

Relationship between social origin and labor insertion of university graduates

Relación entre origen social e inserción laboral de los graduados universitarios

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Resumen

Este artículo tiene dos objetivos. En primer lugar, queremos analizar si el peso del origen social de los graduados universitarios influye en la inserción laboral, tomando como indicador los ingresos que obtienen los titulados que trabajan, cuando controlamos la titulación obtenida. En segundo lugar, intentamos observar si los graduados universitarios provenientes de orígenes sociales más desfavorecidos se encuentran más desocupados y más inactivos que los provenientes de hogares con más recursos. Para tal fin analizamos a los titulados que egresaron de universidades públicas catalanas en el curso 2006-2007, entrevistados por la "Agencia Catalana per a la Qualitat del Sistema Universitari de Catalunya" (AQU Catalunya) en el primer trimestre de 2011. La metodología utilizada se basa en técnicas estadísticas bivariadas (tablas de contingencia) y análisis multivariado (regresión logística binomial). Los resultados obtenidos en la presente contribución nos obligan a reformular las hipótesis de partida, pues los hallazgos muestran que, aun tomando en cuenta la titulación, no se observa una influencia significativa del origen social en la inserción laboral de esta cohorte concreta de graduados universitarios

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Abstract

This article has two primary objectives. Firstly, we aim to examine whether the weight of social origin of university graduates influences the labour market entry, using the wages as an indicator of graduates' job quality, once controlled the degree obtained. Secondly, we want to observe whether graduates from disadvantaged social backgrounds are more unemployed and inactive than those from households with more resources. In order to achieve these purposes, we analyzed a sample of graduates from Catalan public universities in 2006-2007 interviewed by the Catalan Agency for the Quality of University System (AQU) in the first trimester of 2011. The methodology is based on bivariate statistical techniques (contingency tables) and multivariate analysis (binomial logistic regression). The results obtained in the present article leads us to reformulate our original hypothesis, as the findings show that even taking into account the specific degree obtained by graduates, we do not observed a significant influence of social background on the employment of university graduates in this cohort.

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The debate on university expansion has been marked for many years by interest in discovering how social structure continues to

influence society's highest education levels and, in turn, how education structure affects other areas, such as employment structure. In

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France, for example, Baudelot et al. (1981) observed that the quantitative growth of universities in the 1960s had a clearly classist slant in some branches of education or specific degrees: medicine could be considered a degree for “middle class young men”, the arts for women of all social classes, pharmacy for daughters of executives, and scientific studies for young men from any social class.

Similarly, it has been stressed that social advantages, which are passed from parents to offspring, can also be observed in education pathways (Calmand & Epiphane, 2012; Lucas, 2001; Triventi, 2011a). For example, people from privileged backgrounds tend to select more academic pathways, whilst those from lower class families often enrol on vocational programmes, such as those related with technical areas (Van de Werfhorst & Luijkx, 2010).

The decision about which degree to pursue has been correlated with students’ and families’ expectations about opportunities for academic success. Long degrees require an investment over a number of years, which may entail a risk of failure for those who did not obtain solid academic results at pre-university level (Salas, 2005; Troiano & Elias, 2013).

There is a wide range of literature on the impact of the degree on the social composition of the university (Gerber & Cheung, 2008). For example, Van de Werfhorst and Luijkx (2010) studied the influence of parents’ occupation on the field of study chosen by their offspring in the Netherlands, on the basis of the hypothesis that offspring would be over-represented in similar fields to those of their parents’ jobs. The researchers did indeed find that, when they controlled for the relationship between social class and educational level, offspring frequently chose areas of study that were associated with the domain of their parents’ occupation.

In short, it seems to be confirmed that mechanisms of stratification continue to operate within universities in the social composition of degrees (Gerber & Cheung, 2008; Triventi, 2011), although individual factors are also involved. Troiano and Elias

(2013) presented a model to explain factors that influence the choice of degree. The model contains individual and group aspects. Therefore, degree choice would result from a balance of preferences (personal and social aspirations, and aptitude for study) and risks that emerge in an evaluation of the relative cost (direct, indirect and opportunity costs, and income) of this choice and the likelihood of success (possible options, abilities, duration and expected difficulties).

What occurs within universities is beyond the scope of this paper: we focus only on labour market outcome. However, we do take a retrospective approach, as we consider whether degree choice is an important differentiating factor that helps to explain the influence of social origin on early labour market entry of graduates from Catalan public universities.

Previously, we found that filters with a strong impact on university access (which have been studied in the field of sociology of education) have less effect on students who successfully complete their university education (Planas & Fachelli, 2010). The study illustrated that the impact of social origin at aggregate level had a slight influence on some specific categories. However, the explanatory power of the model was very low when graduate income was used as a variable (8.7%), and even lower when job quality was observed (2%). In both cases, the education level of parents had no impact (Planas & Fachelli, 2010, 104:105).

One explanation for this result could be that it was due to a particular characteristic of the case in Catalonia or of the cohort, and that a larger population needed to be analysed. We considered this explanation and subsequently analysed a cohort that had entered the labour market at more or less the same time, according to the Living Conditions Survey 2005: people who graduated in Spain between 1999 and 2002. The results were surprising, as they showed that only sex and graduate occupation influenced the salary obtained. The occupation and education level of graduates’ parents had no impact (Fachelli, Torrents & Navarro-Cendejas, 2014).

Criticism of the study pointed to the need to discover whether this behaviour would remain constant over time. The new hypothesis was that the influence of social origin would disappear on early entry to the labour market, but reappear over time through social networks. Consequently, higher education graduates would enjoy freedom from the chains of their association with a social class for a certain amount of time, but would be re-shackled eventually. To test this hypothesis, we decided to extend the analysis to successive cohorts, and consider people who had graduated from seven to thirty years before 2005. We used 6 cohorts that covered the entire democratic period in Spain. The analysis showed that economic and cultural barriers influenced labour market entry of the population in general. However, the influence was weaker among university graduates, both at the time of labour market entry and subsequently (Torrents & Fachelli, 2015).

