
The Impact of Economic Crisis on Graduates' Employment and Work*

El impacto de la crisis económica en la inserción laboral de los titulados universitarios

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Resumen: Analizamos la situación en el mercado laboral de titulados de universidades públicas catalanas, comparando las cohortes de 2004 (expansión económica), 2007 (inicio de la crisis económica), y 2010 (durante la crisis). En un primer análisis descriptivo, encontramos un aumento en el desempleo que afectó de manera diferenciada a los titulados en función del sexo, el origen social, la titulación y el trabajo durante los estudios. Un segundo análisis tipológico mostró

una estructura homogénea de las ocupaciones entre las cohortes. Sin embargo, a partir de la cohorte 2010, la más expuesta a la crisis, disminuyó la cantidad absoluta de titulados con mejores condiciones laborales y se amplió la cantidad de graduados en ocupaciones más desprotegidas.

Palabras clave: Transición a la vida profesional, Educación superior, Mercado laboral, Crisis económica.

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Abstract: This article examines the employment and work status of Catalan graduates from public universities, by establishing a comparison between three cohorts of graduates: 2004 (during an expansion), 2007 (starting point of economic crisis), and 2010 (during the crisis). A first descriptive analysis shows that the rise of unemployment has affected graduates differently according to gender, social origin, field of study and work during higher education. A second typologi-

cal analysis shows a homogeneous structure of occupations among the cohorts. However, starting with the 2010 cohort, the most exposed to the crisis, the absolute number of graduates with the better occupational conditions has declined, whereas the number of graduates in less protected has increased.

Keywords: Graduate employment and work; Higher education, University graduates, Economic crisis.

INTRODUCTION

The transition of young people from university to work is one of the most important periods in the construction of their adult life. However, this transition is no longer a linear pathway (family-study-work) for most young people. The specific way in which an individual transits into adulthood is the result of the conjunction of three factors, each with the same importance: personal decisions, social and cultural frameworks that may inspire those decisions (social class, gender, geographical origin, etc.), and institutional settings that limit and channel the options (educational opportunities, recruitment strategies of employers, structure and preferences of the working population with which the individual competes, public youth employment policies, etc.).

Since the relationship between education and the world of work is a complex subject, it is essential to establish a historical angle, considering phenomena such as the expansion of education in the context of the so-called knowledge society and particularly, in the context of economic crisis (Sala, Planas, Masjuan and Enciso-Rodríguez, 2007). In the following lines, we enumerate some of the factors that intervene in such relationship.

First, the expansion of higher education in the last decades can be understood as the result of a broad consensus of converging actions and decisions among different social actors, students and their families, educational institutions, governments, and companies, which has caused a sustained increase in the enrolment in higher education (Béduwé and Planas, 2003). Furthermore, the massive growth universities in Spain in the last third of the twentieth century resulted in a significant diversification in the social composition of the university community, with women and the working classes significantly increasing their presence in higher education. However, marked differences in the composition of university degrees persist (Troiano, Masjuan and Elias, 2010; Daza and Elias 2015). This expansion and diversification of graduates may produce a higher job competition among

them, as more people entering the labour force have the same credentials, with potential shifts in the indicators of job skills for employers, for example social background (Jackson, 2001). On the other hand, the recent educational expansion may have led to a process known as “over education” that many authors have analysed (Ortiz, 2010; Kucel, 2011; Marqués-Perales and Gil-Hernández, 2015; Martínez-García, 2017). This approach to the problem, however, focuses mostly on the supply, leaving the demand aside. We argue that by analyzing the demand of labour we contribute to the understanding of other explaining factors, since it may be the case that the productive system is anchored and does not generate the mechanisms adapted to absorb skilled labour (López-Roldán and Fachelli, 2019).

Secondly, due to the global economic crisis that began in 2008, Spain's youth unemployment rates have grown considerably. However, youth most affected by the crisis is the one without post-secondary education, particularly people who have not completed secondary education. This happens because during the economic expansion that preceded the crisis, employers offered well-paid jobs with no educational requirements (mostly in construction and services). As a contextual data, we show in Table 1 that university graduates faced a better labour situation than the rest of the population, since unemployment rates of the total population almost double those of graduates both in Spain and Catalonia. However, differences are observed in the employment opportunities that graduates find once they have obtained a degree (ANECA, 2009; Teichler, 2007; Fachelli and Planas, 2014; 2016).

Table 1. Unemployment rate of graduates and total population, Spain and Catalonia. 1st quarter of 2008, 2011 and 2014

UNEMPLOYMENT RATE OF UNIVERSITY GRADUATES						UNEMPLOYMENT RATE OF TOTAL POPULATION					
SPAIN			CATALONIA			SPAIN			CATALONIA		
2008	2011	2014	2008	2011	2014	2008	2011	2014	2008	2011	2014
5.4	10.7	15.7	4.4	10.2	12.8	9.6	21.3	25.9	7.6	19.0	22.1

Source: Authors' compilation based on the Survey of the Active Population, INE.

