Over-Qualification and the Dimensions of Job Satisfaction

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Abstract

The spread of over-qualification is a consequence of individuals having acquired more credentials than required at the workplace. In some cases, it may be that this mismatch plays a role in allowing workers to compensate for the lack of some other skills, to escape from unemployment, or to achieve job stability in the labour market. Consequently, workers may feel no less satisfied, at least in some aspects, than adequately-matched workers. The aim of this paper is to analyse the relationship between over-qualification and the various dimensions of job satisfaction in Spain, a country characterised by a strongly-segmented labour market with high unemployment levels, and a significant number of mismatched employees. Using micro data for a representative sample of Spanish workers, we carry out simultaneous maximum likelihood estimations on a two-equation system

to control for potential endogeneity. The results obtained provide evidence that does not reject the hypothesis that mismatched workers do not necessarily feel less satisfied than adequately-matched workers in the dimensions of job satisfaction related to extrinsic domains or social relations.

Keywords

Over-qualification
Job satisfaction
Simulated maximum likelihood estimation
Spain

JEL Classification

D82
I26
J24
J28
J62

1. Introduction

The study of the phenomenon of over-qualification, a general concept encompassing over-education, over-experience, and skill under-utilisation, and its impact on labour market outcomes, is attracting interest in various fields of the research agenda. An extensive literature in economics, organizational psychology, and management systematically finds that over-qualification is negatively related to diverse indicators of job attitudes, such as job satisfaction. According to this, firms would prefer to hire adequately-qualified job applicants, since dissatisfaction in the workplace is associated with absenteeism, voluntary turnover, and/or lower productivity (Khan and Morrow 1991; Tsang et al. 1991; Bolino and Feldman 2000; Johnson and Johnson 2000; Johnson et al. 2002; Feldman et al. 2002; Verhaest and Omey 2006, 2009).

However, several studies show that there are advantages to hiring employees who self-perceive that they are over-qualified. Holton et al. (2002), Fine and Nevo (2008), and Erdogan and Bauer (2009), although finding a negative relationship between perceived over-qualification and job satisfaction, provide convincing evidence of over-qualification being positively related to certain indicators of job performance. It is argued that the over-qualified may bring valuable skills to an organization (Erdogan et al. 2011a). As for workers, do they obtain any rewards from over-qualification? Economic studies using wage regressions show that the over-qualified are paid less than equally qualified workers who are in properly-matched jobs, but are paid more than less-qualified workers in well-matched jobs (Hartog 2000; Sloane 2003; McGuinness 2006; Leuven and Oosterbeek 2011). In other words, the over-qualified are extra-rewarded with respect to well-matched, less-qualified workers,

even though they are penalized compared to equally-qualified, properly-matched workers.

Thus, the over-qualified may feel no more dissatisfied than their properly-matched co-workers if they receive some compensation such as higher wages or on-the-job training (Büchel 2002). A further question is whether the over-qualified may be no more dissatisfied than their equally-qualified, properly-matched colleagues. Whereas the empirical evidence provides some support for the former case (Khan and Morrow 1991; Groot and Maassen van den Brink 2000; Büchel 2002; and Kampelmann and Ryck 2012), the latter is rarely found, and only supported when considering diverse domains of over-qualification and/or job satisfaction. Johnson and Johnson (2000), Maynard et al. (2006) and Peiro et al. (2010) find that the association between over-qualification and job satisfaction is not equally strong for all combinations of the various aspects and elements. Diverse studies (Groot and Maassen and van den Brink 1999; Johnson and Johnson 2000; Badillo-Amador and Vila 2013; and Mavromaras et al. 2013) find that, whereas over-qualified workers are more dissatisfied than less-educated, adequately-matched workers in the general notion of job satisfaction, they are not so in certain specific domains of job satisfaction.

