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What Lies Behind the Devaluation of Educational Credentials?

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Abstract

Applying fixed-effects models to EULFS data on Spain from 1998 to 2006, the paper explores the effects of educational expansion on the occupational returns to education across different levels of education. We build an indicator of the positional value of education, based on the idea that the value of a given educational credential partly depends on the percentage of labour market entrants who have reached that level at the time when individuals enter the labour market -- it is higher when fewer individuals have reached it, lower otherwise. Our analysis for the Spanish case shows that the decrease in the occupational returns to education goes in parallel with the decrease in the positional value of education, but this devaluation of credentials has been stronger in general education (e.g., in humanities or social sciences university degrees, or in upper secondary general education) than in specialized education (e.g., in technical fields in the university, or in upper vocational training). We argue that the reason for this is most likely that general education provides a more diffuse signal of candidates' skills than specialized education. We also find that this devaluation of credentials has been stronger in fields accessed by women in larger numbers in last decades.

Keywords

Educational expansion, occupational attainment, credentialism, human capital, skill-biased technological change, vocational training, general education, fields of study, Spain

Acknowledgements

Introduction

In 1993 Shavit and Blossfeld provided empirical evidence that educational expansion over XXth century had not necessarily led to a decrease in the inequalities of educational opportunities by social origin; on the contrary, of the thirteen countries included in the project they coordinated, there had been signs of redistribution of educational attainment opportunities between different social origins in only two of them (Shavit & Blossfeld, 1993).

Resorting to a different method (ordinal logistic regression), more recent data and larger national samples, Breen et al have recently challenged Shavit and Blossfeld's conclusions. Their results point to a "clear decline in educational inequality in several countries over the 20th century" (Breen et al. 2009: 1477). Breen et al. argue that Shavit and Blossfeld's work is plagued with methodological shortcomings that could have led to the wrong conclusions: neither cross-country comparison was systematic nor the chapters resorted to the same categories of social origin or educational attainment. These shortcomings may have obscured the effect of mechanisms behind the decline of educational inequality: "general improvement in conditions of living" over the XXth century should have diminished the 'primary effects' on educational inequality; the "declining costs of education" should have diminished the 'secondary effects' as well.

At the end of their article, though, Breen et al cannot but acknowledge that the importance of inequality being "nonpersistent", as they found out, is conditional on education keeping its human capital value. If education had increasingly became a "positional good", the "value of an educational qualification [would have diminished] in proportion to the number of people who acquire it" (1515). But they dismiss this objection to their argument as not quite "telling".

The current work is inspired by that possibility Breen et al. did not credit. If education becomes less of an investment in human capital and more of a positional good, the real value of 'nonpersistent inequality' must not be overstated. Moreover, the decrease in inequality of educational attainment by social origin may be counteracted by an increase in the inequality of access to the labour market. The door is then open to social and/or cultural capital regaining relevance for the prospects of labour market entrants
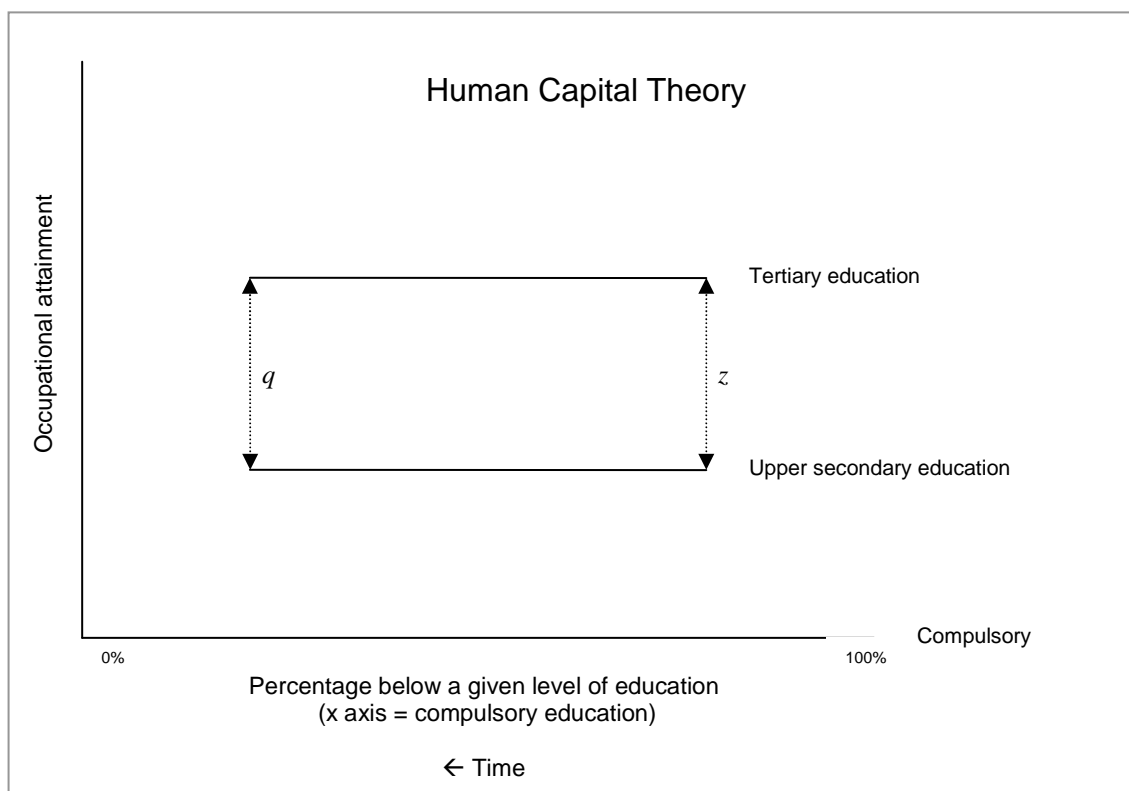
This paper only intends to answer the first of these questions: has there been any trend towards education becoming a positional good? In other words, is there any evidence of a recent decline in the occupational returns to education? After revising different theories on the association between educational expansion and occupational attainment, we justify the selection of the Spanish case for testing that possibility. Then, we introduce the data and methods used for testing our hypotheses.

Educational expansion and occupational returns to education

Breen at al.'s work opens the way to consider two possible values of educational attainment: an *intrinsic value*, which provides individuals with skills that allow them to carry out tasks associated to a given job; and a *positional value*, conferred to a given educational credential by its relative scarcity in the labour market. For the sake of simplicity, let us say that the positional value of a given level of education is captured by the *percentage* of individuals whose educational attainment is *below* in a given labour-market entry cohort. Attaining a diploma as a welder, for instance, enables somebody to carry out tasks associated to this occupation, but the value of this diploma may vary depending on the number and relative scarcity of welders in the labour market. In the same fashion, having a university degree may not convey the same value if university graduates are 5% of active population in a given labour-market-entry cohort as if they are 30% of if. Unfortunately, with some exceptions (Ultee, 1980), studies on social stratification, social mobility and sociology of education have only considered the intrinsic value of education, not its positional one. And, having used a continuous measure of education, the few exceptions that have thought of a positional value of education have not considered the possibility of educational expansion having a differential effect across types or levels of education (see below) (van de Werfhorst, 2011)

Different theories have dealt with the effect of educational expansion on occupational attainment. Human Capital Theory (HCT) would say that time, closely associated to educational expansion, is irrelevant for the value of educational credentials, unless they lose or gain in the quantity or quality of the skills they convey. This scenario is represented in Figure 1 (below). Compulsory education is represented by the x axis; secondary and tertiary education entails a given premium in occupational prestige. In the case of tertiary education, this premium is reflected by q and z. As it is represented in the figure, this effect would be constant, and independent of the percentage of individuals below a given level of education. The share of individuals *below* a given educational credential is also represented by the x axis and is supposed to decrease as educational expansion unfolds. Occupational premium z represents the advantage of tertiary education over secondary education in terms of occupational prestige. HCT would predict that such occupational would be equal to z, a scenario where, due to educational expansion, there would be a lower percentage of people below both tertiary and upper secondary education. The absolute (intrinsic) value of education, represented by the y axis, would not be altered by educational expansion. The relative (positional) value of education, represented by *the difference between* q *and* z) would not change either.

Hypothesis 1: The positional value of education does not have any effect on occupational attainment

Human Capital Theory

Occupational attainment

Tertiary education

q z

Upper secondary education

Compulsory

0%   100%

Percentage below a given level of education
(x axis = compulsory education)

← Time

Other theoretical arguments conceive educational expansion as possibly bringing about a change, either positive or negative, in the intrinsic value of education. On the positive side, it has been argued that educational expansion is a function of the increasing need of skills and qualification associated to the advent of post-industrial societies and the introduction of new technologies of information. If there is any change over time in the occupational returns to education, the skill-biased technological change (SBTC) would predict that it is a change towards an *improvement* of the occupational prospects of educational credentials (Machin, 2003; Manning, 2004).

