

Research Article

Education and Unemployment Patterns for Young Workers with Job Experience in Spain

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This paper analyzes the education and unemployment patterns for young workers with some experience in Spain at the beginning of the current economic crisis, using the *ad hoc* module of the Spanish Labour Force Survey 2009. The results clearly show that educational level and field of study are crucial when explaining the instability of the first job and the difficulty in obtaining another one. Specifically, the lower is the educational level, the greater is the risk of unemployment, not only because it is less likely to keep the first job, but also because it is harder to find another one. Moreover, considering the field of study at a given educational level, it is detected that graduates from health and welfare are the best positioned in the labour market (especially university degree holders). For the rest of fields of study, and despite the differences in the risk of unemployment are small, it is observed that the lowest level of unemployment corresponds to sciences and technology, followed by social sciences and the rest of fields. The education and unemployment patterns detected in the paper may be useful to guide both policy and individual decisions.

1. Introduction

The high unemployment rate observed nowadays in the Spanish labour market has very negative consequences for young people, since they are especially sensitive to the business cycle. According to the Spanish Labour Force Survey, the unemployment rate for young workers in Spain was 34.09% in the third quarter of 2013, while this percentage was significantly higher than the national average of 25.98%. These figures reflect barriers in the school-to-work transition, which has been recently studied in the literature (see, e.g., [1–3]). Moreover, the high unemployment rate also affects young workers who have successfully found a first job and struggle to maintain it, since when they lose it their probability of unemployment is considerable.

In 2013, there were 7,249,800 active people under 35 in Spain; about 7.25% of them were looking for their first job, meaning that more than 6,700,000 active people in this age group had some previous experience. These young workers may be still working in their first job or, alternatively, they may be employed in a different one or unemployed.

Although this group of workers is really numerous, little has been said about their labour market situation in the literature. This paper partially fills in this gap. Moreover, as education (level and field of study) plays a crucial role in workers' career, the main objective of this study is to analyse the education and unemployment patterns for young workers with job experience in Spain. In order to develop this objective, the effect of education on the probability of maintaining the first job, as well as on the probability of being employed in another one or unemployed once they have gone out that first job, is studied. Analysing this issue is especially interesting in a period of crisis, which is especially affecting the Spanish economy, since the groups of young workers (according to these educational variables) who are handling it better can be identified.

The rest of the paper is organized as follows. Section 2 describes the sample and the variables included in the econometric analysis, while the model is specified in Section 3. The results obtained are shown in Section 4 and the paper ends with the main conclusions obtained.

2. Data and Variables

Empirical results are based on data from the *ad hoc* module on entrance of young people into the labour market, included in the Spanish Labour Force Survey (LFS, 2009). The choice of the LFS questionnaire is based on the fact that it contains crucial information that is not included in other sources, as the one related to educational level and field of study. Moreover, the module provides two important advantages: first, although it does not include information on the complete workers' career, it contains information about some characteristics of the entry job, and second, the current economic crisis had yet begun in 2009, so the groups of workers who are handling it better can be identified, as established in the objective of the study.

It is important to mention that the standard LFS used in this paper corresponds to 2009, but the module includes data related to the workers' first job. Thus, the individuals included in the sample obtained their first job after finishing school at different moments of time. This means that some of them might have been employed in different jobs before 2009. Then, the analysis does not necessarily refer to their employment/unemployment status immediately after leaving that first job.

The data includes the answers to the standard LFS questionnaire and the specific questions of the module for 23,286 workers under 35. Firstly, workers without a first significant job (i.e., with a duration of at least 3 months) after finishing school were excluded from the sample, since the paper focuses on young workers with some previous experience. Secondly, young people who remained in the educational system in 2009, those who were already working when they left school, self-employed workers, and members of the Armed Forces were also excluded. Finally, additional filters were applied to reject individuals with inconsistent answers and those who did not provide the necessary information for the analysis.

Thus, the final sample includes 7,850 young workers who have already got a first significant job. Sixty percent of them did not keep that first job in 2009. This instability is not surprising, since temporary employment in Spain represents around 25% of total employment and this percentage is even higher among young workers. In addition, about 29% of the individuals who did not hold their first job were unemployed in 2009. Therefore, a 17.34% of young workers in the sample were unemployed, whereby an 83.66% are employed, either in their first job or in another one.