Experts argued that the explanation for the results must then be that the grouping of data hides more complex, diverse realities. They considered that general conclusions could be drawn if the analysis was carried out with a higher level of disaggregation, that is, by research areas, by sub-areas, or even, most importantly, by degree.

We responded to the first two questions by stating that differences by area and sub-area had been examined in the 2010 paper on Catalan graduates. The goodness of fit of the models that explored the influence of social origin had very low explanatory power, at between 2 and 7% depending on the area. The variables that were responsible for this coefficient were, in many cases, sex, university entry grade or academic record, rather than social background. The analysis by sub-area was more fruitful: two sub-areas of Humanities, three of Economics, two of Social Sciences, one of Experimental Sciences, one of Health Sciences and three of Technology indicated that some of the characteristics analysed in the model influenced the income obtained by graduates (Planas & Fachelli, 2010).

Supporting these findings, in a paper that is close to publication, Julio Carabaña and Gloria de la Fuente analysed graduates in 2003 from the Faculty of Social Sciences and Humanities at the Complutense University of Madrid. In a study on the same subject as this paper, they found three degrees in which social origin had a notable impact, and stressed that the “the influence of social origin on professional class and income drops considerably when we control for degrees, and is not observed in most of them”.

However, when we reflected again on the results we obtained in 2010, we decided to respond to our expert critics’ concern about the importance of a disaggregated analysis, and to go down to the last step in the aggregation: degree level.

Therefore, taking into account the extensive international literature and the suggestions we received on the importance of the stratifying effect that a specific degree could have on university students, we decided to undertake the study described below. In this study, we observed whether the influence of social origin affects university graduates’ labour market entry, taking into account the degree that was obtained. To this aim, we studied Catalan graduates from academic year 2006-2007, who were interviewed in 2011.

Method

Sample

The data are taken from the Fourth Survey on the Labour Market Outcomes of Graduates from Universities in Catalonia (AQU Catalonia, 2011). The survey has been carried out by the Catalan University Quality Assurance Agency (AQU Catalonia) since 2001, using a probability sample of university graduates who obtained a bachelor’s degree four years before participating in the survey [\[1\]](#). For this study, we used microdata from the 2011 survey, which was completed by graduates who finished their studies in 2007. Out of the total cohort, we selected the public universities graduates (11,843 respondents). This set of graduates were spread over 119 degrees, which we analysed without grouping them in any way.

Hypothesis

To this end, we formulated the following hypotheses:

- When we take into account the university degree held by graduates in full-time employment (n = 8,787), social origin influences labour market entry (measured by the income obtained in the graduates' jobs).
- University graduates from disadvantaged backgrounds experience higher unemployment and are more likely to be out of the labour force. Conversely, graduates from privileged backgrounds are more likely to be employed.

Procedure

First, we used contingency tables to assess the level of association between the qualitative variables in the analysis and the independent variable. To determine the overall degree of association between variables, two basic conditions must be met: less than 20% of the cells must have expected frequencies less than

$$\ln \{ (P(Y=1)) / (1-P(Y=1)) \} = \alpha + \beta_1 \text{ [NOF]}_{\text{Low}} + \beta_2 \text{ [NFF]}_{\text{Primary}} \quad (1)$$

where P is the probability of a high income.

The dependent variables used to test the two hypotheses are described below:

• *High or low gross annual income:* to analyse the income of employed graduates, we recoded the income variable, which was

5; and the p-value of the chi-squared statistic must be less than 0.05. Once the association had been verified, its strength could be examined using Cramer's V. This technique was used to verify both hypotheses.

Second, we used binary logistic regression as an explanatory analysis. In this technique, a dependent variable, Y_i that has two mutually exclusive alternatives in terms of probabilities (in this case, high income or low income) can be analysed using the independent variables. Logistic regression enables us to predict group membership on the basis of a qualitative categorical or dependent variable, which has two values in the binary case (López-Roldán & Fachelli, 2015). Then, a strategy of substantive modelling (Jovell, 1995) was carried out. In other words, variables that were considered important to explain the phenomenon were included in the model. In our case, these variables were family employment level (NOF) and family education level (NFF). The empirical specification of the first hypothesis using the logistic model could be expressed as:

originally measured in ranges. We differentiated between two categories: low income and high income. The limit between the two categories was set at 24 thousand euros gross per year. The tables below show the original variable (Table 1) and the result of recoding (Table 2).

Table 1 - Gross annual income

	Frequency	Valid percentage
	89	1,1
	291	3,5
	639	7,8
	799	9,7
Valid	2699	32,7
	2041	24,8
	1225	14,9
	462	5,6
	8245	100,0
Missing	542	
System		
Total	8787	

Source: compiled by authors using data from AQU Catalonia 2011

The following table shows the recoding of the income. A total of 54.8% of graduates

were put in the low income group, and 45.2% were placed in the high income group.

Table 2 - Recoding income

		Frequency	Valid percentage
Valid	0 Low	4517	54,8
	1 High	3728	45,2
	Total	8245	100,0
Missing	System	542	
	Total	8787	

Source: compiled by authors using data from AQU Catalonia 2011

· *Employment status:* to test the first hypothesis, the graduates were divided by their main activity four years after obtaining the degree: employed (working), unemployed (not working, but looking for work), or not in the labour force (not working or looking for work). The survey indicated that in 2011, 88.6% of public university graduates were employed, 7.8% were unemployed and 3.6% were not in the labour force.

Independent variables: family employment level and family education level

The social origin of graduates was measured using two variables: family employment level (NOF) and family education level (NFF). Each variable was divided into three categories (high, medium and low), which reflected the highest level attained by either of the parents.