In graphical terms, it is to be expected that the absolute value of education would *increase* as we move from *a* to *a'* and from *b* to *b'*; that is, as educational expansion unfolds and the percentage of people below a given level of education decreases. But nothing in SBTC theory makes necessary that there is a specific premium (or penalty) associated to this change. In graphical terms, for tertiary education q is still equal to z. Skill-biased technological change would act as a wave lifting the value of all levels of education at the same time.

Hypotheses 2: The positional value of education is positively associated to occupational attainment, and is constant across levels or types of education

Skill-Biased Technological Change
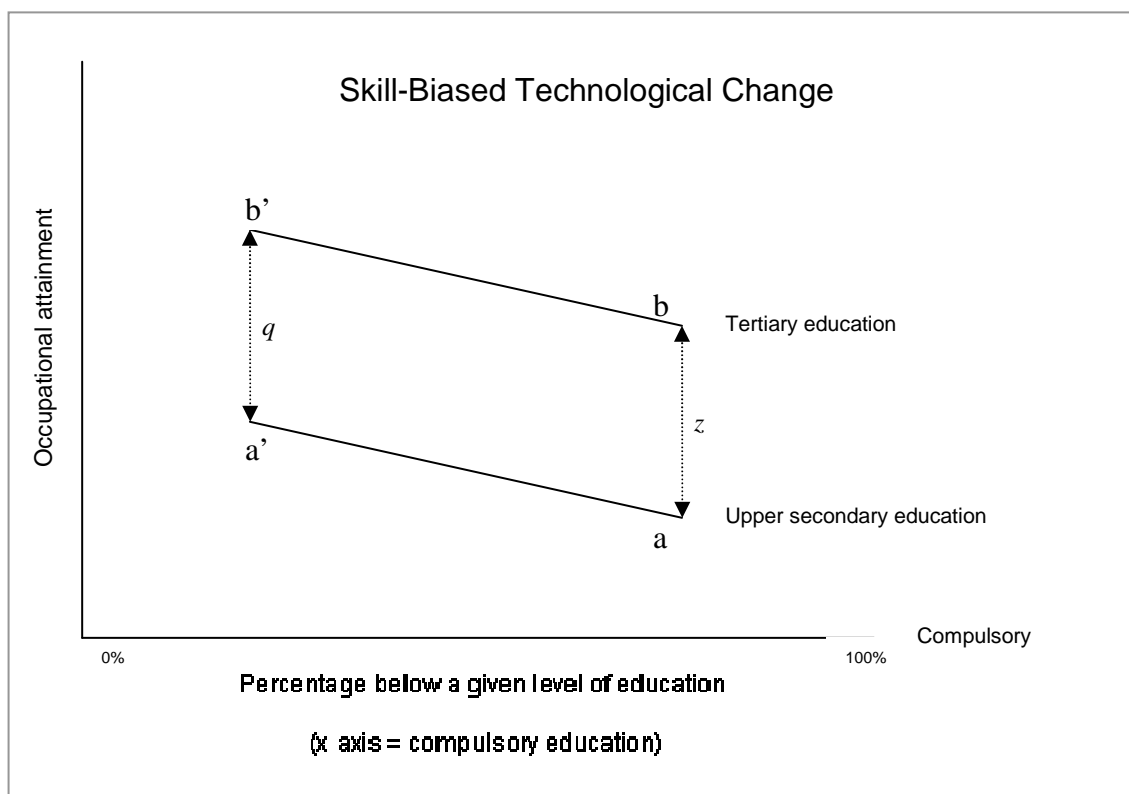
Opposite to SBTC, Credentialism asserts the possibility of a *'credential inflation dynamics'*, according to which a general increase in educational attainment would compel individuals to follow suit, chasing a barrier that moves forward faster the more individuals strive to increase their human capital. By over-educating themselves, they would contribute to put down the *real* value of their titles and diplomas.

Yet, the existence of an eventual credential inflation dynamics may not be necessarily concentrated in the upper categories of educational attainment; on the contrary, it may homogeneously pervade the whole system of education. As more and more people get a university degree, and the signal provided by university education worsens, all titles and diplomas below worsen in parallel. Employers may not regard a university degree as well as they used to, but they do not regard an upper secondary diploma as well they used to either. If this is the case, the prestige premium associated to educational credentials would remain stable, even if the absolute value of education generally worsens.

This scenario is graphically represented below. As we move from left to right along the *x* axis, there is a lower share of individuals *below* each one of the educational levels considered. Such a decrease would be accompanied by a *homogeneous* decrease in the occupational return to each educational level. But there would not be any penalty (negative premium) specifically associated to, say, tertiary education becoming more common among the active population (*q* would be still equal to *z*).

Hypotheses 3: The positional value of education is negatively associated to occupational attainment, and is constant across levels or types of education
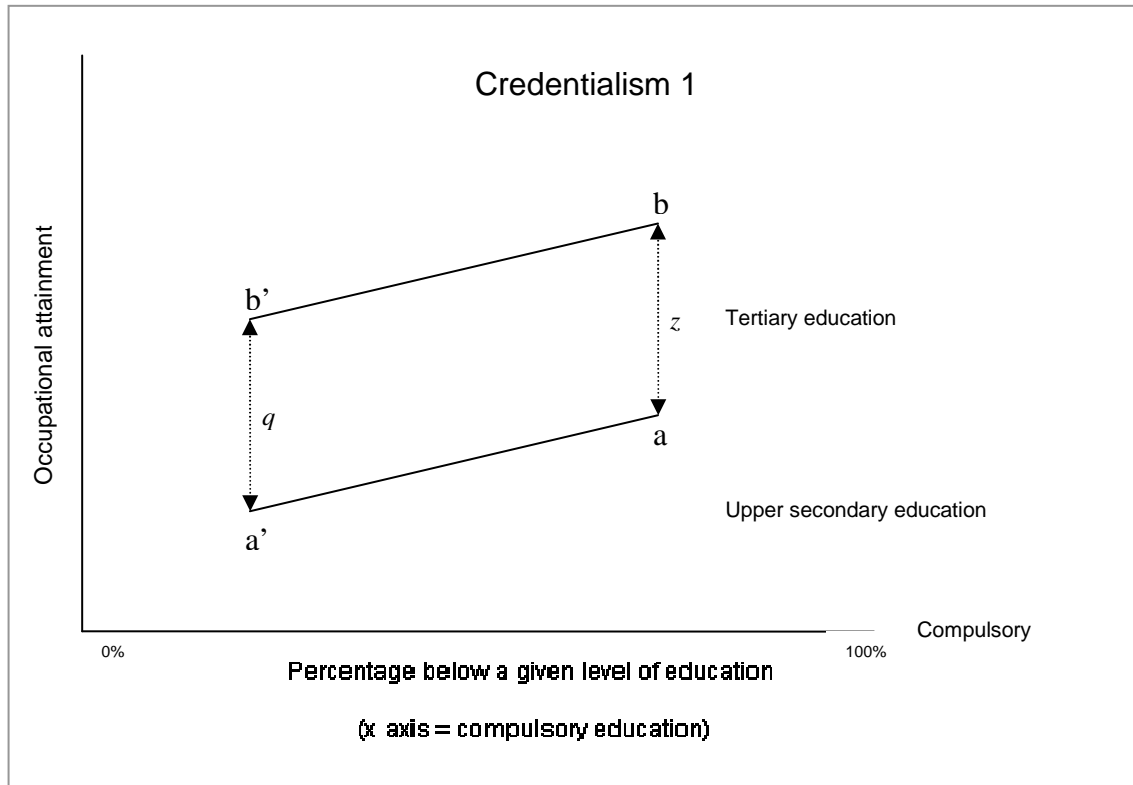
No one of the theories mentioned so far consider the possibility that the effect of educational expansion, in one sense or another, is felt more at some levels of educational attainment than others. Within the realm of Credentialism, for example, some educational credentials may be more adversely affected by educational expansion than others. In the following picture, both secondary and tertiary education have lost absolute value as the percentage of those with educational attainment below them has been reduced, but the loss has been greater for tertiary education, so that its occupational premium relative to upper secondary education has been reduced from q (see figure above) to q'. We may say that there has not been just a loss of value of tertiary education in *absolute* terms, but also in *relative* terms. The decrease in the relative value of tertiary education has been associated to a loss of r ($r = b - q'$)

