6750	0,468	0,6082	0,488
Marital status: single	0,2722	0,445	0,2738	0,446
Marital status: widow/er	0,0054	0,073	0,0238	0,152
Marital status: divorced	0,0474	0,213	0,0942	0,292
Work experience: less than one year	0,0060	0,077	0,0094	0,096
Work experience: 1-5 years	0,0326	0,178	0,0476	0,213
Work experience: 6-10 years	0,0711	0,257	0,0966	0,295
Work experience: 11-20 years	0,2496	0,433	0,2769	0,447
Work experience: more than 20 years	0,6390	0,480	0,5678	0,495
Sector of activity: Agriculture, forestry and fishing	0,0639	0,245	0,0297	0,170
Industry I (food and beverages, textile, leather, wood and paper industries)	0,0573	0,232	0,0393	0,194
Industry II (extractive Industries, petroleum refining, chemical industry, rubber products, metallurgical industry, energy and water)	0,0862	0,281	0,0208	0,143
Industry III (machinery, electrical equipment, transport equipment, various manufacturing industries)	0,0630	0,243	0,0178	0,132
Construction	0,1172	0,322	0,0132	0,114
Commerce and hotels and catering	0,2041	0,403	0,2503	0,433
Transport	0,0969	0,296	0,0375	0,190
Financial intermediation, Real estate activities	0,1029	0,304	0,1387	0,346
Public Administration, education and health	0,1735	0,379	0,3484	0,476
Other services	0,0349	0,183	0,1044	0,306
Type of contract: permanent	0,6288	0,483	0,6698	0,470
Full-time	0,9516	0,215	0,7727	0,419
Socio-professional category: Professionals	0,2313	0,422	0,2939	0,456
Routine non-manual workers	0,2383	0,426	0,5256	0,499
Small proprietors	0,1645	0,371	0,0946	0,293
Skilled manual workers	0,2712	0,445	0,0382	0,192
Unskilled manual workers	0,0328	0,178	0,0162	0,126
Agricultural proprietors	0,0322	0,177	0,0183	0,134
Agricultural workers	0,0271	0,162	0,0087	0,093
Seniority in the firm: Less than one year:	0,1075	0,310	0,1247	0,330
1 to 5 years	0,1843	0,388	0,2414	0,428
6 to 10 years	0,1835	0,387	0,2134	0,410
11 to 20 years	0,2412	0,428	0,2185	0,413
More than 20 years	0,2834	0,451	0,2019	0,401

Year 2012 (continued)

	Men		Women	
	Mean	St. Dev.	Mean	St. Dev.
Autonomous Community: Andalusia	0,1452	0,352	0,1379	0,345
Aragon	0,0438	0,205	0,0416	0,200
Asturias	0,0274	0,163	0,0287	0,167
Balearic Islands	0,0258	0,159	0,0289	0,168
Canary Islands	0,0421	0,201	0,0437	0,204
Cantabria	0,0263	0,160	0,0274	0,163
Castile and Leon	0,1027	0,304	0,0924	0,290
Castile - La Mancha	0,0690	0,253	0,0590	0,236
Catalonia	0,1048	0,306	0,1138	0,318
Valencian Community	0,0746	0,263	0,0754	0,264
Extremadura	0,0311	0,173	0,0254	0,157
Galicia	0,1228	0,328	0,1315	0,338
Madrid	0,0547	0,227	0,0642	0,245
Murcia	0,0298	0,170	0,0287	0,167
Navarre	0,0233	0,151	0,0258	0,159
Basque Country	0,0515	0,221	0,0535	0,225
La Rioja	0,0193	0,138	0,0178	0,132
Ceuta and Melilla	0,0059	0,076	0,0042	0,065
Number of cases	30.849		26.670	

2011

2011/1, Oppedisano, V; Turati, G.: "What are the causes of educational inequalities and of their evolution over time in Europe? Evidence from PISA"
2011/2, Dahlberg, M; Edmark, K; Lundqvist, H.: "Ethnic diversity and preferences for redistribution "
2011/3, Canova, L.; Vaglio, A.: "Why do educated mothers matter? A model of parental help"
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2011/5, Piolatto, A.; Schuett, F.: "A model of music piracy with popularity-dependent copying costs"
2011/6, Duch, N.; García-Estévez, J.; Parellada, M.: "Universities and regional economic growth in Spanish regions"
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2011/21, Tonello, M.: "Mechanisms of peer interactions between native and non-native students: rejection or integration?"
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2011/23, Banal-Estañol, A.; Macho-Stadler, I.; Pérez-Castrillo, D.: "Research output from university-industry collaborative projects"
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2011/25, Mongrain, S.; Wilson, J.D.: "Tax competition with heterogeneous capital mobility"
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2012

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2014

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