· *Family employment level (NOF)*

The low category of NOF included parents who were employed by others in unskilled occupations, as well as freelancers whose functions did not require higher education; the medium category was made up of employed parents with skilled functions; and the high category was comprised of parents who were employed by others with senior management or expert functions, as well as freelancers who had university-level functions (Planas and Fachelli, 2010).

· *Family education level (NFF)*

In the case of NFF, the low category was comprised of one or both parents with up to primary education, the medium category

included one or both parents with secondary school education, and the high category was made up of one or both parents with higher education.

To analyse the association between social origin and graduate employment outcome, contingency tables were created for each degree. Then, a basic binomial logistic regression was applied to the 116 degrees. Here, we only present results for degrees that met the statistical application conditions, as explained below.

This procedure was very important, as it defined which degrees informed us or responded to our research question, and which did not. In the research process, we first addressed the general area (all Catalan graduates grouped together, examined in previous studies referred to in the Introduction), and then the most specific area, as described in this paper. This highly specific analysis is of great interest, because we differentiated between degrees that could be analysed and those that could not. The degrees that could be analysed produce reliable results. We identified the degrees that could not be analysed and therefore cannot answer the research question.

Results

Analysis of the relationship between income and social origin: contingency tables

The first analysis consisted of preparing contingency tables to observe the relationship between social origin and income for each degree, using the chi-squared statistic. One

hundred and nineteen contingency tables were created for each indicator of social origin. Therefore, there were 238 contingency tables in total: one for each degree and each indicator of social origin. We then analysed the tables using the steps given below:

- We identified the degrees that met the requirements for contingency table analysis, that is, those in which less than 20% of the cells had an expected frequency of less than 5, as recommended in the application of this technique.
- We determined the degrees that had a statistically significant relationship, with a confidence interval (CI) of 95%, that is, $p < 0.05$ in the chi-squared statistic.
- We selected the degrees with significant results and then analysed the direction of the relationship between income level and social origin.

1) *Family employment level (NOF)*

Figure 1 shows two axes, which are: whether the data meet the requirements for contingency table analysis ($< 20\%$ of cells have an expected frequency less than 5) or not (vertical axis); and whether the association is statistically significant ($p < 0.05$) or not (horizontal axis). The intersection of the axes produces four distinct quadrants in which to put the corresponding degrees.

As can be seen at the top of the table, out of the total number of degrees with enough cases for contingency table analysis (49), there was only a statistically significant relationship between family employment level and income in five degrees (top right quadrant). In the remaining 44 degrees, low and high graduate incomes were distributed evenly between the three family employment levels (top left quadrant).

Figure 1 - Summary of contingency tables, income and family employment level (NOF)

Meets the condition: less than 20% of cells have an expected frequency less than 5	
D. Labour Relations D. Social Work B. Work Sciences D. Management and Public Administration B. Sociology (... total 44)**	D. Business Sciences D. Social Education B. English B. Criminology B. Physical Activity and Sport
P =>0,05 Non Sig.	P < 0,05 Sig.
B. Geography B. History of Art B. History and Sciences of Music B. Philosophy B. Linguistics B. Literary Theory (...total 54)**	B. East Asian Studies B. Humanities B. Actuarial and Financial Sciences T.E. Telecommunications T.E. Forestry (Commercial Forestry) T.E. Aeronautics (Air Travel)
Does not meet the condition: over 20% of cells have an expected frequency less than 5	

Source: compiled by authors using data from AQU Catalonia 2011. D = Diploma; B = Bachelor's Degree; TE = Technical Engineering. ** The complete list of degrees is given in Appendix 3.

In 60 degrees, there were too few cases to draw valid conclusions about whether the employment indicator of social origin influenced labour market entry (the bottom

part of the table). However, this is an important result, as it defines the situation of degrees about which no conclusions can be made.

Out of the five degrees in the top right quadrant with valid, statistically significant results, four were from the social sciences area and one from humanities. The relationship between the parents' employment level and the graduates' income was as follows:

- B. English ($p = 0.019$; Cramer's $V = 0.32$; $n = 75$): the relationship was significant, particularly due to the over-representation of medium parental employment level among graduates with a low income (Appendix 1, Table 7).
- D. Business Sciences ($p = 0.012$; Cramer's $V = 0.15$; $n = 386$): low income was related to low parental employment levels; high income was related to high or medium parental employment levels (Appendix 1, Table 8).
- B. Criminology ($p = 0.007$; Cramer's $V = 0.33$; $n = 88$): the relationship was the opposite of the expected result. A high parental employment level was related to a low income, and vice versa (Appendix 1, Table 9).
- D. Social Education ($p = 0.008$; Cramer's $V = 0.27$; $n = 133$): low income was related to low parental employment levels; high income was related to high or medium parental employment levels (Appendix 1, Table 10).
- B. Physical Activity and Sport Sciences ($p = 0.009$; Cramer's $V = 0.34$; $n = 80$): a low income was related to low and high parental employment levels; a high income was mainly related to a medium parental employment level (Appendix 1, Table 11).

Family education level (NFF)

Using the same logic as that described above for employment level, Figure 2 shows a list of degrees arranged according to two axes: whether they meet the requirements for

contingency tables analysis (<20% cells with an expected frequency less than 5) and whether the result is statistically significant ($p < 0.05$).

Out of the degrees with enough cases for contingency table analysis (49), a statistically significant relation between family education level and income was only observed in three degrees. In the remaining 46 degrees, low and high incomes were distributed evenly between the three family education levels.

We could not draw valid conclusions from the 59 degrees in the bottom quadrants, as there were not enough cases to determine the influence of family education level on labour market entry. However, as mentioned above, this is an important result as it defines the situation of degrees about which we cannot comment on this kind of influence.