With regard to the exogenous variables, educational level and field of study are basic in the analysis. According to the National Classification of Education (NCE-2000), and taking into account the limitations imposed by the need for an acceptable number of observations, a set of dummy variables is defined in order to provide a two-dimensional joint vision. In this sense, for general educational programmes (compulsory secondary or lower and noncompulsory secondary education) dummies for both levels are created; similarly, dummy variables for each of the four specializations considered for vocational training and university degrees are defined (i.e., 8 dummies): social sciences, sciences and technology, health

and welfare, and other fields (education, arts, humanities, or services). Furthermore, dummy variables are included to differentiate the effect of higher relating to lower vocational training and long-cycle relating to short-cycle university degrees.

The rest of the explanatory variables are as follows.

Personal characteristics (gender and nationality) as well as socioeconomic background (the highest educational level of the two progenitors) are included. Whether the worker has got children or not has been considered in the analysis; therefore, the correspondent dummies appear interacting with gender in order to consider the possibility that family responsibilities have a different influence on the labour situation of men and women.

Workers are classified as overeducated in their first job according to an objective method previously developed in Rahona [4] and similar to the one applied in some of the literatures on overeducation in Spain. Furthermore, workers' potential experience (years elapsed since leaving the educational system until 2009) is considered when analysing the risk of unemployment of workers who are out of their first job; alternatively, the time since workers got their first significant job until 2009 is controlled in the analysis of the probability of maintaining it.

Additionally, information on first job characteristics, as part-time or fixed-term contract, is included, and finally, the activity sector, the GDP per capita by Autonomous Communities in 2009 (in relation to the national average), and the unemployment rate by gender in the quarter of the survey are also controlled.

A sample description is shown in Table 1. As most of the variables in the econometric analysis are dummies, Table 1 includes the sample frequencies for the most important ones. The sample average values for the continuous variables are also displayed.

3. Methodology

As previously stated, the main objective of the study is to analyse the effect of the educational variables (level and field of study) when explaining the employment/unemployment status of young workers with some experience in 2009. To this end, a bivariate probit model with sample selection is estimated. Thus, considering exclusively young workers who succeeded in the school-to-work transition, the model allows analysing two issues: the probability of maintaining their first job and, for the ones who do not maintain it, the probability of being unemployed.

As the observed unemployment data are nonrandomly selected for the set of workers who got a first job after leaving school, a bivariate probit model with sample selection is specified (see, e.g., [5, 6]).

Let us define y_1^* as the latent variable reflecting the probability of being unemployed and y_2^* as the latent variable

TABLE 1: Sample description: frequencies and average values.

| | |
|---|-------|
| Gender: female | 46.3 |
| Nationality: non-Spanish | 7.1 |
| Parents' higher educational level | |
| Compulsory education or lower | 67.6 |
| Noncompulsory secondary or lower vocational training | 16.6 |
| University or higher vocational training | 15.7 |
| Children | |
| Male worker | 3.0 |
| Female worker | 3.9 |
| Educational level and field of study | |
| Compulsory secondary or lower | 36.8 |
| Noncompulsory secondary | 11.1 |
| Vocational training (VT) in social sciences | 8.4 |
| VT in sciences and technology | 12.8 |
| VT in health and welfare | 3.0 |
| VT in other fields | 4.4 |
| Higher vocational training | 15.4 |
| University in social sciences | 7.4 |
| University in sciences and technology | 6.0 |
| University in health and welfare | 3.8 |
| University in other fields | 6.4 |
| Long-cycle university | 12.4 |
| First job | |
| Part-time | 17.2 |
| Overeducated | 51.8 |
| Fixed-term | 67.3 |
| Time since obtained first job | |
| Less than 2 years | 13.2 |
| 2-3 years | 19.8 |
| 4-5 years | 15.1 |
| 6-10 years | 30.4 |
| More than 10 years | 21.4 |
| Potential experience | |
| Three years or less | 12.3 |
| 3 to 5 years | 14.0 |
| 5 to 10 years | 34.3 |
| More than 10 years | 39.4 |
| Unemployment rate by gender in the quarter of the survey* | 21.5 |
| GDP per capita by Autonomous Communities in 2009* | 0.949 |

The frequency of the omitted category for variables with just two categories is not included since it is complementary to the one displayed in the table.

* Continuous variable (average).