We follow this line of research to study the association between different dimensions of job satisfaction and of over-qualification, for the case of Spain. The contributions of this paper are, first, the interest in Spain as a case study since, from an international perspective, the proportion of over-educated workers in Spain is among the highest in the OECD countries (OECD 2011; Verhaest and van der Velden 2013), with a large portion of the over-qualified being permanently so (Acosta-Ballesteros et al. 2018). Additionally, Spain's labour market is very slack—with the unemployment rate being consistently among the highest in the EU for decades—and strongly segmented, with a temporary-employment rate that has been the highest in the EU, around 30%, for the last 30 years. Difficulty in finding a job, let alone a stable career, may well be an incentive for workers to pursue an extra qualification. Whereas several studies investigating the phenomenon of over-qualification in Spain exist, the literature analyzing the relationship with job satisfaction is sparse, and very few papers consider the various dimensions of job satisfaction. An important contribution of our study is that the period under consideration, 2007–2010, represents the transition from the completion of the expansive period to the onset of the Great Recession. In just 4 years, the unemployment rate soared, from less than 8% to more than 20%. Additional contributions of this work are the use of a large, nationally-representative survey;[1] concerns about the two main dimensions of over-qualification, and an analysis of the sixteen domains of job satisfaction. Also important is the fact that the plausible appearance of endogeneity is addressed, albeit partially, through simultaneous estimation by maximum likelihood.

Our results show that, when endogeneity is not considered, over-qualification is systematically found to be negatively correlated with any domain of job satisfaction,

corroborating the findings of the prior literature. However, this negative relationship is weakened in some dimensions of job satisfaction when dealing with endogeneity. In particular, over-qualified workers are no less satisfied than equally-educated, adequately-matched workers in the dimensions of job satisfaction related to extrinsic domains or social relations.

The structure of the paper is as follows. Section 2 presents a summary of the literature and Sect. 3 describes the data, the diverse domains of job satisfaction, and the concepts of mismatch used. In Sect. 4, we present the applied methodology and our estimated results. Finally, Sect. 5 concludes.

2. Literature Review

The study of the differential effects on earnings returns and on job satisfaction, between the over-qualified and the non-over-qualified, and on the phenomenon of the bumping down and/or crowding out of less-skilled workers, have been the focus in most of the empirical economics literature (Green and Zhu 2010; Leuven and Oosterbeek 2011). Several models have been proposed as possible explanations for the existence of over-education, one of the dimensions of over-qualification. A traditional argument is based on the human capital theory (Becker 1964), which argues that individuals accumulate human capital (education, experience, tenure) to obtain greater productivity and receive higher wages. In this supply-side view, one more year of human capital is equally productive in all types of jobs, yielding an increase in wages whatever the job. A possible alternative, the job competition theory (Thurow 1975), offers a demand-side explanation. Competition for high wages among workers creates a job queue, in which jobs are ranked by earnings. Simultaneously, workers are ranked by education level in the labour queue, so that highly-educated individuals are matched to high-paying jobs. As the educational attainments of workers increase, there is a shift in the distribution of workers in the labour queue, so that the low-skilled are ‘bumped down’ into lower-wage jobs, or ‘crowded out’ of the labour market into unemployment, resulting in high-skilled individuals being forced to accept jobs lower in the job queue, thus experiencing over-education.

Both approaches, however, are recurrently unsupported by the empirical evidence (see Rubb 2003; McGuinness 2006; McGuinness and Wooden 2009; Baert et al. 2013). Rather, results typically show that the over-qualified are penalised against the equally-qualified, properly-matched workers, but extra-rewarded with respect to the well-matched, but less-qualified workers. According to these results, more support (see the surveys by Sloane 2003; McGuinness 2006) has been given to the assignment theory (Sattinger 1993), which rests on the notion that not all similarly-educated workers are equally productive in all jobs, but there does exist a heterogeneous skill/ability distribution, provoking mismatch in the allocation of workers to jobs (Chevalier 2003; Green and McIntosh 2007). In these circumstances, the need to study the more general concept of over-qualification, rather than over-education,

emerges. This explicitly differentiates between over-education, lack of experience, and skill mismatch, all encompassed in the general term of over-qualification.