All three degrees with valid, statistically significant results were from the social sciences area. The relationship between the parents' education level and the graduates' income was as follows:

- B. Criminology ($p = 0.018$; Cramer's $V = 0.30$; $n = 88$): the relation is the opposite of the expected result. A higher education level was related to a low income, and vice versa. (Appendix 2, Table 12).
- B. Political Science and Public Administration ($p = 0.010$; Cramer's $V = 0.32$; $n = 91$): as in the above case, a low income was related to higher education, whilst a high income was associated with primary education (Appendix 2, Table 13).
- D. Social Education ($p = 0.043$; Cramer's $V = 0.22$; $n = 135$): a low income was related to primary education, and a high income was related to higher education (Appendix 2, Table 14).

Figure 2 - Summary of contingency tables, income and family education level

Less than 20% of cells have an expected frequency less than 5	
B. Social and Cultural Anthropology B. History B. Business Admin. and Management B. Economics D. Market Research and Techniques (...total 46)**	B. Criminology B. Political Science and Public Admin D. Social Education
P >= 0.05	P < 0.05
B. Geography B. History of Art B. History and Sciences of Music B. Philosophy B. Linguistics B. Literary Theory (...total 57)**	B. German T.E. Agriculture (Agricultural and Food Engineering)
More than 20% of cells have an expected frequency less than 5	

Source: compiled by the authors using data from AQU Catalonia 2011.

** The complete list of degrees is given in Appendix 4.

D = Diploma; L = Bachelor's Degree; TE = Technical Engineering.

Balance between the two social origin indicators

After the independent analysis of each social origin indicator, we defined the degrees that were associated with both indicators (employment origin and education origin), to examine the relationship with graduate employment outcome, measured by income. Some degrees did not pass the test, either because they did not meet the conditions or

because they met the conditions, but no relationship was found between the variables.

Therefore, of the six degrees that passed all the tests, three showed an influence of the parents' employment level (top left quadrant), one showed an influence of parents' education level (bottom right quadrant) and two showed an influence of both social origin indicators: Criminology and Social Education. Figure 3 summarizes these results, and all of the degrees are presented in Appendix 5.

Figure 3 - Balance between employment level and education level

There is a relationship with parental employment level	
No relationship can be determined with parental education level	D. Business Sciences B. English B. Sport
D. Labour Relations D. Social Work B. Work Sciences D. Management and Public Admin B. Sociology (...total 44)**	D. Social Education B. Criminology B. Political Sciences
No relationship can be determined with parental employment level	
A relationship can be determined with parental education level	

Source: compiled by the authors using data from AQU Catalonia 2011. D = Diploma; L = Bachelor's Degree

** The complete list of degrees is given in Appendix 5.

Analysis of the relationship between employment status and social origin

In light of the results obtained in the previous section, we explored the second hypothesis. The assumption was that if social origin did not influence labour market entry in most of the cases that could be analysed, then perhaps some influence could be found in graduates who had not entered the labour

market (unemployed graduates) or those who were outside the labour market because they were focusing on other activities (graduates not in the labour force). Therefore, in the second analysis, the dependent variable was “employment status” and its relationship with the two independent social origin variables was analysed.

Table 3 - Association between family employment level (NOF) and graduate employment status

Graduate employment status	Family employment level (NOF)			
	High	Medium	Low	Total
Employed	4323	2987	3363	10673
<i>% column</i>	88,6	88,7	88,6	88,6
<i>Adjusted residuals</i>	-0,2	0,2	-0,1	
Unemployed	376	271	292	939
<i>% column</i>	7,7	8,1	7,7	7,8
<i>Adjusted residuals</i>	-0,3	0,6	-0,3	
Not in the labour force	181	108	140	429
<i>% column</i>	3,7	3,2	3,7	3,6
<i>Adjusted residuals</i>	0,7	-1,3	0,5	
Total	4880	3366	3795	12041

Chi squared = 0.729

Source: compiled by the authors using data from AQU Catalonia 2011.

First, the analysis of the relationship between parental employment level and graduate employment status, that is, whether graduates were working, unemployed or not in the labour force (Table 3), did not allow us to state that there were significant differences according to parental employment level. The

analysis of employment status showed that graduates had similar likelihoods (that were not differentiated by social origin) of being employed, unemployed or not in the labour force.

Table 4 - Association between family education level (NFF) and graduate employment status

Graduate employment status	Family education level (NFF)			
	Low	Medium	High	Total
Employed	3965	3295	3527	10787
<i>% column</i>	89,2	89,5	87,2	88,6
<i>Adjusted residuals</i>	1,6	2,0	-3,5	
Unemployed	332	263	357	952
<i>% column</i>	7,5	7,1	8,8	7,8
<i>Adjusted residuals</i>	-1,1	-1,8	2,9	
Not in the labour force	148	125	162	435
<i>% column</i>	3,3	3,4	4,0	3,6
<i>Adjusted residuals</i>	-1,1	-0,7	1,8	
Total	4445	3683	4046	12174

Chi squared = 0,013; Cramer's V = 0,023

Source: compiled by the authors using data from AQU Catalonia 2011

Second, Table 4 shows a certain cultural influence of parents on their offspring's employment status. In other words, parental education level was associated to a certain degree with graduates' employment status, although the association was very weak (with a power of 2.3%). We analysed this influence. Adjusted residuals indicate which cells explain the level of association (significant residuals are above the absolute value of 1.96); in this case, employed and unemployed graduates whose parents were from high social strata. The sign of the residuals shows the direction of the association. Therefore, offspring of parents with a high education level were less likely to be employed (residual: -3.5) than the rest of graduates, and graduates from high social strata were more likely to be unemployed than the rest of the graduates (residual: 2.9).

In conclusion, we should reject Hypothesis 2 for two reasons. First, family employment level did not influence offspring's employment status by increasing the likelihood of unemployment or of being outside the labour force in some groups. Second, family education level had a very weak influence, but in the opposite direction to the expected result: offspring of

families with a higher education level were more likely to be unemployed, but just as likely to be out of the labour force, as no significant differences were observed between the three groups in this case.