Credentialism 2
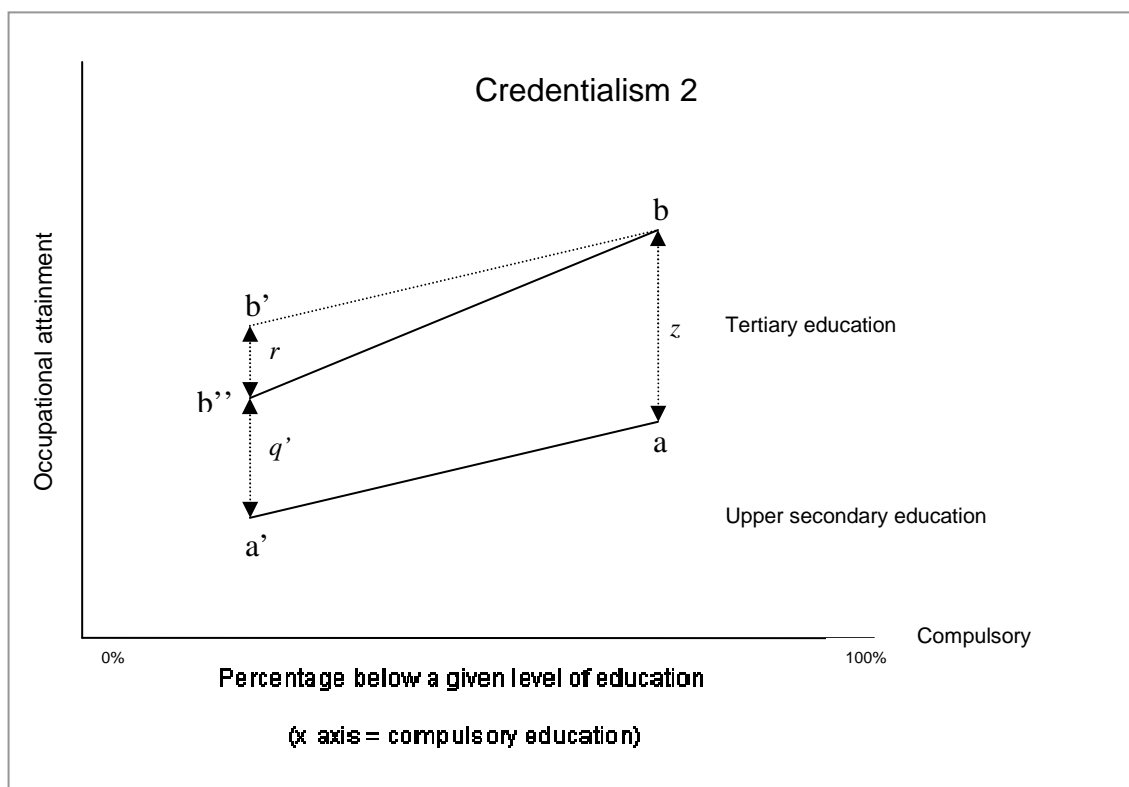
With very few exceptions (Gebel, 2009), the literature has not explored yet the possibility that educational expansion is not associated to equal trends in occupational attainment, maybe because educational attainment has often been measured as a continuous variable, in years of education. But there are reasons to think that an eventual credential inflation dynamics may be different across types of education. Without considering educational expansion, Ianelli and Raffe consider two alternative scenarios: on the one hand, vocational training may be said to provide employers with a more accurate signal of the skills it convey (a welder is a welder, regardless of how many welders there are in the labour market); on the other hand, vocational training may be associated with poorer academic performance at compulsory education, reflecting lower competences that would have lead individuals to choose a vocational track, instead of a general, academic one (Ianelli and Raffe, 2006).

Taking Ianelli and Raffe's argument to educational expansion, two alternative hypotheses may be formulated on the association between educational expansion and the evolution of occupational returns to education. Both hypotheses commonly lie in the possibility that educational expansion brings a more diverse, heterogeneous pool of abilities and motivations for the same level or type of education; therefore, reducing the strength of the signal each type or level of education sends to the labour market. Due to its more specific nature, it might be argued that vocational training is not as vulnerable in this sense as general education. In other words, the strength of the signal provided by vocational training would more resilient to educational expansion than general education. Alternatively, it might be argued that, being associated to poorer academic performance at lower stages of the educational trajectory, vocational training

may be more adversely affected by educational expansion. The *general* loss of signalling of skills and competences would be particularly adverse for this type of education, since it is associated to lower marks and poorer academic performance at compulsory education. This could be especially the case in lowly stratified systems of education where vocational training is not as important as in *dual systems* like Germany, the Netherlands or Switzerland. This will be one of the arguments in the selection of our case of study (see below).

Hypothesis 4: The positional value of education is more positively associated to occupational attainment for general education than for vocational training
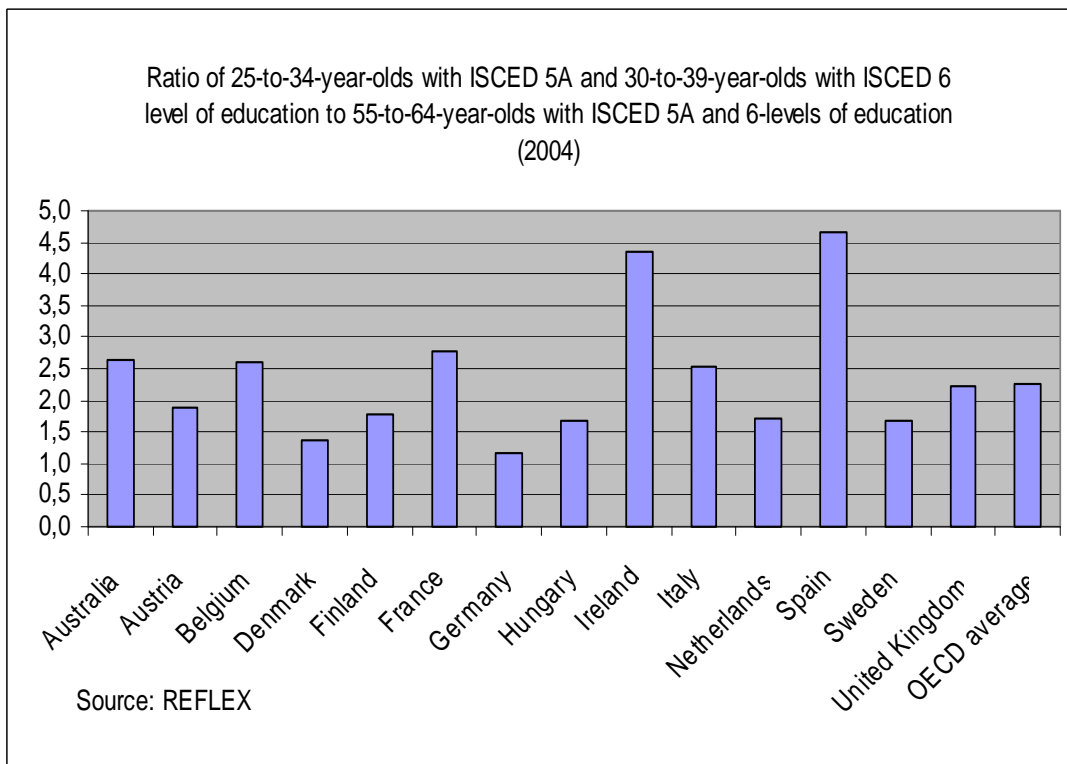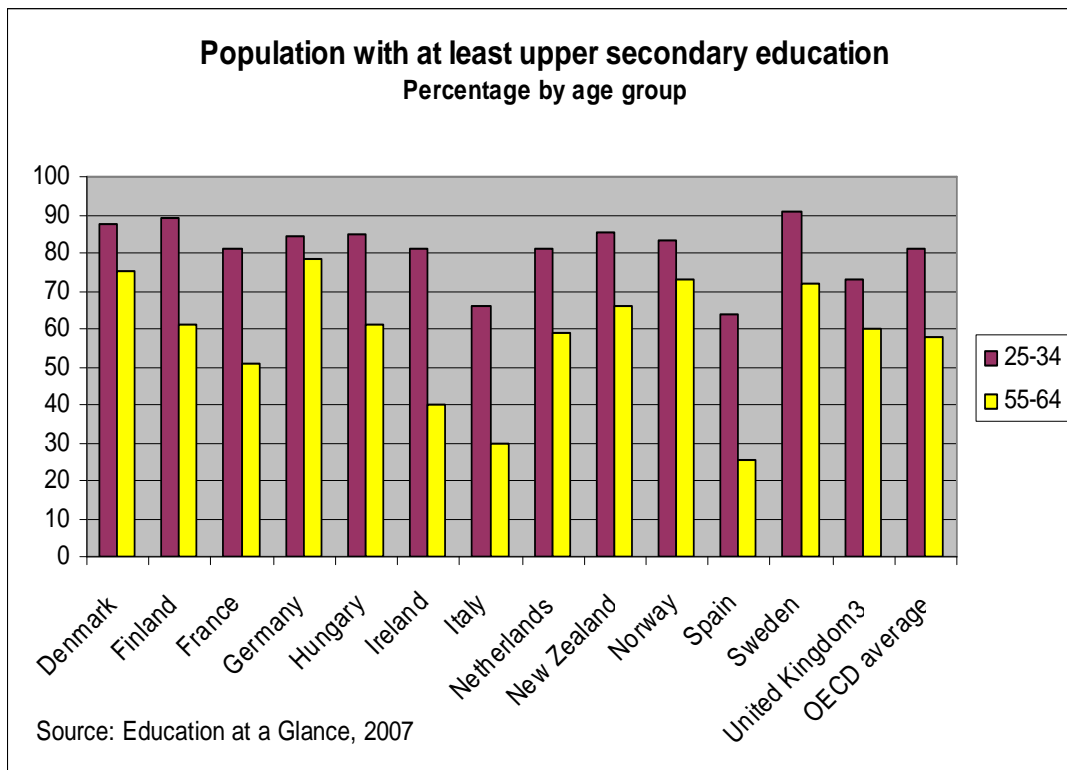
The possibility that the association between educational expansion and returns to education is conditional gender has not been explored either. On the supply side, especially at the university level, fields of study where women are over-represented may not provide as clear a signal, in the terms of the specificity or accuracy expressed in the paragraph above, as fields where they are under-represented. On the demand side, occupational segregation by gender may lead female graduates to occupations where returns to education are not as favourable as male graduates of the same level and/or field of study.