Source: Spanish Labour Force Survey (2009). Own calculations.

indicating the likelihood of not keeping the first job. Then, the model can be specified as follows:

$$\begin{aligned} y_1^* &= x_1' \beta_1 + \varepsilon_1, & y_1 &= 1 \text{ if } y_1^* > 0, 0 \text{ otherwise,} \\ y_2^* &= x_2' \beta_2 + \varepsilon_2, & y_2 &= 1 \text{ if } y_2^* > 0, 0 \text{ otherwise} \end{aligned} \quad (1)$$

with (y_1, x_1) observed only when $y_2 = 1$.

In the above equations, y_1 indicates if the young worker is unemployed and y_2 if he does no longer hold that first

job; x_1 reflects the variables determining the probability of unemployment; x_2 contains the variables explaining the fact of not maintaining the first job; and ε_1 and ε_2 are the error terms. When estimating the bivariate probit with sample selection, it is assumed that the error terms follow a bivariate normal distribution. As usual, these error terms have mean zero, variance equal to 1, and the covariance being ρ .

4. Empirical Findings

4.1. Parameter Estimates. The results of the estimations displayed in Table 2 indicate that women and foreign workers have a higher probability of not maintaining their first job, providing evidence on the well-known worse conditions faced by these collectives in the labour market.

This transition out of the first job is also more frequent among young workers with compulsory secondary or lower education and those with vocational training in social sciences, education, humanities, arts, or services. On the contrary, only university graduates from health and welfare have a greater chance of maintaining their first job than the ones with noncompulsory secondary education (omitted category). This result is interesting in the sense that not only the educational level but also the field of study influences the probability of maintaining a first significant job.

The shorter the time since the first job is found, the more likely is to continue in it. Furthermore, the probability of keeping that first job is lower if the worker had a temporary contract, as expected. Additionally, this probability is also lower if the worker was overeducated. This last result is in line with Alba [7], who also observes that Spanish overeducated workers are subject to higher employment mobility than the ones with a good educational match. On the contrary, having a part-time employment reduces the likelihood of being out of the first job. Finally, the estimates in Table 2 also show that there are significant differences across activity sectors and regions of residence.

Regarding the probability of unemployment for young workers who do not continue in their first job, the results reveal higher values for women and foreign workers. Male workers with young children face a lower probability of unemployment, while having children is not relevant for female workers.

Turning now to the main interest of the study, it can be pointed out that the risk of unemployment tends to decrease as the educational level increases. Nevertheless, when considering the field of study, different parameter estimates are obtained for university education.

The estimates suggest that workers with compulsory education are unemployed to a greater extent than the rest. Furthermore, as workers' educational level increases, their probability of unemployment decreases, being university graduates with the lowest likelihood.

It is important to mention that the field of specialization in vocational training does not imply significant differences in unemployment, while the level really does. Specifically, workers with higher vocational training are more likely to be employed in a different job after a first experience than those

TABLE 2: Parameters estimates for the bivariate probit with sample selection: probability of not maintaining the first job and being unemployed.