Analysis of the relationship between income level and social origin: binomial logistic regression

Once the contingency tables had been completed, a series of logistic models were developed to measure the influence of social origin on income, controlling for degree. A logistic model was created for each degree, with the two social origin indicators entered as independent variables. The aim was to measure the influence of each indicator on the dependent variable of income (the same dichotomous variable as that used in Section 3.1)^[2].

Once the logistic regressions had been applied, we identified the models in which the data had significant goodness-of-fit results. Statistically significant results were only found in six of the 119 degrees under study. Table 5 shows the logistic model results: the Hosmer-Lemeshow test, Nagelkerke's R², and the valid cases.

Table 5 - Logistic regression results

	N	R ² Nagelkerke	Hosmer-Lemeshow test	
			Chi squared	Sig.
B. English	75	,219	2,426	,877
D. Business Sciences	384	,036	2,859	,722
B. Criminology	88	,165	3,113	,539
B. Sociology	69	,190	2,288	,891
D. Social Education	133	,116	,425	,995
B. Physical Activity and Sport	80	,222	1,417	,841

Source: compiled by the authors using data from AQU Catalonia 2011

When there are few cases, as in the first column of Table 5, it is advisable to use the Hosmer-Lemeshow test, which shows whether the logistic regression can be interpreted. A significance level of 0.05 or above indicates that we can accept the regression results. Once the level of significance has been verified, we can interpret Nagelkerke's R², which informs us about the goodness of fit of the model. In this

case, the degrees with the greatest explanatory power were B. Physical Activity and Sport at 22.2% and B. English at 21.9%, followed by B. Sociology at 19%, B. Criminology at 16.5% and D. Social Education at 11.6%. D. Business Sciences had a very low explanatory power (3.6%).

Table 6 shows the logistic regression results. In all cases, the reference categories were the

lowest levels of social origin, that is, low level.
employment level and a primary education

Table 6 - Logistic regression coefficients

		B	E.T.	Wald	gl	Sig.	Exp(B)
English	<i>NOF (low ref.)</i>			5,969	2	,051	
	NOF (high)	-,210	,792	,070	1	,791	,811
	NOF (medium)	-2,702	1,120	5,822	1	,016	,067
	<i>NFF (primary ref.)</i>			2,558	2	,278	
	NFF(higher)	-,042	,948	,002	1	,965	,959
	NFF(medium)	,929	,705	1,737	1	,187	2,533
	Constant	-,738	,432	2,920	1	,087	,478
D. Business Sciences	<i>NOF (low ref.)</i>			4,876	2	,087	
	NOF (high)	,602	,293	4,228	1	,040	1,826
	NOF (medium)	,440	,269	2,671	1	,102	1,552
	<i>NFF (primary ref.)</i>			1,568	2	,457	
	NFF(higher)	,288	,332	,753	1	,385	1,334
	NFF(medium)	,290	,248	1,364	1	,243	1,336
	Constant	-1,051	,194	29,299	1	,000	,350
B. Criminology	<i>NOF (low ref.)</i>			3,449	2	,178	
	NOF (high)	-1,275	,687	3,447	1	,063	,279
	NOF (medium)	-,399	,563	,502	1	,479	,671
	<i>NFF (primary ref.)</i>			1,558	2	,459	
	NFF(higher)	-,829	,666	1,553	1	,213	,436
	NFF(medium)	-,248	,593	,175	1	,676	,780
	Constant	1,229	,419	8,602	1	,003	3,417
B. Sociology	<i>NOF (low ref.)</i>			5,510	2	,064	
	NOF (high)	-1,476	,818	3,260	1	,071	,228
	NOF (medium)	,057	,734	,006	1	,939	1,058
	<i>NFF (primary ref.)</i>			4,230	2	,121	
	NFF(higher)	,009	,715	,000	1	,990	1,009
	NFF(medium)	-1,400	,764	3,355	1	,067	,247
	Constant	,379	,615	,380	1	,538	1,461
D. Social Education	<i>NOF (low ref.)</i>			4,470	2	,107	
	NOF (high)	1,418	,671	4,457	1	,035	4,127
	NOF (medium)	,927	,664	1,951	1	,162	2,527
	<i>NFF (primary ref.)</i>			,416	2	,812	
	NFF(higher)	,418	,652	,411	1	,521	1,520
	NFF(medium)	,148	,561	,069	1	,792	1,159
	Constant	-2,259	,488	21,387	1	,000	,104
B. Physical Activity and Sport	<i>NOF (low ref.)</i>			9,545	2	,008	
	NOF (high)	1,901	,948	4,016	1	,045	6,690
	NOF (medium)	2,606	,843	9,544	1	,002	13,540
	<i>NFF (primary ref.)</i>			4,009	2	,135	
	NFF(higher)	-1,409	,864	2,660	1	,103	,244
	NFF(medium)	-,281	,878	,103	1	,749	,755
	Constant	-1,869	,642	8,488	1	,004	,154

Source: compiled by the authors, using AQU Catalonia 2011

We only found a statistically significant ($p=0.008$) influence of social origin for high family employment level in the bachelor's degree in Physical Activity and Sports Science. Graduates of this degree whose parents had a high or medium employment level had between 6 and 13 times more opportunities to obtain a high income than graduates whose parents had a low employment level.

In the rest of the models, no variable showed statistically significant results, although they could be found in some categories:

- *B. English*: offspring of parents with a medium employment level had fewer opportunities to obtain a high income than offspring of parents with a low employment level ($\text{Exp}(B)=0.67$).
- *D. Business Sciences*: offspring of parents with a high employment level had almost double the opportunities to obtain a high income than offspring of parents with a low level ($\text{Exp}(B)=1.82$).
- *D. Social Education*: offspring of parents with a high employment level had four times more opportunities to obtain a high income than offspring of parents with a low employment level ($\text{Exp}(B)=4.127$).

Conclusions and discussion

We have adopted various approaches to analyse the influence of social origin on university graduates' early labour market entry. In previous studies of all graduates in 2003-2004 who were interviewed in 2008, we found a weak influence of social origin, which just allowed us to highlight some degrees with strong results, such as History of Art, English, Fine Arts, Teacher Training in Physical Education and Industrial Technology (Planas and Fachelli, 2010).