Before the crisis, surveys showed that, in Catalonia, university graduates had an unemployment rate of 6.23% in 2001 and 5.06% in 2005¹. But the crisis, particularly in the case of Spain, showed two different moments, one between the begin-

1 AQU Catalunya (2011) own elaboration over Table 2.3 p. 13.

ning of the crisis and the first semester of 2011 and a second period, that Oliver (2015) called ‘second recession’. In the case of university graduates, except for a rise in unemployment, the impact of the economic crisis is not clearly observed until 2011, since they manage to maintain working conditions similar to those in 2008. It is between 2011 and 2014 that an important acceleration of the deterioration of working conditions is observed (Fachelli and Planas, 2016).

Given this historical perspective, the aim of this paper has two-folded. First, we contribute to improve the understanding of university graduates’ employment and work situation. Second, we provide evidence on the impact of the recent economic crisis in their working conditions. A typological approach was thus used to clarify different labour market outcomes in three sets of graduates. The theory of labour market segmentation is used as a theoretical framework to understand the evolution of the results that graduates have obtained in recent years, which coincide with the emergence and sustainability of one of the strongest economic crises that Spain has suffered.

THE SEGMENTATION OF THE HIGH-SKILLED LABOUR MARKET

The labour market is a basic institution of industrial society that distributes social positions and largely determines social stratification and class structure. From the perspective of labour market segmentation, which proposed the Institutional Theory (Piore, 1975), two main types of segment are identified: primary and secondary. The primary segment is characterized by stable employment, qualified with promotion and high income in a context of labour rights and public or private companies. The secondary segment is precarious, with unskilled jobs, professional stagnation, low incomes, deregulated, unprotected context and marginal sectors in which small and medium-sized enterprises operate (Reich, Gordon and Edwards, 1973).

Graduates, in general, belong to the upper strata of the labour market because they are more protected than other groups. It has been repeatedly found that they have a more satisfying and successful transition from school to employment than individuals with less education. This happens because they are more likely to stay active, less likely to be unemployed, and have more job stability and a higher wage income (Pastor and Peraita, 2014). Nevertheless, research based on segmentation theory has found a small new secondary segment with plenty of professionals either employed in high but extremely unstable job categories, or holding temporary contracts, both in public and private sectors, in areas such as health, education, transport and public administration (Miguélez and López-Roldán, 2014, p. 278).

The dichotomous point of view shaped mainly by Piore (1975) and Doeringer and Piore (1971) was then reformulated to expand the analysis beyond the frame-

work of the company. Segmentation was thus conceived as a global phenomenon that goes beyond strictly productive factors and includes factors linked to social structure (López-Roldán, 1994, p. 43). Because of this reformulation, there is a division in the primary segment into the independent or upper primary segment and the dependent or lower primary segment (Reich et al., 1973). The independent primary segment is characterized by stable quality contracts with the possibility of promotion for highly educated, mainly technical executives, professionals and managers. The dependent primary segment is characterized by permanent full-time workers with a lower level of skills and wages, and includes traditionally employees in the industrial sector. According to this characterization, one would expect graduate employees to be mostly included in the independent and dependent primary segment. This is the first hypothesis. However, it is conceivable that in a situation of crisis and high unemployment many of them will be excluded from the primary segment (i.e. unemployed or discouraged) or retained in the secondary segment. This is the second hypothesis.

In the case of graduates, the flow between segments could be expressed as the passage from university to first entry to labour market, if it is the case, and from a transitional stage in the secondary segment to the independent primary segment as they become older (López-Roldán and Fachelli, 2017). Other studies have shown how graduates with degrees in fields such as architecture or chemical engineering have more than 20% of their graduates working abroad—a sign of the deterioration in sectors of work requiring superior skills (INE, 2014). The analysis presented in this article explores the evolution of the employment of graduates in different years, before and during the economic crisis, thus, the third hypothesis states that the crisis has slowed the labour insertion of university graduates to the upper primary segment.

DATA

Data from a periodical survey on graduates' labour market outcomes, carried out since 2001 by the Agency for Quality in the University System of Catalonia (AQU Catalunya), were used to perform the typological analysis. In order to test the hypotheses, the last three surveys were used: the first was carried out in early 2008 with students who graduated in 2004, the second in early 2011 with students who graduated in 2007, and the third in 2014 with students who graduated in 2010 (AQU Catalunya, 2008; 2011; 2015). While the graduates surveyed in 2008 can be considered as those who entered employment in a time of economic expansion, the other two generations did so in a moment of economic crisis. Since 2008, AQU

has progressively introduced private universities in their studies, to avoid possible bias in the comparative analysis, in our study we analysed only data referring to the public universities, which represent more than 80% of university graduates.

In contrast with other similar studies (Schomburg and Teichler, 2006; Teichler, 2007) that investigate the results in the labour market in two moments (normally two years and four years after graduation), the data used for this study only ask about the situation of graduates four years after graduation. Hence, the trajectories and the careers cannot be reconstructed; the results show the occupational structure of the graduates only at a given moment. This limitation of the data is compensated with the comparative strength due to the consistency in the data collection for the three cohorts analysed.