| Variable | Not maintaining first job | | Unemployed | |
|--|---------------------------|----------|-------------|----------|
| | Coefficient | <i>t</i> | Coefficient | <i>t</i> |
| Constant | 0.154 | 1.83 | -0.914 | -5.47 |
| Gender: female | 0.235 | 5.80 | 0.234 | 4.70 |
| Nationality: non-Spanish | 0.312 | 3.99 | 0.283 | 3.74 |
| Parents' higher educational level (ref. compulsory education or lower) | | | | |
| Noncompulsory secondary or lower vocational training | 0.274 | 5.95 | -0.040 | -0.70 |
| University or higher vocational training | 0.107 | 2.19 | 0.016 | 0.24 |
| Children | | | | |
| Male worker | -0.025 | -0.24 | -0.349 | -2.82 |
| Female worker | -0.095 | -0.96 | -0.034 | -0.32 |
| Worker's educational level and field of study: (ref. educational level: noncompulsory secondary; ref. field of study: general education) | | | | |
| Compulsory secondary or lower | 0.245 | 4.17 | 0.407 | 5.53 |
| Vocational training (VT) in social sciences | 0.197 | 2.41 | 0.141 | 1.41 |
| VT in sciences and technology | 0.110 | 1.41 | 0.102 | 1.07 |
| VT in health and welfare | 0.105 | 0.83 | -0.092 | -0.61 |
| VT in other fields | 0.326 | 3.32 | 0.176 | 1.42 |
| Higher vocational training | -0.068 | -1.09 | -0.137 | -1.80 |
| University in social sciences | 0.028 | 0.30 | -0.371 | -2.71 |
| University in sciences and technology | 0.006 | 0.07 | -0.447 | -3.18 |
| University in health and welfare | -0.189 | -1.89 | -0.978 | -5.44 |
| University in other fields | -0.030 | -0.34 | -0.286 | -2.16 |
| Long-cycle university | -0.064 | -0.94 | 0.096 | 0.85 |
| First job | | | | |
| Part-time | -0.890 | -19.11 | | |
| Overeducated | 0.262 | 7.62 | | |
| Fixed-term | 0.953 | 31.76 | | |
| Time since obtained first job (ref. >10 years) | | | | |
| Less than 2 years | -2.193 | -33.61 | | |
| 2-3 years | -1.335 | -23.30 | | |
| 4-5 years | -1.001 | -16.68 | | |
| 6-10 years | -0.482 | -9.10 | | |
| Potential experience (ref. >10 years) | | | | |
| Three years or less | | | 0.524 | 5.16 |
| 3 to 5 years | | | 0.268 | 3.32 |
| 5 to 10 years | | | 0.015 | 0.29 |
| Unemployment rate by gender in the quarter of the survey | | | 0.011 | 4.50 |
| GDP per capita by Autonomous Communities in 2009 | | | -0.329 | -2.66 |
| Activity sector (ref. primary and industry sectors) | | | | |
| Construction | 0.136 | 2.25 | 0.330 | 4.76 |
| Commerce | 0.077 | 1.57 | -0.200 | -3.25 |
| Transportation | 0.306 | 4.11 | -0.247 | -2.65 |
| Financial services | 0.255 | 3.80 | -0.084 | -1.06 |
| Public administration, education, and health | 0.378 | 4.82 | -0.205 | -2.53 |

TABLE 2: Continued.

| Variable | Not maintaining first job | | Unemployed | |
|--------------------------|---------------------------|----------|-------------|----------|
| | Coefficient | <i>t</i> | Coefficient | <i>t</i> |
| Other services | 0.115 | 1.41 | -0.400 | -4.08 |
| Civil servant | -0.351 | -4.53 | | |
| Regions (ref. Southwest) | | | | |
| Northwest | -0.186 | -3.57 | | |
| Northeast | -0.058 | -1.21 | | |
| Central | 0.097 | 2.06 | | |
| Southeast | 0.010 | 0.20 | | |
| Correlation coefficient | 0.239 | 3.51 | | |
| Number of observations | | 7,850 | | 4,698 |

The quarter of the survey has been controlled in the unemployment equation.

with lower vocational training. On the contrary, considerable gaps among university degree holders according to the length of the cycle (short or long) are not found, but a dependence on the specialization has been detected. Thus, the results clearly show that university graduates from health and welfare face the lowest probability of unemployment. On the other hand, degree holders from education, humanities, arts, or services have a greater risk of unemployment.

The results also show that the lower is the potential experience in the labour market, the higher is the probability of unemployment. Furthermore, there are some significant differences related to the sector of activity: the highest probability of unemployment corresponds to construction. This result is not at all surprising given the drastic drop of activity in this sector during the last years in Spain.

4.2. Education Impact on Unemployment: A Taxonomy. In order to highlight the importance of education in the analysis, a taxonomy of “educational labels” can be established depending on *instability* (probability of not maintaining the first job) and *difficulty* in finding another job (probability of unemployment given that the worker left the first job). Each “educational label” refers to a combination of educational level and field of study.

To this end, the parameters estimates of the model are used to calculate both probabilities for each “educational label.” As they have been obtained evaluating the rest of variables in the sample mean, the differences in these probabilities quantify the effect of education per se on young workers’ labour situation. Furthermore, this procedure allows calculating the complete set of probabilities including the probabilities of the omitted category in the econometric estimation. The results are presented in Table 3. Moreover, they are displayed in Figure 1 in order to show them from a visual perspective.

When the educational level is specifically analysed, a positive correlation between *instability* and *difficulty* is found. Furthermore, the specialization for each educational level affects *instability* of first job to a greater extent than *difficulty* in obtaining another one.

More specifically, a ranking of the “educational labels” can be established as follows.