Social origin variables were included for the first time in the 2008 survey, and again in the 2011 survey that was used in this study. According to the survey data, most Catalan university students are the first generation in

their family group to attend university. This fact reflects the university expansion that has occurred, and the importance of the decentralization of public universities from the 1980s onwards. As a result of these actions, a considerable number of people without resources can now access universities, as the cost of moving to cities with universities was not generally a limiting factor for middle class and well-off families, but was a clear barrier to access for those from lower classes.

In the social field, there are numerous studies on the important role of social origin as a determinant of limitations to opportunities that promote upward mobility. However, this area has not been studied sufficiently with respect to university graduates. Therefore, our aim is to provide as much evidence as possible to begin to discuss two ideas that have existed for many years, but have been rekindled with the current economic crisis: universities are unemployment factories, and graduates from well-off families have much better opportunities.

In particular, we focused on re-examining these clichés, using a new source of data (AQU, 2011). On this occasion, we went down to the smallest unit of analysis: the degree. Previously, we studied this topic at more aggregate levels, and the results cast doubts over the usual clichés (Torrents and Fachelli, 2015; Fachelli, Torrents and Navarro-Cendejas, 2014; Fachelli and Planas, 2014; Fachelli and Planas, 2011). Of course, dropping to this new level of detail has a high cost, as many associations do not reach statistical significance. This is true despite the fact that the sample was designed to analyse the data by degree. However, whether or not data can be analysed effectively depends on the distribution of frequencies in each category of a variable, and the number of variables to consider.

Fewer results are presented in this paper than initially expected (119 degrees), but the selected degrees are those about which we can make statements with a reasonable confidence level. Therefore, this study provides

information or a response to the experts (ourselves included) who believed that the social reproduction thesis would finally be proved at this level. However, establishing that we cannot confirm specific behaviour is also a response.

In order to summarize the study, we should mention that it was based on two hypotheses. The first was that social origin influences university graduates' labour market entry if social origin is analysed by degree. The second hypothesis addressed the graduates who were excluded from the first hypothesis, that is, unemployed graduates and those who were not in the labour force. It was postulated that graduates from lower social strata in terms of employment and culture, would be more likely to be unemployed or not in the labour force.

In relation to the first hypothesis, and taking into account the contingency table results, the following points can be highlighted:

- a. Of the 49 degrees that met the analysis conditions, only five showed an influence of social origin based on parental employment level: D. Business Sciences, D. Social Education, B. English, B. Criminology, and B. Physical Activity and Sport Sciences. However, the expected relationship, according to the hypothesis, was only found in the first two diplomas listed above.
- b. Of the 49 degrees that met the analysis conditions, only three showed an influence of social origin based on parental education level: B. Criminology; B. Political Sciences and D. Social Education. However, the expected relationship, according to the hypothesis, was only found for the diploma in Social Education. The relationship was the opposite of expected for the Criminology and Political Sciences degrees: graduates from low social origins had a higher income.

- c. When we took stock and analysed the intersection of these groups, we only found two degrees that were influenced by both family employment level and family education level. In this case, we had to reject one degree (Criminology), because the expected results were only obtained for the diploma in Social Education.

Regarding the first hypothesis, and on the basis of the logistic regression results, we can highlight the following:

- a. Out of the 116 degrees that were analysed, only six met the statistical criteria required for all indicators in an analysis of this type: B. English, D. Business Sciences, B. Criminology, B. Sociology, D. Social Education, and B. Physical Activity and Sport.
- b. Of these six degrees, only one showed a significant impact of family employment level on income (B. Physical Activity and Sport).
- c. None of the degrees showed an influence of family education level when we also controlled for the parents' employment level.
 - a) The results found in relation to the second hypothesis are as follows:
 - a. Social origin determined by the parents' employment level did not have an influence that allowed us to differentiate between graduates' status as employed, unemployed or not in the work force. All graduates, regardless of their social origin, were equally distributed among the categories of employed, unemployed and not in the work force.
 - b. Social origin determined by the parents' education level did have an influence on employment status. Both employed and unemployed graduates were more likely to be from the highest social strata. This association was found to be very weak, and was in the opposite direction to the expected

results. This leads us to consider the capacity of graduates from privileged backgrounds to wait at times of recession in the labour market, as seen in previous studies.

In light of the results obtained, we must reject the two hypotheses that guided this research. Even when we controlled for degree, we did not find relevant effects that lead us to consider that social origin influences most graduates' labour market outcome. The exception that proves the rule are the 133 graduates of the diploma in Social Education, who behaved as expected, that is, graduates from privileged backgrounds, both economically and culturally, had the highest incomes.

In general, we consider that it is useful to add evidence together in this way, and to begin to question our social imaginary on the basis of objective evidence. This approach could enable us to draw conclusions about education policy. Currently, an education reform is being discussed to cut bachelor's degrees to three years, and master's degrees to two years. This reform comes soon after another, the Bologna Declaration, which put an end to diplomas and established four-year bachelor's degrees. The effects of education policies can only be evaluated after a sensible amount of time has passed. Our study provides evidence prior to the reform that some wish to implement. In this respect, from the perspective of labour market outcomes, it appears that the higher education system, which has already been reformed, works quite well.

We should therefore continue the analysis, to check whether cohorts of graduates in the years after this study, who have also been influenced by the deep recession, have had the same opportunities. This is the next task that we shall work on.