Table 2. Population, sample and sampling error (public universities)

2004 COHORT			2007 COHORT			2010 COHORT		
POPULATION	SAMPLE	SAMPLING ERROR	POPULATION	SAMPLE	SAMPLING ERROR	POPULATION	SAMPLE	SAMPLING ERROR
22.343	11.771	0.62%	22.191	12.219	0.59%	21.442	11.807	0.62%

Source: Authors' compilation based on AQU Catalunya (2008; 2011; 2014).

All three surveys (carried out via telephone) used the same questionnaire applied to a representative sample of graduates of each cohort and program degree (sampling errors in Table 2).

METHODOLOGY

Firstly, we present a descriptive analysis of participation in labour market, considering gender, social background, field of studies and work during higher education. Secondly, a typological analysis on occupied graduates is proposed, with the aim of establishing a differentiation regarding labour market outcomes working conditions four years after graduation. The typological analysis was carried out using two complementary statistical techniques: multiple correspondence analysis (MCA) and cluster analysis (CLA). MCA helps to describe similarities or likenesses between individuals and relationships between qualitative variables, while automatic classification techniques allow individuals and variables to be grouped through algorithms, which can make use of the results of the MCA (Lebart, Morineau and Piron, 2000). Hence, these techniques offer the possibility of constructing complex, effective and useful descriptions of large data sets organized in matrices that relate individuals and variables (Cornejo, 1988, López-Roldán and Fachelli, 2015).

The MCA was developed by the French School of Data Analysis (Le Roux and Rouanet, 2010), and has been used in several sociological studies, such as Pierre Bourdieu's *The Distinction* (1984), which analysed the tastes and lifestyles of the french classes.

The use of multivariate techniques such as MCA and CLA in the analysis of labour market differences has the advantage of simplifying the complexity and diversity of the labour market in a relatively small and significant number of groups that are homogeneous within themselves and heterogeneous between them. Our model does not preconfigure groups from theory but is rather adopted from López-Roldán's "structural and articulated typology", which classifies the phenomenon under examination in a small and meaningful set of categories (Lopez-Roldán, 1996, pp. 11-22). Work by the Jaume Bofill Foundation (2005), the Institute of Regional and Metropolitan Studies of Barcelona (Subirats, López-Roldán and Sánchez, 2010), Domínguez and López-Roldán (1996), Miguélez and López-Roldán (2014) among others, continues this tradition by using the same techniques to analyse existing inequalities both in the social structure and in the labour market. However, the joint analysis of MCA and CLA has been used rather infrequently when analysing the results of graduate surveys. Therefore, the aim of our contribution is to demonstrate the benefits of these techniques, especially when comparing different cohorts of graduates.

GRADUATES' LABOUR FORCE PARTICIPATION

In this section, we present some general and descriptive characteristics of the labour force participation of Catalan graduates four years after higher education². First, we establish a simple typology of students regarding their occupational status: occupied, inactive and unemployed.

The data show the impact of the economic crisis. The percentage of occupied graduates decreased from 93.5% in the 2004 cohort to 88.6% in the 2007 cohort and 83.7% in the 2010 cohort. The rate of unemployment rose from 3.4% in the 2004 cohort to 12% in the most recent one. Previous studies have pointed out that the unemployment problems for graduates in countries like Spain are more severe in the transition from higher education to work, measured in the first months after graduation. Furthermore, this transition influences the labour market outcomes

2 See AQU Catalunya 2008, 2011 and 2015 for a more complete presentation of the survey results. The third reference includes a review of the historical evolution of some variables for the period 2001-2014.

when measured in the conventional 3 to 4 years period after graduation (Allen and Van der Velden, 2007). Due to data limitations, we cannot compare our results with those of other studies, but having found a high rate of unemployment among the earliest graduates' cohort could be linked to structural problems in the early transition from university to work.

Table 3. Occupational status by gender. Percentages

	2004 COHORT			2007 COHORT			2010 COHORT		
	FEMALE	MALE	TOTAL	FEMALE	MALE	TOTAL	FEMALE	MALE	TOTAL
Occupied	93.3	93.9	93.5	89.1	88.0	88.6	82.7	85.2	83.7
Unemployed	3.0	3.1	3.1	7.3	8.5	7.8	13.0	10.3	11.9
Inactive	3.7	3.0	3.4	3.6	3.5	3.6	4.3	4.5	4.4
Total	100	100	100	100	100	100	100	100	100

Source: Authors' compilation based on AQU Catalunya (2008; 2011; 2014).

Considering gender, we found that men were more affected by unemployment in the 2004 and 2007 cohorts, but women were more affected in the 2010 cohort. Except in the 2010 cohort, no relevant gender differences in terms of occupation were observed. Finally, there were no differences between female and male inactivity in the three cohorts (Table 3).

A study by Planas and Fachelli (2010) concluded that Catalan universities have played a positive role in the equity and professional mobility of their graduates. These authors found that neither social background nor educational outcomes could clearly explain the inequality in the labour outcomes of graduates. Only gender appeared as an explicative variable of income differences between graduates.