- (i) Workers with compulsory secondary or lower education are the most likely to suffer *instability* (almost 68% do not keep their first job), and they face the highest *difficulty* in getting a new employment (40% of those who are no longer working in their first job are unemployed).
- (ii) Young workers with lower vocational training (except health and welfare) show a lower *difficulty* (30%), but *instability* depends on the field of study.
- (iii) Higher vocational and noncompulsory secondary graduates show a similar level of *difficulty* (25%) and different degrees of *instability*. Moreover, instability across fields in higher and lower vocational shows the same pattern. The lowest instability corresponds to noncompulsory secondary.
- (iv) There are no important differences in both indicators for workers with lower or higher vocational training in health and welfare. In any case, these workers hold a better position in the labour market than their peers from the rest of fields, as they suffer lower *instability* and *difficulty*.
- (v) University graduates who left their first job (except graduates from health and welfare) face a probability of unemployment around 15–20%. This probability is slightly higher for long-cycle degrees, although *instability* is somewhat lower. Moreover, differences across fields of study are small for each level of education. Graduates from sciences and technology show slightly lower *instability* and *difficulty* indicators than workers with degrees in social sciences and other fields. Nevertheless, a better position could be expected for the former, but the above result can be explained by the greater impact of the crisis on the activity sectors, as construction, where this collective was employed in.
- (vi) The best situation corresponds to university graduates from health and welfare, since their probability of

or social sciences. As a consequence, graduates from these fields locate in lower labour market positions than their peers from hard fields, as health. In this sense, the results in this paper indicate that health and welfare as well as sciences and technology are the fields which better position workers in the labour market. Nevertheless and as already indicated, graduates from sciences and technology do not enjoy a more positive position due to the economic crisis.

Finally, both *instability* and *difficulty* jointly determine workers' risk of unemployment, that is, their probability of unemployment (last column in Table 3). The results obtained are similar to the above described since there is a positive correlation between the probability of maintaining the first job and the probability of unemployment given that the worker had left the first job. It can be concluded that educational level strongly determines success in labour market. Furthermore, specialization in health and welfare always implies a reduction in the unemployment rate given an educational level; this effect is stronger for university graduates. For the rest of fields of study, the differences in the risk of unemployment at a given educational level are small; nevertheless, the lowest level of unemployment corresponds to sciences and technology, followed by social sciences and the rest of fields.

5. Conclusions

This paper analyzes the education and unemployment patterns for young workers with some experience in Spain at the beginning of the economic crisis. Educational level and field of study are crucial when explaining the *instability* of first job and the *difficulty* in obtaining another one.

The results clearly show that the lower is the educational level, the greater is the risk of unemployment, not only because it is less likely to keep the first job, but also because it is harder to find another one. Moreover, for each level of education, it is also observed that (a) graduates from health and welfare are the best positioned according to both *instability* and *difficulty*, (b) graduating in the rest of fields of study mainly implies differences in *instability*, thus affecting the risk of unemployment, and (c) graduates from sciences and technology are closer positioned to workers from social sciences and other fields than to graduates in health and welfare because they have suffered the economic crisis to a relatively greater extent since it began.

It can be highlighted that university graduates from health or welfare were handling the economic crisis better than their peers from the rest of fields in 2009, since they had obtained more stable first jobs and they found another one more easily. Therefore, it would be also interesting to further explore if this collective still enjoys this privileged position in the labour market taking into account the cuts in the Spanish welfare state, including those in the public health system.

From an individual perspective, they indicate that the selection of a particular level and field of study have negative (or positive) consequences for future employment of young workers. Therefore, young people should take into account this fact when choosing their educational pathway. Moreover,

from a social point of view, the education and unemployment patterns detected in the article may be useful to guide policy decisions, especially in the current context characterized by dramatic unemployment rates.

Thus, policy measures to be taken would include firstly, those designed to prevent a premature dropout the educational system, without achieving a minimum level of education. Secondly, it is also important to provide students in secondary education with wider information on labour market prospects associated with different educational programmes. Thereby, this information is interesting when deciding future studies. Thirdly, it is necessary to continue promoting enrolment in sciences or technology subjects, as the European Union recommends. And finally, it is necessary to extend the "practicum credits" in university degrees in Spain, especially in the more general fields, as Bologna reforms' attempt.

Conflict of Interests

The authors declare that there is no conflict of interests regarding the publication of this paper.

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