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Notes

^[1] The survey questions are available on the AQU website: http://www.aqu.cat/doc/doc_21620985_1.pdf

^[2] *Appendixes 1 and 2 contain the contingency tables that measure separately the association between graduate income and the two social origin variables for each of the degrees described in this section.*

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ANNEXES

1. Association between graduate income and parents' employment level for selected degrees.

Table 7 -Bachelor's degree in English. Association between income and parents' employment level

Graduate employment outcome	Family employment level (NOF)			Total
	High	Medium	Low	
Low income	13	20	21	54
<i>% column</i>	65.0%	95.2%	61.8%	72.0%
<i>Adjusted residuals</i>	-.8	2.8	-1.8	
High income	7	1	13	21
<i>% column</i>	35.0%	4.8%	38.2%	28.0%
<i>Adjusted residuals</i>	.8	-2.8	1.8	
Total	20	21	34	75

Chi squared = 0.019. Source: compiled by the authors using data from AQU Catalonia 2011.

Table 8 - Diploma in Business Sciences. Association between income and parents' employment level

Graduate employment outcome	Family employment level (NOF)			Total
	High	Medium	Low	
Low income	64	64	120	248
<i>% column</i>	55.7%	61.0%	72.3%	64.2%
<i>Adjusted residuals</i>	-2.3	-.8	2.9	
High income	51	41	46	138
<i>% column</i>	44.3%	39.0%	27.7%	35.8%
<i>Adjusted residuals</i>	2.3	.8	-2.9	
Total	115	105	166	386

Chi squared = 0.012. Source: compiled by the authors using data from AQU Catalonia 2011.

Table 9 - Bachelor's degree in Criminology. Association between income and parents' employment level

Graduate employment outcome	Family employment level (NOF)			Total
	High	Medium	Low	
Low income	15	10	9	34
<i>% column</i>	65.2%	34.5%	25.0%	38.6%
<i>Adjusted residuals</i>	3.0	-.6	-2.2	
High income	8	19	27	54
<i>% column</i>	34.8%	65.5%	75.0%	61.4%
<i>Adjusted residuals</i>	-3.0	.6	2.2	
Total	23	29	36	88

Chi squared = 0.007. Source: compiled by the authors using data from AQU Catalonia 2011.

Table 10 - Diploma in Social Education. Association between income and parents' employment level

Graduate employment outcome	Family employment level (NOF)			Total
	High	Medium	Low	
Low income	30	27	46	103
<i>% column</i>	63.8%	77.1%	90.2%	77.4%
<i>Adjusted residuals</i>	-2.8	.0	2.8	
High income	17	8	5	30
<i>% column</i>	36.2%	22.9%	9.8%	22.6%
<i>Adjusted residuals</i>	2.8	.0	-2.8	
Total	47	35	51	133

Chi squared = 0.008. Source: compiled by the authors using data from AQU Catalonia 2011.

Table 11 - Bachelor's degree in Physical Activity and Sport. Association between income and parents' employment level

Graduate employment outcome	Family employment level (NOF)			
	High	Medium	Low	Total
Low income	28	7	22	57
<i>% column</i>	71.8%	43.8%	88.0%	71.3%
<i>Adjusted residuals</i>	.1	-2.7	2.2	
High income	11	9	3	23
<i>% column</i>	28.2%	56.3%	12.0%	28.8%
<i>Adjusted residuals</i>	-.1	2.7	-2.2	
Total	39	16	25	80

Chi squared = 0.009. Source: compiled by the authors using data from AQU Catalonia 2011.

2. Association between graduate income and parents' education level for selected degrees.

Table 12 - Bachelor's degree in Criminology. Association between income and parents' education level

Graduate employment outcome	Family education level (NFF)			
	High	Medium	Low	Total
Low income	14	7	13	34
<i>% column</i>	63.6%	35.0%	28.3%	38.6%
<i>Adjusted residuals</i>	2.8	-.4	-2.1	
High income	8	13	33	54
<i>% column</i>	36.4%	65.0%	71.7%	61.4%
<i>Adjusted residuals</i>	-2.8	.4	2.1	
Total	22	20	46	88

Chi squared = 0.018. Source: compiled by the authors using data from AQU Catalonia 2011.

Table 13 - Bachelor's degree in Political Science and Public Administration. Association between income and parents' education level

Graduate employment outcome	Family education level (NFF)			
	High	Medium	Low	Total
Low income	31	20	4	55
<i>% column</i>	73.8%	57.1%	28.6%	60.4%
<i>Adjusted residuals</i>	2.4	-.5	-2.7	
High income	11	15	10	36
<i>% column</i>	26.2%	42.9%	71.4%	39.6%
<i>Adjusted residuals</i>	-2.4	.5	2.7	
Total	42	35	14	91

Chi squared = 0.010. Source: compiled by the authors using data from AQU Catalonia 2011.

Table 14 - Diploma in Social Education. Association between income and parents' education level

Graduate employment outcome	Family education level (NFF)			
	High	Medium	Low	Total
Low income	18	34	53	105
<i>% column</i>	62.1%	77.3%	85.5%	77.8%
<i>Adjusted residuals</i>	-2.3	-.1	2.0	
High income	11	10	9	30
<i>% column</i>	37.9%	22.7%	14.5%	22.2%
<i>Adjusted residuals</i>	2.3	.1	-2.0	
Total	29	44	62	135

Chi squared = 0.043. Source: compiled by the authors using data from AQU Catalonia 2011.