Nevertheless, it is important to analyse the impact of social background on the distribution of graduates' occupational status to answer questions such as whether social class influences the employment status of university graduates and whether graduates from families with a higher educational background have better labour market outcomes. Although this issue requires further analysis, it is worth reviewing the major indicators of the relationship between social origin and occupational status. We use educational background because the last survey does not ask for parents' occupation. The educational background was classified into three categories

considering the main educational levels: primary, secondary and tertiary³. Family background continues to play a role in the inheritance of children in terms of class, education and income. All three are correlated, but when analysed separately, different effects have been found. Some studies have found that parental education explains more variance in children's destination than income or social class (Erola, Jalonen and Lehti, 2016). On the other hand, previous research built with databases on Catalan graduates (cohort 2004 and cohort 2007), including parents' occupation and education, show a high correlation between the two variables (Planas and Fachelli, 2010). This suggests there are empirical reasons to consider parental education as an indicator of the social origin of the three cohorts.

Table 4. Occupational status of graduates by family educational level. Percentages

	2004 COHORT			2007 COHORT			2010 COHORT		
	P	S	HE	P	S	HE	P	S	HE
Occupied	94.4	93.7	92.0	89.2	89.5	87.2	83.8	83.4	84.0
Unemployed	2.7	3.2	3.4	7.5	7.1	8.8	12.3	12.2	11.3
Inactive	2.8	3.1	4.6	3.3	3.4	4.0	3.9	4.5	4.7
Total	100	100	100	100	100	100	100	100	100

Source: Authors' compilation based on AQU Catalunya (2008; 2011; 2014). P= primary education; S= secondary education; HE= higher education.

In Table 4 we can see that in the first two cohorts, one that coincides with a period of economic growth and the other with a period of crisis. The higher the family educational background (at least one of the parents studied up to tertiary level), the more likely graduates were to be unemployed and inactive. This may happen because these graduates had more family resources to wait until they found a good job opportunity. This hypothesis is reinforced when we observe that it was precisely in the upper level that a higher increase was observed in the proportion of unemployed people between the first two surveys. In the 2010 cohort, although the relationship between family education and occupational status was the opposite, the relationship between parents' education and participation in labour market was not statistically significant.

The Catalan university system divides the degrees into five fields of study: Social Sciences, Engineering and Architecture, Health Sciences, Humanities, and Ex-

3 For a deeper analysis on the relationship between social class and occupational success of graduates in the Catalan context, see Planas and Fachelli (2010) and Fachelli and Planas (2014).

perimental Sciences. In this research, the Social Sciences area was subdivided into two subject fields, because of the variability on employment outcomes observed among its graduates. Thus, degrees related to Law, Economics, Business Administration and Business Sciences were grouped into an independent field (LEA: Law, Economics and Administration), while the remaining degrees are in the social sciences field. The complete list of degrees by subject groups may be consulted in AQU (2015, pp. 101-106)⁴. All fields reported a lower level of occupation in 2010 compared with 2004 cohorts (Table 5). The fields with the greatest decrease in employment rates were Experimental Sciences (15.5 percentage points) and Humanities (13.6 percentage points). In addition, the same fields showed the highest increase in unemployment. Humanities is clearly the field that showed the lowest level of occupation and the highest level of unemployment in the three cohorts.

Table 5. Occupational status by subject areas. Percentages

		SS	LEA	ES	EA	HS	H
2004 cohort	Occupied	94.3	93.7	90.4	95.0	96.1	89.3
	Unemployed	3.1	2.8	3.0	2.3	1.4	5.8
	Inactive	2.6	3.5	6.6	2.6	2.4	4.9
	Total	100	100	100	100	100	100
2007 cohort	Occupied	91.0	88.5	86.3	88.7	93.2	81.5
	Unemployed	6.3	6.3	8.8	8.2	3.8	12.7
	Inactive	2.7	2.7	5.0	3.2	3.0	2.7
	Total	100	100	100	100	100	100
2010 cohort	Occupied	83.4	86.7	79.5	86.3	87.9	75.3
	Unemployed	12.7	9.9	14.9	9.9	8.5	17.1
	Inactive	4.0	3.4	5.6	3.8	3.7	7.7
	Total	100	100	100	100	100	100

Source: Authors' compilation based on AQU Catalunya (2008; 2011; 2014). SS= social sciences; LEA= Law, Economics and Administration; ES= Experimental Sciences; EA= Engineering and Architecture; HS= Health Sciences; H= Humanities.

⁴ The degree programs included in the LEA field (Law, Economics and Administration) are the following: Business Administration and Management, Economics, Actuarial Science and Finance, Market Research and Techniques, International Commerce, Business Economics, Law, Criminology and Tourism.

Finally, we analyse the relationship between occupational status and the work experience during higher education. This association involves decisions and actions of many actors in the phenomenon that we are discussing: students, employers and managers of higher education institutions. There are several reasons for working during college (not asked in the survey), but the type of work (part-time or full-time, related or unrelated to the degree) reflects different professional pathway decisions taken by young people. This feature of students' pathways is important because of the high prevalence of work during higher education among Catalan students' (more than 60% of the three cohorts have worked either way during college at least for the last two years of their university life), and because of the proven relationship between working during higher education and further labour market outcomes (Weiss, Klein and Grauenhorst, 2014; Planas y Enciso, 2014, among others).