Hypothesis 5: The positional value of education is more negatively associated to occupational attainment for women than for men.

Case of study

Spain has been selected as the case for testing all the possible associations between educational expansion and the evolution of occupational attainment hypothesized above, first, because Spanish educational expansion in the last decades has been remarkable in cross-national terms; second, because educational expansion was at odds with the introduction of 'deregulation at the margin' (Toharia and Malo, 2000), which has proved to be a bad recipe to reap the best profit from such a societal investment; on the contrary, labour market differential deregulation has provided adverse labour market-entry prospects for new labour market entrants, much better qualified that the insiders in a quite segmented labour market. One side effect of this has been a high incidence of over-education and over-skilling (Barone & Ortiz, 2011). Hence Spain seems a good case to check if education may become a 'positional good'.

Educational expansion has been generalised across all OECD Europe, especially as a result of a transition to post-industrial societies, which require higher skills from individuals accessing the labour market. Yet, as we may see in the two graphs below, the expansion has not been equal across countries. Spain has been one of the countries where, either considering upper secondary or higher education graduation, the effort in that direction has been more remarkable

Population with at least upper secondary education
Percentage by age group

Source: Education at a Glance, 2007

Ratio of 25-to-34-year-olds with ISCED 5A and 30-to-39-year-olds with ISCED 6
level of education to 55-to-64-year-olds with ISCED 5A and 6-levels of education
(2004)

Source: REFLEX

As regards over-education or over-skilling, some systems of education have been found more able than others to provide labour market entrants with a good return to their education in terms of occupation (Gangl, 2003). Occupational Labour Markets

(OLM) provide a quicker and easier match between human capital investment and occupation, granted by more developed vocational training systems (Gangl, 2003: 110). Internal Labour Markets (ILM), on the contrary, are characterised by a more troublesome integration into the labour market, with longer spells of unemployment and temporary employment. Entrance at a low occupational level is often used as a way of screening candidates by employers in ILM countries, since they do not rely as much on the general training and education system as employers in OLM ones do.

Southern European countries deviate from this dichotomy, sharing characteristics of both OLM and ILM. The immediate return to education in terms of occupation is not initially as low as in the ILM system, but unemployment spells are as large, or even more, than in ILM countries. But Spain is found deviant to this dynamic too. Relative to Italy, occupational return to education in Spain is found remarkably low among labour market entrants. Ianelli and Soro-Bonmati find that "highly educated people are more likely to enter lower occupational positions in Spain than in Italy", but they give quite a tautological explanation for this difference, taking it as a "consequence of the large expansion of tertiary education and of the limited number of available positions at the front of the job queue in Spain" (Ianelli and Soro-Bonmatí, 2003: 233).

Recent cross-national research on over-education has confirmed the existence of a credential inflation dynamics in Spain that is not present in other countries. Applying different indicators of over-education to data on university graduates of nine different countries drawn from REFLEX survey, Barone and Ortiz found that Spain was the only country where there was a meaningful, remarkable incidence of over-education (Barone and Ortiz, 2010). Prior research has also shown that when the level of temporary *employment* becomes so unusually high to turn job security into an exceptionally valuable asset (such is the case of Spain), individuals may *partly* devote their human capital investment to attain it (Ortiz, 2010).

Data and methods

The European Union Labour Force Survey is possibly the best data source for looking at labour market trends in Europe. It has been designed to enhance cross-country comparability and goes back in time long enough to capture any trend. The questionnaire is highly harmonised and national sample sizes are quite large, which is particularly important if the attention is focused on university and tertiary graduates, and their fields of study.

Unfortunately, the EULFS has a number of limitations. First, not being longitudinal data, it is not possible to ascertain the extent to which a job is casual, held by the worker on a purely temporary basis while s/he get full access to the labour market or finish his/her training. Second, educational attainment is only registered in detail from 1998 onwards, limiting the period of the analysis. Third, the EULFS do not include the first job, but the current one. First jobs seem more suitable for investigating the effect

of education on labour market entry. Therefore, it is here necessary to provide guarantees that, by using current jobs for assessing occupational returns to education, we are not either under- or over-estimating these returns. For instance, it could be argued that older individuals in our sample of analysis (see below) have been able to enjoy upward career mobility that younger individuals have not reached, thus giving a better view of the occupational return to education of the former, and thus providing a false view of credentialism as educational expansion has expanded.

Recent studies of occupational mobility, though, have revealed "more stability than change in occupational category positions" along the working life in Europe (Bukody and Robert, 2007). If so, first occupation could be reasonably assumed to be well approximated through current one, and vice versa. Moreover, Bukody and Róbert found a particularly "strong job stability" among countries belonging to the Mediterranean employment regime, where Spain and Italy are included. In order to check the degree of association between current and first occupation, we have resorted to a survey of the Spanish Centre for Sociological Studies where both variables are present (CIS 2634, 'Clases Sociales y Estructura Social'). A rough correlation between first and current occupation at one and three digits provides the picture that appears in Table 1.

Unlike what was initially expected, current and first occupation are not less highly correlated for younger than for older groups; older groups are the ones who show the 'strong job stability' mentioned by Bukody. The correlation seems reasonably stable across age groups, but it cannot be denied that, more exposed to the flexibilisation at the margin introduced in Spain from the 1980s onwards (Toharia and Malo, 2000), younger individuals have experienced higher occupational mobility.

Table 1
Correlation between first and current occupation for different age groups

Correlation between first and current occupation (1-digit)				
16-24 yrs	25-34 yrs	35-44 yrs	45-54 yrs	55-65 yrs
0.49 (0.06)	0.53 (0.03)	0.54 (0.02)	0.61 (0.03)	0.67 (0.04)
N=265	N=928	N=983	N=676	N=565
Correlation between first and current occupation (3-digit)				
16-24 yrs	25-34 yrs	35-44 yrs	45-54 yrs	55-65 yrs
0.46 (0.06)	0.53 (0.03)	0.52 (0.02)	0.59 (0.03)	0.64 (0.03)
N=262	N=918	N=980	N=676	N=564

Source: 'Clases Sociales y Estructura Social' Survey (CIS 2634, February 2006)

It is thus not upward career mobility what may bias our results, but occupational mobility at the beginning or mid career of the individual. In order to correct any possible bias of this kind, we have, first, excluded those individuals who may not be considered as properly inserted into the labour market yet; second, for some analysis we have also excluded those above 55 years of age, considering they could be the successful survivors of their respective cohorts, contributing again to give an over-estimation of the returns education had in their career. Cutting the two tails of working live trajectories should counteract any possible downward or upward bias in occupational attainment associated to initial and late labour market careers, respectively. Finally, we have introduced age and tenure as controls in all our models (see below).

Since the transition from education to work is a contentious process, and it is increasingly difficult to establish the limits of it, we have chosen three possible criteria for regarding this transition as completed: age, seniority and time since leaving formal education. Thus, the statistical analysis has been alternatively carried out excluding: a) those leaving education less than five years ago; b) those holding less than six months-long tenure jobs (estimated as more likely to be transitory jobs); and c) those below 25 years of age.

As regards the method, we have applied fixed-effect models to a pool of cross-sectional EULFS files from 1998 to 2005. Fixed-effect modelling is justified on the grounds that there are few units (cohorts) at the second at the second level, and those units are not to be considered as a random sample of units of their kind. By applying fixed-effects modelling, we also control for omitted variable bias at the level of the labour-market-entry cohort while at the same time correcting for the likely auto-correlation between individuals inside each cohort, due to their being exposed to the same environmental factors.