3. Summary of contingency tables, income and family employment level: complete list of degrees

Meets the condition: less than 20% of cells have an expected frequency less than 5			
	D. Labour Relations D. Social Work B. Work Sciences D. Management and Public Ad. B. Sociology B. Political Sciences B. Audiovisual Communication B. Journalism B. Advertising and P. Relations B. Psychology B. Education B. Educational Psychology M. Special Education M. Physical Education M. Early Childhood Education M. Music Education M. Foreign Language M. Primary Education B. Chemistry B. Biochemistry B. Environmental Sciences B. Mathematics	D. Nursing D. Optics and Optometry B. Medicine B. Pharmacy B. Food Science and Technology Architecture Technical Architecture Industrial Engineering (Electricity) Industrial Engineering (I. Electronics) Industrial Engineering (Mechanics) Industrial Engineering (I. Chemistry) Chemical Engineering Tel. Engineering (Electronic Systems) Tel. Engineering (Telematics) Management Software Engineering Systems Engineering Computer Engineering Agricultural Engineering B. Social and Cultural Anthropology B. History B. Business Ad. and Management B. Economics	D. Business Sciences D. Social Education B. English B. Criminology B. Physical Activity and Sport
P >=0.05	No association	Association with social origin	P < 0.05 Sig.
Non-sig.	B. Geography B. History of Art B. History and S. of Music B. Philosophy B. Linguistics B. Literary Theory B. Catalan B. Spanish B. German B. French B. Italian B. Translation and I. B. Translation and I. (English) B. Translation and I. (French) B. Romance Languages B. Fine Arts D. Market Research and Tec. B. Law D. Library and Information S. B. Information Science D. Tourism B. Enology B. Biology B. Geology B. Biotechnology B. Physics D. Statistics	B. Statistical Science and Techniques D. Physiotherapy D. Speech Therapy D. Human Nutrition and Diet D. Chiropody B. Dentistry B. Veterinary Science Mining Eng. (Commercial Mining) Public Works Engineering Surveying Engineering Geological Engineering Civil Engineering T.E. Maritime Navigation T.E. Marine Propulsion Textile Engineering Industrial Engineering Industrial Organization Materials Engineering Automation and I. Electrical Eng. Tel. Engineering (Sound and Image) Tel. Engineering Electronic Engineering Agr. Engineering (Ag. and Livestock) Agr. Eng. (Fruit and Vegetable) Agr. Engineering (Ag. Industries) Agr. Engineering (Mechanization) Forestry Engineering	B. East Asian Studies B. Humanities B. Actuarial and Financial Sci. T.E. Telecommunications T.E. Forestry (Commercial For.) T.E. Aeronautics (Air Travel)
	Does not meet the condition: over 20% of cells have an expected frequency less than 5		

4. Summary of contingency tables, income and family education level: complete list of degrees

Meets the condition: less than 20% of cells have an expected frequency less than 5				
	B. S. and C. Anthropology B. History B. B Admin. and Management B. Economics D. Market Research and Techniques D. Business Sciences B. Law D. Labour Relations D. Social Work B. Work Sciences D. Management & Public Ad. B. Sociology B. Audiovisual Communication B. Journalism B. Advertising and Public Relations B. Psychology B. Education B. Educational Psychology M. Special Education M. Physical Education M. Early Childhood Education M. Music Education M. Foreign Language	M. Primary Education B. Sports Sc. and Physical Act. B. Chemistry B. Biology B. Biochemistry B. Environmental Sciences B. Mathematics D. Nursing B. Medicine B. Pharmacy B. Food Sci. and Technology Architecture Technical Architecture Industrial Eng. (Electricity) I. Eng. (Industrial Electronics) Industrial Eng. (Mechanics) Industrial Engineering Chemical Engineering Tel. Eng. (Electronic Systems) Tel. Engineering (Telematics) Management Software Eng. Systems Engineering Computer Engineering	B. Criminology B. Political Science and PA D. Social Education	
P	No association		Association with social origin	
>=0.05			P < 0.05	
Non-sig.	B. Geography B. History of Art B. History and Sc. of Music B. East Asian Studies B. Philosophy B. Humanities B. Linguistics B. Literary Theory and Literature B. Catalan B. Spanish B. English B. French B. Translation and Interpretation B. Translation and I. (English) B. Translation and I. (French) B. Romance Languages B. Fine Arts B. Actuarial and Financial Sciences D. Library and Information Science B. Information Science D. Tourism B. Enology B. Geology B. Biotechnology B. Physics D. Statistics B. Statistical Science and Tec. D. Physiotherapy	D. Speech Therapy D. Human Nutrition and Diet B. Optics and Optometry D. Chiropody B. Dentistry B. Veterinary Science Mining Eng. (C. Mining) Public Works Engineering Surveying Engineering Geological Engineering Civil Engineering T.E. Maritime Navigation T.E. Marine Propulsion I. Eng. (Industrial Chemistry) Industrial Engineering (Textile) Industrial Organization Materials Engineering Automation & I. Electrical Eng. Tel. Engineering (Tel. Systems) Tel. Eng. (Sound and Image) Tel. Engineering Electronic Engineering Agr. Eng. (Agr. and Livestock) Agr. Eng. (F. and V. Growing) Agr. Eng. (Mechanization) Forestry Eng. (C. Forestry) Agricultural Engineering Forestry Engineering Aeronautical Eng. (Air Travel)	B. German T.E. Agr. (Agr. & Food E)	Sig.
	Does not meet the condition: over 20% of cells have an expected frequency less than 5			

5. Balance between employment level and education level

There is a relationship with parental employment level		
D. Business Sciences B. English B. Sport		D. Social Education B. Criminology
No relationship can be determined with parental education level		A relationship can be determined with parental education level education determined
D. Labour Relations D. Social Work B. Work Sciences D. Management and P. Ad. Admin. B. Sociology B. Audiovisual Communication B. Journalism B. Advertising and Public Relations B. Psychology B. Education B. Educational Psychology M. Special Education M. Physical Education M. Early Childhood Education M. Music Education M. Foreign Language M. Primary Education B. Chemistry B. Biochemistry B. Environmental Sciences B. Mathematics	D. Nursing D. Optics and Optometry B. Medicine B. Pharmacy B. Food Sc. and Technology Architecture Technical Architecture I. Eng (Electricity) I. Eng (Industrial Electronics) I. Engineering (Mechanics) I. Eng. (Industrial Chemistry) Chemical Engineering Tel. Eng (Electronic Systems) Tel. Engineering (Telematics) M. Software Engineering Systems Engineering Computer Engineering Agricultural Engineering B. S. and C. Anthropology B. History B. BA and Management B. Economics	B. Political Sciences and Administration
	No relationship can be determined with parental employment level	

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