Table 6. Occupational status by work during higher education. Percentages

		S	PR	PNR	FR	FNR
2004 cohort	Occupied	93.2	97.3	93.1	96.5	93.8
	Unemployed	3.3	1.4	4	2.1	3.9
	Inactive	3.4	1.4	2.8	1.4	2.3
	Total	100	100	100	100	100
2007 cohort	Occupied	88.1	90.6	87.2	93.0	90.0
	Unemployed	8.3	6.9	9.5	4.9	7.8
	Inactive	3.6	2.5	3.4	2.1	2.2
	Total	100	100	100	100	100
2010 cohort	Occupied	83.6	88.5	84.4	91.6	88.3
	Unemployed	12.5	8.9	11.6	6.5	8.6
	Inactive	3.9	2.6	4.0	1.8	3.2
	Total	100	100	100	100	100

Source: Authors' compilation based on AQU Catalunya (2008; 2011; 2014). S= full-time students; PR= part-time related job; PNR= part-time unrelated job; FR= full-time related job; FNR= full-time unrelated job.

As can be seen in Table 6, in general, full-time students had a lower level of occupation than their peers who worked in any capacity during their degrees, which can be interpreted as a more difficult labour insertion between full-time study and the entry to labour market. Among graduates that worked during higher education, the groups that showed the highest unemployment rates were those who worked part-time and full-time in a job not related to their degrees, and full-time students. In contrast, students who worked part-time in a job related to their degree showed a significant rise in unemployment between cohorts (7.5 percentage points). The smallest increase in unemployment was found in graduates who worked in a full-time job related to their degree, which mostly enrolled at university when they were already working in 2008.

In sum, the impact of the crisis on the employment of graduates has differed according to sex, family status of origin, field of study and work during higher education. For example, between the 2004 and 2007 cohorts' men faced more unemployment, whereas between the 2007 and 2010 cohorts' women faced more unemployment. With respect to family background, measured by the parent's level of education, in the 2004 and 2007 cohorts the higher level of education of parents, the higher the proportion of unemployment, whereas in the 2010 cohort graduates from families with a high educational level, showed a similar level of unemployment to the rest of the graduates. In a situation of major labour shortage, it seems that family background may influence access to top-level jobs. With respect to the field of study, Humanities clearly showed more unemployment than other fields, while the Health Sciences resisted the crisis better, although the differences were reduced in the last cohort. Finally, working while attending university is a factor that shows the importance of experience in access to the labour market, since the graduates working full-time in something related to their degrees were more likely to be employed than those not working or working part-time during their degrees.

TYPOLOGICAL ANALYSIS OF OCCUPIED GRADUATES

The previous section addressed some general features of the graduates' labour force participation. Even with the decrease in the level of occupation and a significant increase in the proportion of unemployed graduates, most graduates were occupied at the time of the survey. However, in this section we tried to focus on how the jobs were different in quality between cohorts.

In order to perform the typological analysis, we used five variables that characterise the graduates' job: request of university degree, degree-level job, contract

type, full-time of part-time job and income. These set of occupational variables allow us to establish the basic labour characteristics of graduates' jobs and establish a hierarchy of occupational quality, as they include variables that have been used for general comparisons among types of employment, especially in studies about precarious employment (Duell, 2004; Santamaría, 2009). Hence, the MCA used the five variables mentioned above as active variables, which define the axes of factorial analysis. In previous analysis that also included the distinction between salaried job and self-employment, the self-employed group turned out to be a confusing category due to the low prevalence of the self-employed graduates (2004 Cohort = 5.8%; 2007 Cohort = 5.2%; 2010 Cohort = 8.7%). Therefore, the MCA was applied only to the subset of graduates who held a salaried job (excluding interns).

In summary, the techniques described before (MCA and CLA) were applied to construct a typology that is helpful in differentiating the type of job held by the graduates (at the time of the survey) in terms of type of contract, working hours (full-time vs. part-time), revenues, requirements to obtain the job, and the functions performed (length of current job position was used as an illustrative variable after the clusters were calculated). Once we elaborated this typology, the remaining graduates (self-employed, unemployed, inactive and interns) were added directly to obtain a typology of all graduates (see Table 8). Finally, the socioeconomic and educational variables, discussed in the previous section, were used to illustrate the composition of groups.

Results of multiple correspondence analysis

The MCA was applied independently to the three samples. In all cases, the best solution was to retain the first two factorial axes, which explain 99% of the variance. The percentage of variance explained by each factor is presented in Table 7.