In order to test hypotheses 1 to 3, we will apply the following model

$$\text{Yij} = \beta_1 \text{Xij} + \beta_2 \text{Zij} + \beta_3 \text{Wij} + \alpha \text{j} + u \text{ij}$$

Where j are labour-market-entry cohorts and i are individuals belonging to the same labour-market-entry cohort. Y is the ISEI score for 2-digit ISCO-88 occupational categories[1]. X is a vector of control variables that includes age (as a proxy of labour market experience) tenure and ethnic origin. As said above, both age and tenure are aimed at correcting any possible bias due to considering the current occupation rather than the first one. Z and W are our main independent variables; namely, the absolute and relative value of education. The term αj corresponds to j cohort-specific fixed effects and uij is an idiosyncratic error, which varies over cohort and time.

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[1] These scores are the result of averaging ISEI scores from 4-digit occupation information drawn from the European Social Surveys of 2002 and 2004

As regards educational attainment, we have five categories: 'university', 'upper vocational training', 'upper secondary, general', 'upper secondary, vocational' and 'lower secondary'. As regards the positional value of education, we have computed it resorting to the variable 'iscdyear' ('Year when highest level of education or training was successfully completed'). The positional or relative value of each individual's level of education will be the percentage of individuals whose highest level of education was below his/her educational attainment in the year when respondent's 'education or training was successfully completed. Thus, the positional value of a university degree will be 0.8 for a given year if 80% of the members of the sample who also attained their highest level of education in that year were below tertiary education; it will be will be 0.4 for another year if just 40% of the members of the sample who declared to attain their highest level of education in that very same year was below tertiary education. The same educational credential can thus have different positional values, depending on the percentage of people below that credential who attained their highest level of education in a the same year.

Hypotheses 4a and 4b will be tested by adding interactions between educational attainment and the positional value of education. Finally, hypothesis 5 will be tested by including three way interactions between educational attainment, positional value and gender.

As regards cohorts, they have been built combining the economic cycle and educational reforms affecting the individuals in the sample. As for the economic cycle, it is reasonable to think that a high unemployment rate at entrance into the labour market may lead individuals to take up jobs in occupations below the wage and prestige initially expected according to their level of human capital investment. Although adjustment is later expected, this adjustment may be harder the more adverse the environment at labour market entry is, subsequently affecting occupational returns to education for different cohorts. As for educational reforms, we may assume that two successive reforms (Ley General de Educación (LGE) 1970; and LOGSE 1990) improved the quality of education, and therefore the skills associated to a given educational credential or title. The LGE was the first to systematize the Spanish system of education, making education compulsory up to 14 years of age. LOGSE extended compulsory education to 16 years of age. Besides, it upgraded vocational training by increasing the entry requirements for lower and upper vocational training, and thus extended the total number of years of education individuals attaining each level would credit.

As it could be seen in the graph below, there are transition cohorts in which the first graduates after an educational reform were accessing the labour market at the same time as the last graduates in a previous educational reform . We have considered these periods as transitory as separate cohorts. Seven cohorts have resulted from the combination of the economic cycle and the three educational laws[2] that were

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[2] The LOGSE was accompanied by a 'schedule of implementation' that enabled us to be accurate as regards the years after the issue of the law when students affected by this law were acceding to the

implemented during the entire period comprised in which our entire sample completed its formal education.
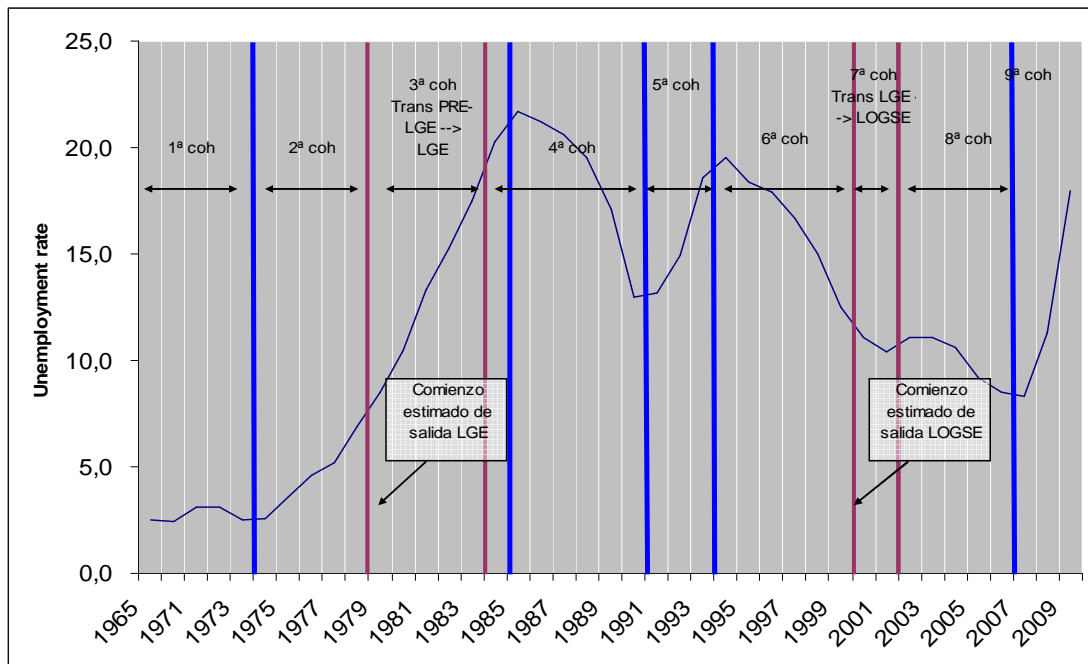
Results

Relative to lower secondary education, and controlling for age, seniority and ethnic origin, educational attainment has, as expected, a positive effect over occupational prestige (table 2). What really matters here, though, is that beyond this absolute effect, the positional value of education (as measured by the percentage of individuals below each level when leaving formal education) also has a positive effect over occupational prestige. In other words, controlling for educational attainment, the higher the positional value of educational credentials is, the higher the occupational prestige too; or, the other way round, the lower the positional value (always associated to educational expansion), the lower the occupational prestige derived from an occupational title. Such a result is robust to different ways of selecting out those in the sample who had finished formal education as recently as probably not having a reliable or stable occupation. The results cannot be said to be the result of an over-estimation of occupational attainment among those finishing their educational career either. As may be seen in table 2, the results for models additionally selecting out those above 55 do not change much. In sum, educational expansion, which naturally decreases the positional value of education, seems to have been accompanied in Spain by a parallel decrease of occupational prestige. The positive signs of the positional value of education should be read as a sign of credential inflation dynamics

labour market. Quite unfortunately, such information does not exist for LGE. In the case of this law, we have added fourteen years of age to the year of issuance of the law, in order to calculate when the first LGE students were entering into the labour market.

Table 2
Labour-market-entry cohort fixed-effects estimates of ISEI score
Effect of educational attainment and the positional value of education

	Excluding less than 5 yrs labour market experience	…Additionally excluding 55 yrs old	Excluding those with less than 6 months long tenure	…Additionally excluding 55 yrs old	Excluding less than 25 yrs old	…Additionally excluding 55 yrs old
Female	1.00 ***	1.04 ***	1.07 ***	1.12 ***	0.76 ***	0.79 ****
Age 25-34 *(Age <24: ref)*	0.37 ***	0.32 ***	0.44 ***	0.47 ***	--- (ref)	--- (ref)
Age 35-44	0.64 ***	0.67 ***	0.78 ***	0.85 ***	0.26 ***	0.27 ***
Age 45-54	0.97 ***	1.00 **	1.19 ***	1.28 ***	0.62 ***	0.64 ***
Age 55-64	1.01 ***	---	1.40 ***	---	0.70 ***	---
Foreign (EU) *(Native: ref)*	0.45 *	0.42	0.40	0.37	0.47 *	0.44*
Foreign (Non-EU)	-9.42 ***	-9.43	-9.53 ***	-9.60 ***	-9.89 ***	-9.92 ***
Seniority	0.01 ***	0.01 ***	0.01 ***	0.01 ***	0.01 ***	0.01 ***
University *(lower sec: ref)*	20.76 ***	20.92 ***	19.96 ***	19.98 ***	21.52 ***	21.73 ***
Upper vocational	2.76 ***	2.90 ***	2.26 ***	2.29 ***	3.82 ***	4.02 ***
Upper secondary general	3.85 ***	3.98 ***	3.27 ***	3.32 ***	4.54 ***	4.72 ***
Upper secondary vocational	0.54 **	0.67 **	0.09	0.16	1.14 **	1.31 ***
Positional value	8.37 ***	8.09 ***	9.10 ***	8.95 ***	7.46 ***	7.09 ***
Constant	29.97	29.20	30.52	30.45	30.36	30.31
No. observations	379036	358314	364505	344246	366156	345326