Table 7. Percentage of variance explained from the ACM analysis

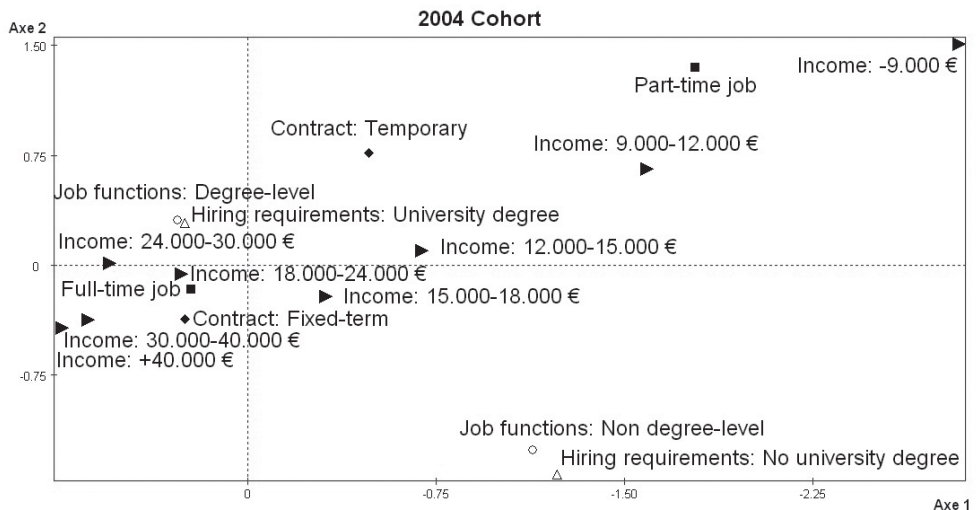
AXIS	2004 COHORT	2007 COHORT	2010 COHORT
1	73.4	75.9	81.1
2	25.3	22.7	18.3
TOTAL	98.7	98.6	99.4

Note. Authors' compilation based on AQU Catalunya (2008; 2011; 2014). Benzécri's correction method (1979).

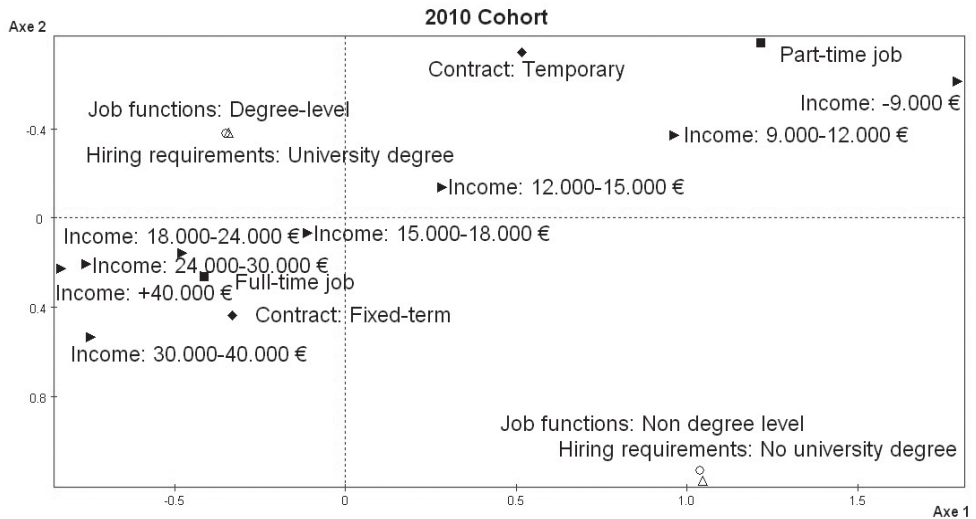
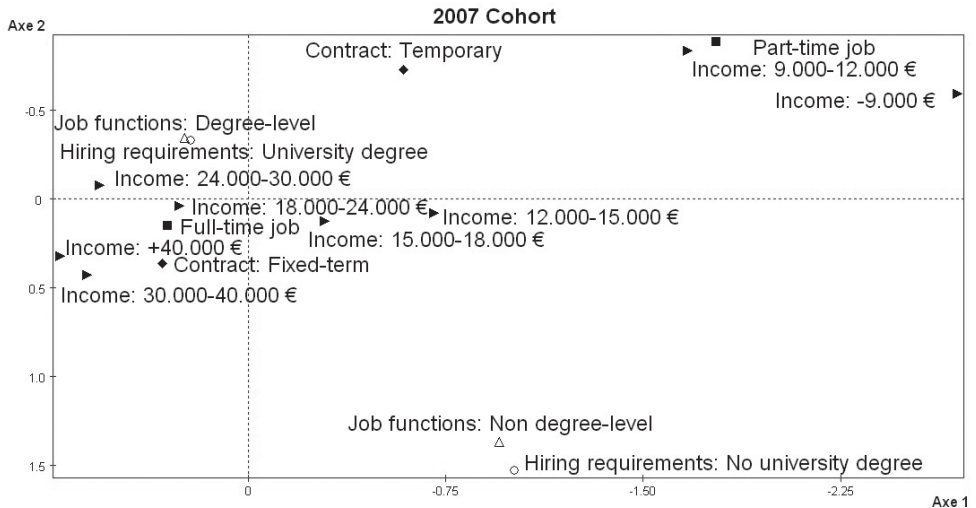
The first outstanding aspect of the analysis is the match between the three surveys regarding the factorization of the space. Practically, the same amount of variance can be explained with the same number of axes. The amount of variance explained by each axis also shows great similarity. One important remark is that despite the economic crisis, the factorial space of graduates with a salaried occupation shows a similar structure.