* = p < 0.10; ** = p < 0.05; *** = p < 0.01

Thus, we may reject hypothesis 1 or 2, but we cannot reject hypothesis 3 till we do not check if such a credentialist effect has been homogenous across educational levels and types of education. As we see in the graph below, the predicted values of ISEI for each type and level of education does not confirm such a homogenous effect. The picture is similar regardless of the criterion for selecting out recent labour market entrants[3]. Table 3 confirms that the effect of the positional value is significantly different across types and levels of education. Across the different models in the table, the positional value of university and upper secondary education has a stronger (and positive) effect over occupational prestige than lower secondary vocational (reference category) and upper secondary vocational. In fact, in some cases the coefficient corresponding to upper secondary vocational turns out to be negative; particularly in the case of men. It seems as if the positional value of education (the percentage below your level of education at entry into the labour market) mattered more for general (university, upper secondary education) than for vocational education, thus confirming hypothesis. Due

Graph 1. Predicted ISEI by positional value of education
(excluding those who left education less than five years ago)
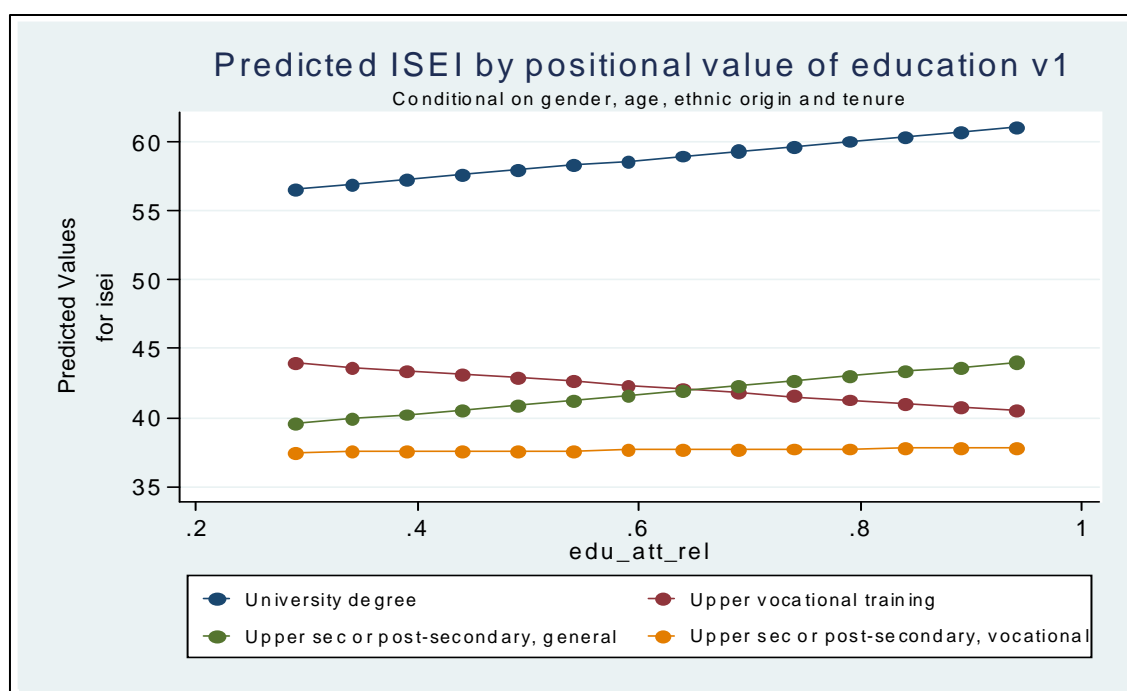
to its clearer signal, vocational training seems to have been less adversely affected by educational expansion than general education.

Upper secondary education may be regarded as more clearly general than university education. At the university level, there are fields of study (engineering, health….) that

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[3] The graph corresponds to the analysis excluding those leaving education less than five years ago; analyses excluding those with less than six-months-long tenure or below 25 years of age provide the same picture.

could be regarded as more technical than others (social sciences, law, humanities….), which are more general in nature. It is for this reason that we have modified the variable on educational variable so that university education is split up in fields of study. The results, shown in table 4, are quite revealing, offering a much more nuanced view of the general strong effect of positional value at the university level over shown in table 5. Such an effect is largely driven by credentialist dynamics operating in 'humanities & teaching', 'social sciences, business and law'; and, quite surprisingly, 'health and welfare' (see graphs in the Appendix). These results are in tune with Reimer et al.'s findings in their cross-nationally analysis of labour market effects of field study (Reimer et al., 2008).

Except for 'health and welfare', other technical fields ('engineering', 'agriculture and veterinary') show a strongly negative effect of the positional value of education. In other words, time, which has been accompanied by a decrease in the percentage of individuals below the level of education of graduates, has not brought about a decrease in the occupational prestige associated to these fields of study. Along with the negative coefficients of upper vocational training in table 3, this works as a partial confirmation of the SBTC scenario. It is not just that the positional value of education in vocational training (and technical fields of study at the university level) does not have as positive an effect over occupational prestige as in general education, revealing less vulnerability to a possible damaging effect of educational expansion over the signalling of the skills associated to them; positional value is actually negatively associated to occupational prestige.

The positive coefficients of 'health and welfare', a field of study increasingly feminised as educational expansion unfolded, takes us to the possible role of gender in the association between educational expansion and the gain or loss of occupational prestige by level and type of education.

Table 3
Labour-market-entry cohort fixed-effects estimates of ISEI score
Interactions of educational attainment and the positional value of education
Controlling for gender, age, tenure and ethnic origin

	V1 Excluding less than 5 yrs labour market experience	…Additionally excluding 55 yrs old	V2 Excluding those with less than 6 months long tenure	…Additionally excluding 55 yrs old	V3 Excluding less than 25 yrs old	…Additionally excluding 55 yrs old
University *(ref: upper sec. voc)*	13.41 ***	9.54 ***	5.49 ***	0.77	3.11*	-2.75
Upper vocational	6.45 ***	7.48 ***	4.90 ***	5.86 ***	5.08 ***	5.60 ***
Upper secondary general	-0.26	-0.99 **	-1.07 **	-1.80 ***	-1.47 **	-2.51 ***
Positional value	3.30 **	2.76 **	5.05 ***	4.80 ***	7.37 ***	7.75 ***
Univ * pv	9.99 ***	14.94 ***	18.89 ***	24.85 ***	20.94 ***	28.03 ***
Upper vocational * pv	-4.36 ***	-5.77 ***	-2.69 **	-4.09 **	-3.49 **	-4.52 **
Upper secondary general * pv	6.82 ***	8.21 ***	7.89 ***	9.27 ***	8.24 ***	10.03 ***
Constant	32.28	32.39	31.49	31.53	31.26	31.10
No. observations	184015	171939	191547	179586	192099	179959

* = p < 0.10; ** = p < 0.05; *** = p < 0.01

Table 4
Labour-market-entry cohort fixed-effects estimates of ISEI score
Interactions of educational attainment (detailed, fields of study in HE) and the positional value of education
Controlling for gender, age, tenure and ethnic origin

	Excluding less than 5 yrs labour market experience	…Additionally excluding 55 yrs old	Excluding those with less than 6 months long tenure	…Additionally excluding 55 yrs old	Excluding less than 25 yrs old	…Additionally excluding 55 yrs old
Positional value	1.61	0.96	6.51 ***	6.93***	7.08 ***	7.91 ***
Univ. (General) * pv *(ref: upper sec. voc)*	-1.33	-6.14	-12.50	-22.52	-5.39	-10.60
Univ (Humanities & Teaching) * pv	-0.31	4.65	16.86 ***	24.87 ***	18.87 ***	28.61 ***
Univ (Ssci & Bussines & Law) * pv	4.61	14.05 **	19.02 ***	30.92 ***	19.30 ***	31.50 ***
Univ (Scien & Math & Computer) * pv	-9.22	-12.54	-2.05	- 3.80	2.33	2.35
Univ (Engineering) * pv	-40.59 ***	-55.70 ***	- 36.41 ***	- 50.58 ***	-37.76 ***	-51.27 ***
Univ (Agric & Veterinary) * pv	-28.74 **	-37.73 ***	-10.11	- 11.58	-15.67	-18.88
Univ (Health & Welfare) * pv	-4.95	7.43	16.73 **	32.31 ***	10.40 **	25.02 ***
Univ (Services) * pv	-8.51	-8.95	3.03	5.57	-0.03	1.30
Upper vocational training * pv	-4.63 **	-4.67 *	-1.47	-1.10	-2.81	-2.23
Upper secondary general * pv	2.39 **	2.78 *	3.56 **	4.18 **	3.51**	4.33 **
Constant	33.53	33.64	31.55	31.33	31.61	31.26
No. observations	56798	52639	58686	54572	59326	55153

* = p < 0.10; ** = p < 0.05; *** = p < 0.01

As we may see in tables 5 and 6, the loss of occupational prestige associated to the decrease in the positional value of education brought by educational expansion is to some extent gendered biased. Such a loss has been higher for women than for men. The results in tables 5 and 6 do not allow us to say that hypothesis 4 can be equally applied to men and women. Certainly, in the case of upper secondary education (general) the loss in the positional value is paralleled by an equivalent loss in occupational prestige for men and women, revealing a credentialist dynamics at this level. Yet, the argument does not work equally well for upper vocational training and university. As regards upper vocational training, such a loss has taken place only for women. The negative association between positional value and occupational prestige at upper vocational found in previous analysis is largely driven by men. For male students completing this level, time and educational expansion has brought about an improvement of their occupational prospects. At the university level, the picture is less clear for men, but definitively different to the credentialist dynamics observed in women. When we look at the analysis by fields of study, we may deduct that such a credentialist dynamics must have operated at the fields where women are over-represented. Although the sample does not allow the coefficients to turn out statistically significant as easily as in prior models, we may pay attention at the sign. In both the second and third option of selecting out recent education leavers, we find that this credentialist effect of female university graduates is largely concentrated in the more general fields (i.e. 'humanities and teaching' and 'social sciences, business and law') but also in 'health and welfare'.

Table 7 and 8 (see Appendix) brings full confirmation to hypothesis 5. The sample is too stretched to show a clear picture in table 8, since three-way interaction involves too many categories. But table 7 provides evidence that the interaction between educational attainment and positional value significantly varies across gender. This variation is concentrated at the university level: relative to male university graduation, female graduation significantly raises the effect of positional value of education. Educational expansion in Spain has had a credentialist effect at the university level mainly among women. Among men the hypotheses that better explain the evolution of their occupational prestige as educational expansion has unfolded are either differential effects depending on the general / vocational nature of education (hypothesis 4) or SBTC.

Table 5
Labour-market-entry cohort fixed-effects estimates of ISEI score
Interactions of educational attainment and the positional value of education
Controlling for gender, age, tenure and ethnic origin

	Excluding less than 5 yrs labour market experience		Excluding those with less than 6 months long tenure		Excluding less than 25 yrs old	
	Female	Male	Female	Male	Female	Male
University *(ref: upper sec. voc)*	-1.57	27.26 ***	-10.50 ***	20.94 ***	-12.13 ***	18.24 ***
Upper vocational	2.40	6.23 ***	0.85	4.78 ***	1.61	4.62 ***
Upper secondary general	-0.32	-0.18	-0.94	-1.02 **	-1.54 **	-1.15 *
Positional value	3.09 **	2.77 **	4.11 **	4.77 ***	8.20 ***	5.68 ***
Univ * pv	27.91 ***	-6.32 **	38.29 ***	0.62	38.86 ***	3.41
Upper vocational * pv	3.48 *	-5.21 **	5.49 **	-3.75 **	3.39	-3.78
Upper secondary general * pv	7.08 ***	6.57 ***	7.89 ***	7.67 ***	8.39 ***	7.76 ***
Constant	35.53	31.35	34.84	30.70	29.81	35.09
No. observations	80253	103762	84083	107464	84991	107108

* = p < 0.10; ** = p < 0.05; *** = p < 0.01

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Table 6
Labour-market-entry cohort fixed-effects estimates of ISEI score
Interactions of educational attainment and the positional value of education
Controlling for gender, age, tenure and ethnic origin

</div>

	Excluding less than 5 yrs labour market experience		Excluding those with less than 6 months long tenure		Excluding less than 25 yrs old	
	Female	Male	Female	Male	Female	Male
Positional value	- 2.19	4.66 *	3.12	8.94 ***	5.01 *	8.18 **
Univ. (General) * pv *(ref: upper sec. voc)*	28.82	-13.90	22.78	-35.47	22.49	-19.96
Univ (Humanities & Teaching) * pv	4.28	-4.04	23.66 ***	13.59 **	22.33 ***	18.57 **
Univ (Ssci & Bussines & Law) * pv	4.79	-6.10	22.16 **	6.79	19.89 **	8.01
Univ (Scien & Math & Computer) * pv	-4.92	-14.18	16.13	- 17.07 **	15.87	-10.50
Univ (Engineering) * pv	-74.00 ***	-42.57 ***	-65.82 ***	-41.99 ***	-70.89 ***	-42.62 ***
Univ (Agric & Veterinary) * pv	-14.74	-28.91 **	20.23	-17.85	18.11	-22.91 **
Univ (Health & Welfare) * pv	-2.10	-6.35	22.76 ***	13.98 *	13.61 **	9.32
Univ (Services) * pv	-14.48	-15.01	3.97	-12.23	-1.49	-13.65
Upper vocational training * pv	0.23	-3.49	4.57	-1.31	1.85	-1.68
Upper secondary general * pv	1.87	2.37	3.53 *	3.05 *	2.52	3.48 *
Constant	38.12	30.89	35.88	29.45	34.54	30.75
No. observations	25322	31476	26255	32431	26775	32551

* = p < 0.10; ** = p < 0.05; *** = p < 0.01

Conclusions

Recent findings on the decreasing inequality of educational attainment by social origin over the XXth century make relevant to question the extent to which such a positive trend is projected to occupational attainment. If a decreasing inequality of educational attainment by social origin were not projected into the labour market by means of an stable association between education and occupational attainment, other mechanisms of intergenerational transmission of advantages, as cultural or social capital, could have come to gain higher and higher salience in the linkage between education and occupation.

We have here explored this possibility in the case of Spain, a country characterised both by a strong effort in terms of educational expansion in the last decades and by growing symptoms of over-education or over-skilling among its younger, more educated labour-market-entry cohorts. Unlike other studies on educational expansion and occupational attainment, we have considered two additional possibilities: first, that educational expansion is not equally associated to gains or losses of occupational prestige across types (vocational / general) of education; second, that this association differs by gender. Finally, we have contributed to the literature with a simple indicator of the positional value of education, which allows to differentiate a same degree or title, depending on the percentage of graduates below their level when people holding this degree entered into the labour market.

Our results has demonstrated that such a positional value mattered, at least in the Spanish labour market. Neither a simple Human Capital Scenario, nor a SBTC one, or a simple Credentialist one fit our results; on the contrary, it is clear that the positional value has had different effects across types of education and gender.

There are signs that vocational training have been less affected than general education by a possible loss of signalling associated to educational expansion, but these concentrates concentrate among men. This is especially the case with upper secondary general education, relative to the other types. But these results are not definitive. Sometimes it looks as if men would have enjoyed a 'skill-biased technological change' scenario, which has not been the case among women. At tertiary level, whereas results for women fit more a credentialist scenario, results for men fit more a SBTC scenario.

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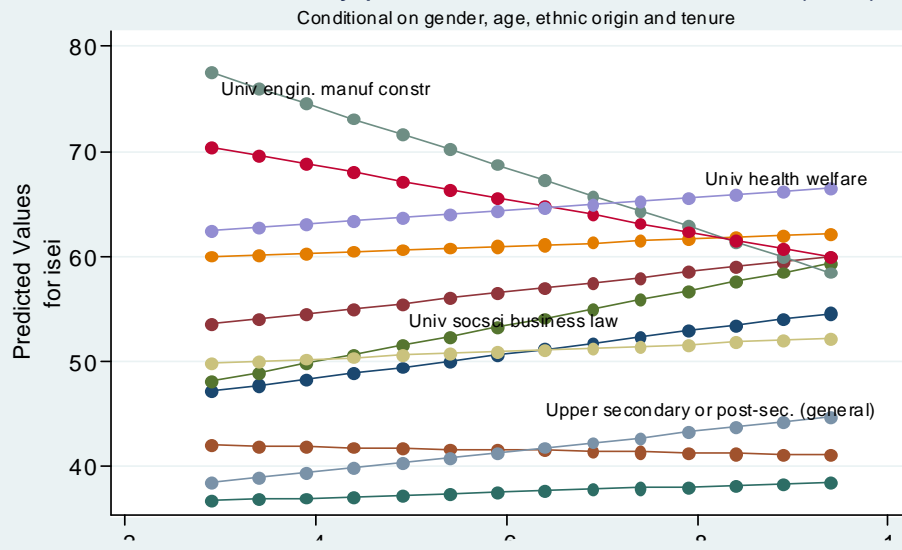
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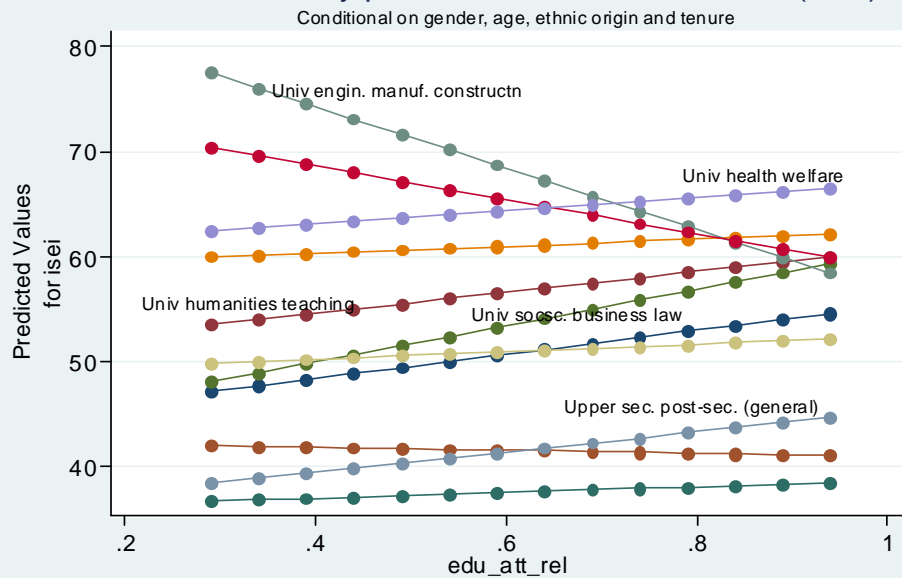