Due to limitations of space in this paper, it is not possible to make a thorough analysis of the composition of the axes, but generally the two factors are defined on the following features of the occupational situation of occupied graduates valid for all three surveys: axis 1 characterizes graduates by their income, job functions and hiring requirements (the categories to the left side of the axis show the better conditions), while axis 2 characterizes graduates by type of contract and working hours (the categories to the upper side of the axis have the worst situations) (see Figure 1).

Figure 1. MCA for the three cohorts. Axis 1 and 2 from the factorial space



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Cluster analysis

Based on the resulting factors of the MCA, we conducted a cluster analysis to obtain a typology of occupied graduates with salaried jobs. We chose to classify wage earners into four groups (groups 1-4), considering how the variables used in the MCA were distributed. After the clusters were calculated, we proceed to name each

group according to the segments presented above: primary independent, primary dependent, qualified secondary and secondary. Subsequently, these four groups were integrated with the whole set of graduates, including self-employed, interns, unemployed and inactive, in order to compare how the proportion of graduates from each segment and labour categories changed between cohorts. In the specific case of the self-employed and the interns, due to sample and data limitation we only identify them as an entire group, without the identification of the four segments among them. The complete typology is presented in Table 8. In the following lines we briefly describe the attributes of each type.

Table 8. Typology of graduates by labour force participation and employment conditions

	2004 COHORT		2007 COHORT		2010 COHORT	
	SIZE	%	SIZE	%	SIZE	%
Primary independent segment	4046	34.4	4081	33.4	3376	28.6
Primary dependent segment	2012	17.1	1970	16.1	1560	13.2
Qualified secondary segment	2753	23.4	2943	24.1	2255	19.1
Secondary segment	1230	10.4	812	6.6	1399	11.8
Self-employed	623	5.3	543	4.4	817	6.9
Interns	343	2.9	477	3.9	469	4
Unemployed	362	3.1	957	7.8	1404	11.9
Inactive	402	3.4	436	3.6	518	4.4
Total	11771	100	12219	100	11798	100

Source: Authors' compilation based on AQU Catalunya (2008; 2011; 2014).

Primary independent segment. These graduates got their jobs after obtaining their degree; they are working full-time, with permanent contracts and in jobs that require academic skills. In terms of revenue, most graduates are located above the average. The effect of the crisis is seen in the decrease in the size of this group in the 2010 cohort in comparison with previous cohorts: in the 2010 cohort it represented 29% of the total sample, compared with approximately 34% in 2004 and 2007. In terms of external characteristics, gender, social origin and work during college resembles de mean of total population. Instead, the characteristic subject areas of this group are engineering and architecture, social sciences and Law, Economics and Administration.

Primary dependent segment. University graduates in this category work in jobs that do not require a college degree but are stable in terms of the type of contract (open-ended) and the duration of the working day (full-time). Their incomes are in the middle. The group includes a large number of graduates placed in the higher age groups and in the longer trajectories in the same job, so it can be hypothesized that these graduates entered university when they already had a job and they continued in the same jobs four years after obtaining the degree. Parental education is consistent with older generations in Spain who had less educational opportunities (around 75% of all three cohorts reached only primary or secondary levels). While there was a decrease in the relative importance of this type in the 2010 cohort (13% vs. 16% in the 2004 cohort), it is a low change of magnitude, so it can be considered more a structural than a cyclical phenomenon.

Qualified secondary segment. Graduates in this cluster, composed mainly by women (70% in all three cohorts) who studied full time or work partially during college, have temporary contracts, with full-time positions that require a university degree. The type of contract is reflected in the income, as most are located around the average. This group fell from 24% to 19% between the first two cohorts and the 2010 cohort. If we consider that much of the temporary employment is in the public sector (mainly in Education and Health carried out by women), the decrease in the proportion of this segment can be explained by a fall in public employment and a ban on public sector recruitment due to the crisis, especially from 2011 (Montesinos, Pérez and Ramos, 2014).

Secondary segment. These graduates have the least stable situation. It is a clearly feminized cluster (78% in 2004 and 2010 cohorts, 76% in 2007 cohort), and composed mainly by graduates in Social Sciences and Humanities (62% in 2004 cohort, 68% in 2007 cohort and 73% in 2010 cohort). The three cohorts show a similar composition in all the variables analysed: temporary contracts, incomes well below average and part-time jobs that require a university degree and whose functions correspond to this level. There is no question in the survey to assess the reasons for working part-time, but the due to the high prevalence of women, a relationship with the labour market entry difficulties for women can be hypothesized. However, the impact on the structure of the labour market is reflected on the similarity of the composition of this group, and a cyclical deterioration is shown by its increase from 6.6% in the 2007 cohort to 11.8% in the 2010 cohort.

Self-employed. The dynamics of self-employment does not show a clear trend among the three cohorts, as it is a small group, half composed by graduates in Engineering, Economics, Law and Administration, that decreased between the first two cohorts and increased again in the last one, although in both cases the changes

are rather low. No clear trends in terms of gender, social origin or work during higher education were found, neither in terms of income and working ours.