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APPENDIX

Predicted ISEI by positional value of education (FoS) v1
Conditional on gender, age, ethnic origin and tenure

Univ engin. manuf constr
Univ health welfare
Univ socsci business law
Upper secondary or post-sec. (general)

Predicted ISEI by positional value of education (FoS) v2
Conditional on gender, age, ethnic origin and tenure

Univ engin. manuf. constructn
Univ health welfare
Univ humanities teaching
Univ socsc. business law
Upper sec. post-sec. (general)

edu_att_rel

Predicted ISEI by positional value of education (FoS) v3
Conditional on gender, age, ethnic origin and tenure

Univ engin. manuf. constr.
Univ health welfare
Univ humanities teaching
Univ socsci business law
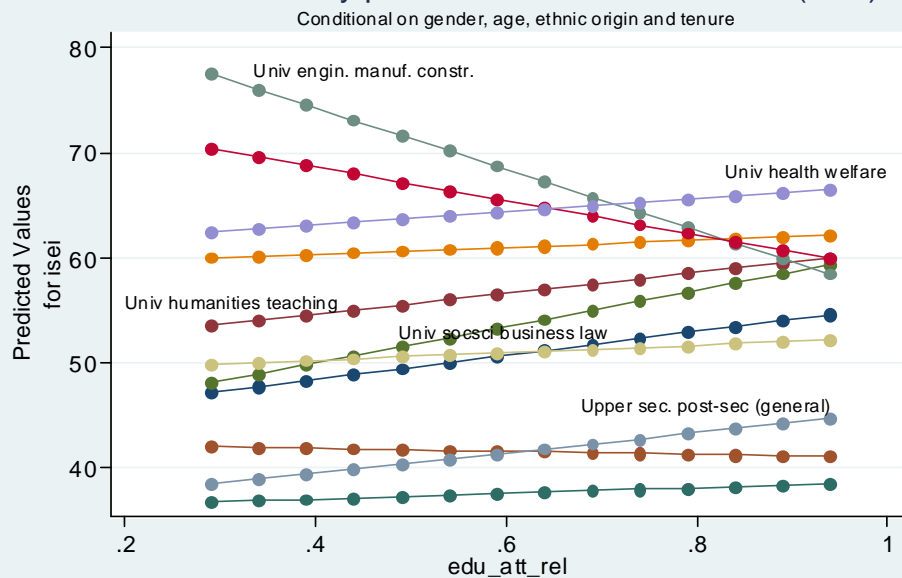Upper sec. post-sec (general)

edu_att_rel

Table 7
Labour-market-entry cohort fixed-effects estimates of ISEI score
Three-way interactions
educational attainment * positional value * gender
Controlling for gender, age, tenure and ethnic origin

	Excluding less than 5 yrs labour market experience	Excluding those with less than 6 months long tenure	Excluding less than 25 yrs old
University *(ref: upper sec. voc)*	22.65 ***	16.08 ***	12.12 ***
Upper vocational	3.75 ***	1.94 *	1.49
Upper secondary general	-0.39	-1.35 **	-1.66 **
Positional value *(for male and upper sec. voc)*	6.92 ***	8.73 ***	9.66 ***
Female *(for pv and upper sec.voc)*	6.59 ***	6.84 ***	4.77 ***
University * pv (ref: upper sec. voc)	-1.82	5.50 **	9.72 ***
Upper vocational* pv	-2.98 **	-1.03	-0.68
Upper secondary general * pv	6.57 ***	7.87 ***	8.22 ***
University * female (ref: upper sec. voc)	-18.26 ***	-20.23 ***	-16.93
Upper vocational* female	2.49	3.21 **	4.55 **
Upper secondary general * female	0.52	0.92	0.85
Positional value * female *(for upper sec. voc)*	-9.17 ***	-9.50 ***	-6.19 ***
University * pv * female (ref: upper sec. voc)	24.34 ***	26.74 ***	21.96 ***
Upper vocational * pv * female	2.83	2.19	-0.43
Upper secondary general * pv * female	0.28	-0.36	-0.51
Constant	30.39	2.961.086	30.11
No. observations	184015	191547	

* = p < 0.10; ** = p < 0.05; *** = p < 0.01

Table 8
Labour-market-entry cohort fixed-effects estimates of ISEI score
Three-way interactions
educational attainment (detailed) * positional value * gender
Controlling for gender, age, tenure and ethnic origin

	Excluding less than 5 yrs labour market experience	Excluding those with less than 6 months long tenure	Excluding less than 25 yrs old
Univ. (General) *(for male)*	26.38	42.87 *	28.49
Univ (Humanities & Teaching) *(for male)*	24.44 ***	5.88	1.44
Univ (Ssci & Bussines & Law) *(for male)*	23.19 ***	9.15 **	7.82 *
Univ (Scien & Math & Computer) *(for male*	33.79 ***	32.79 ***	26.86 ***
Univ (Engineering) *(for male)*	57.11 ***	53.30 ***	53.47 ***
Univ (Agric & Veterinary) *(for male)*	45.89 ***	33.63 ***	37.13 ***
Univ (Health & Welfare) *(for male)*	34.02 ***	12.78 **	16.77 **
Univ (Services) *(for male)*	25.41 **	19.43 *	20.21 *
Upper vocational training *(for male)*	3.24 *	-0.14	0.12
Upper secondary general *(for male)*	2.08	1.07	0.82
Positional value *(for male and upper sec. voc)*	5.95 **	11.30 ***	10.27 ***
Female *(for pv and upper sec.voc)*	6.39 ***	7.23 ***	5.07 ***
Univ. (General) * pv (ref: upper sec. voc) *(mal*	-15.55	-36.04	-18.96
Univ (Humanities & Teaching) * pv *(for male)*	-6.14	14.21 *	19.46 ***
Univ (Ssci & Bussines & Law) * pv *(for male)*	-5.58	9.47 *	11.28 **
Univ (Scien & Math & Computer) * pv *(for male*	-13.79	-14.12 *	-6.95
Univ (Engineering) * pv *(for male)*	-42.52 ***	-39.45 ***	-39.39 ***
Univ (Agric & Veterinary) * pv *(for male)*	-29.35 **	-16.14	-20.33 *
Univ (Health & Welfare) * pv *(for male)*	-8.56	14.97 **	10.49
Univ (Services) * pv *(for male)*	-14.65	-8.88	-9.76
Upper vocational training * pv *(for male)*	-2.64	0.56	0.37
Upper secondary general * pv *(for male)*	2.19	3.13 **	3.64 **
Univ. (General) * female	-33.37	-43.69	-28.26
Univ (Humanities & Teaching) * female	-8.52 *	-4.06	0.82
Univ (Ssci & Bussines & Law) * female	-6.79	-6.13	-3.40
Univ (Scien & Math & Computer) * female	-6.36	-21.25 **	-15.39
Univ (Engineering) * female	33.41 *	30.25 **	33.85 **
Univ (Agric & Veterinary) * female	-5.9	-22.41	-23.53
Univ (Health & Welfare) * female	-5.24	-2.83	0.11
Univ (Services) * female	1.65	-7.12	-4.60

3

Upper vocational training * female	3.82	4.44	5.74 **
Upper secondary general * female	0.79	0.53	1.33
Positional value * female *(for upper sec. gen)*	-9.40 ***	-10.70 ***	-7.22 ***
Univ. (General) * pv * female	44.84	55.21	37.20
Univ (Humanities & Teaching) * pv * female	13.59 **	8.69	2.11
Univ (Ssci & Bussines & Law) * pv * female	8.67	8.37	4.12
Univ (Scien & Math & Computer) * pv * female	9.64	27.74 **	19.91
Univ (Engineering) * pv * female	-40.32 *	-36.58 *	-41.90 **
Univ (Agric & Veterinary) * pv * female	12.02	32.32	33.23
Univ (Health & Welfare) * pv * female	8.38	5.82	1.44
Univ (Services) * pv * female	-2.10	8.60	4.58
Upper vocational training * pv * female	1.49	1.06	-1.38
Upper secondary general * pv * female	-0.62	0.41	-1.07
Constant	31.34	29.13	30.06
No. observations	56798	58686	59326

* = p < 0.10; ** = p < 0.05; *** = p < 0.01