Interns. Here a slight, gradual increase between the three cohorts is observed, but it cannot be considered a recurrent phenomenon among graduates. In addition, the vast majority of graduates with internships were doctoral students who obtained a scholarship to work while studying, so more than a position in the labour market, we may consider it as a formative stage. There is an overrepresentation in this group of graduates from natural sciences, who studied full-time or had part-time jobs during college, and with high social backgrounds.

Unemployed. As shown in Table 3, the impact of the crisis can be seen in the tripling of unemployment between the 2004 and 2010 cohorts. However, the impact differs in men and women in terms of social origin, degree or work experience during the university period (Tables 3 through 6).

Inactive. Graduates out of labour market force slightly grow from the earliest cohort to the latest by one percentage point. As expected, there are more women in this group in all three cohorts, but their presence tends to diminish from 2004 cohort to 2010 cohort (65% to 58%).

CONCLUSION

In this article we review the impact of the economic crisis on graduates' work and employment. It is important to highlight that this research contributes with the first comparative analysis of more than two cohorts of university graduates both in Catalonia and Spain.

The first important result to emphasize is that the economic crisis had indeed an impact on employment rates among higher education graduates in Catalonia, which rose from 3% in 2008 (same rate found in 2001 and 2005 with the same population), to 12% in 2014, although with remarkable differences according to gender, social origin, field of studies and work during higher education. On the last variable, we want to emphasize the importance of differentiating in this type of research the population that have worked while attending university, particularly in something related to their field of studies, given that the training and experience gained during work, together with the skills obtained in the formal education, modify the traditional perceptions about the transition from school to work.

On the other hand, the observed situation regarding the rise of unemployment is linked to the differentiated impact of the crisis in two stages, that we have had the opportunity to observe elsewhere (Fachelli and Planas, 2016), showing that

the effects of the crisis were more dramatic from 2011 onward. Other authors have also provided evidence of this finding: Oliver (2015) called the period between June 2011 and March 2013 the 'second recession'. An example of the differences between periods is that the quarterly employment rate fell by 1.1% during the first recession and by 1.4% during the second.

In order to contrast the position of graduates in the labour market under the assumptions of the theory of segmentation, we performed a typology that would allow us to characterize graduates regarding their position in the labour market four years after graduation. This methodology allowed us to test the three hypotheses raised in this study. Our first hypothesis is not corroborated because we were able to identify graduates in secondary segments, as the primary segment (independent and dependent) incorporates only around 60% among salaried graduates.

The second hypothesis is corroborated regarding that the crisis tends to exclude graduates from primary segment: both independent and dependent segments decreases 6 points between 2004 and 2010 cohort, but graduates are not pushing to secondary segment; they are directly excluded to unemployment and inactivity. In that sense, the impact of the economic crisis can be observed in two moments. On the one hand, between the 2004 cohort and the 2007 cohort, the main difference is found in the increase of unemployment rates and the decrease in graduates working in the secondary segment. Given that the rest of the groups behave practically uniformly between the first two cohorts, it can be hypothesized that graduates from the secondary segment (the most prone to job insecurity), would swell the ranks of unemployment. That is, the economic crisis, in its first phase, tended not to change the structure of occupations in university graduates. However, we observe how the economic crisis affects the jobs in 2014: in addition to a new increase in unemployment, the three segments with the best working conditions lose weight, while, the secondary segment becomes more relevant. That is, we observe a negative effect of the crisis that affected graduates in a general way. The danger of this effect is that the secondary segment could have become a sort of refuge for graduates who were previously working under better conditions. Finally, the analysis corroborates our third hypothesis, as the crisis did slow the labour insertion of graduates in the upper segments of labour market.

A very important result rise of this study: a trend in the case of women to occupy jobs with less labour protection in the dependent primary segment (characterized by temporary full-time jobs) and in both secondary segments (part-time and full-time but with temporary contracts). Here, the economic crisis does not alter the trend, so we can confirm the structural feature of this phenomenon.

Finally, our results suggest that instead of having a case of skills-deficient graduates, the economic crisis may have raised a lack of demand and sub utilization of the skills for which they were trained, including the skills obtained in jobs while they were attending university. This assertion refers to a contradiction of the knowledge-based economy, as authors like Brown and Lauder (2006) sustain, where there is a demand for increasingly qualified skills acquired in higher education. However, such demand is not accompanied by a corresponding increase in the demand for skilled positions available to the recent graduates, due –among other things– to the strong competition that globalization imply. Some questions emerge from this analysis: how could more quality jobs become available? How can employers be encouraged to use the potential of graduates to increase productivity and growth? How can they benefit from the massification of education, especially higher education? Moreover, if the tension between a hegemonic discourse based on the theory of human capital (Klees, 2016) and results that are not congruent with it is not somehow resolved, could students become disenchanted with the University, as well as disinclined to enrol in it?

In future research, it will be important to develop related hypotheses to explain these findings, analysing the role played by the institutions and governments in the promotion of graduate employment. Aspects such as higher educational reforms in Europe (the Bologna process) should be included in the analysis of the labour market outcomes of post-reform graduates.

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RECENSIONES