Over-qualified workers are associated with lower levels of job satisfaction than their corresponding equally-qualified, well-matched colleagues. The rationality for this result, from the economic perspective, is that over-qualification results from a mismatch between a worker's capabilities and the job requirements, such that final allocation is suboptimal, leading to inefficient outcomes and losses in earnings and productivity (Hartog 2000; McGuinnes 2006). In managerial studies, the typical finding that over-qualified workers feel more dissatisfied and thus performing worse than the adequately-matched, and being more prone to leave the job, is rationalised through the person-job fit model, by which the incongruence between the goals or desires of the employee and the quality of the job leads to lower job attitudes on the part of employees (Kristof-Brown et al. 2005; Maynard et al. 2006). Similarly, such findings are explained in the psychological literature by the relative deprivation theory (Bolino and Feldman 2000; Feldman et al. 2002; Johnson et al. 2002; Khan and Morrow 1991; Peiro et al. 2010). When an individual wants something and feels it is deserved, but does not get it, that is, when a gap between aspirations and actual realisations exists, the individual becomes frustrated (Crosby 1976). Wages, job responsibilities, challenges, and career advancements are generally lower for the over-qualified, leading to a sense of deprivation and unfairness that is reflected in the individual showing lower job performance and a greater readiness to leave than the adequately-matched worker. These models also support the view that the over-qualified feel more dissatisfied with respect to their well-matched, less-educated co-workers, because of the sense of deprivation, frustration, lack of equity, and unfairness in general.

Empirical studies typically confirm that the over-qualified are less satisfied than equally-educated, well-matched workers (Allen and van der Velden 2001; Vieira 2005; Verhaest and Omey 2006, 2009). When comparing the over-qualified with their less-educated, well-matched co-workers, the evidence is mixed. Whereas in some studies, the relationship between over-qualification and job satisfaction is also negative (Tsang et al. 1991; Feldman et al. 2002; Verhaest and Omey 2006, 2009), in others the relationship is not statistically significant (Khan and Morrow 1991; Groot and Maassen van den Brink 2000; Büchel 2002; Kampelmann and Rycx 2012). The inclusion of certain determinants may moderate the negative relationship. For instance, Erdogan and Bauer (2009), Weststar (2009), and Verhaest and Verhofstadt (2016) find that the negative relationship weakens when considering empowerment, control of work, or autonomy, respectively, as additional factors affecting job satisfaction.

Recent studies consider that a portion of over-qualification can be considered as "voluntary". This would imply that the over-qualified may not be more dissatisfied than equally-educated, adequately-matched workers (McGuinness and Sloane 2011;

Mavromaras et al. 2013). Whereas the interest of firms in hiring over-qualified workers is supported by the fact that workers bring valuable skills to an organization (Feldman et al. 2002; Holton et al. 2002; Fine and Nevo 2008; Erdogan and Bauer 2009), a non-negative relationship between over-qualification and job satisfaction (when comparing the over-qualified to their well-matched colleagues) requires workers to find over-qualification profitable, at least in some aspects of the job. That is, the decision of an over-qualified individual to remain in a job must be the result of personal preferences and choices.

Two possible lines of reasoning have been suggested. First, workers may accept the situation of over-qualification to accommodate other life demands, such as lower-levels of work-family conflict or best fit with the individual's values and interests (Erdogan et al. 2011a, b). Thus, the point on the career stage suggests that younger workers may accept starting as over-qualified to facilitate a later upward mobility. An initial mismatch may be transitory, and disappears in the course of upward career mobility (Sicherman and Galor 1990; Sicherman 1991; Alba-Ramirez 1993), so that the over-qualified may not feel continuously less job-satisfied.[2] Analogously, older workers may wish to accommodate to less stressful, more pleasant jobs (Liu and Wang 2012). Maltarich et al. (2011) define these, and similar, possibilities as intentional mismatch. Also, in the specific case of over-education, this may appear as a compensation for deficient human capital in other respects—for the lack of other skills, to reveal non-obvious qualifications for a job, or to disguise shortcomings among other, more able individuals (Green et al. 2002; Green and McIntosh 2007; Chevalier and Lindley 2009). The increasing dispersion in ability and skills among equally-educated workers may induce individuals to voluntarily acquire more qualifications than those they can productively use in their jobs, as a way of compensating for a lack in those observed and unobserved skills. Accordingly, a sizeable portion of the over-qualified only appear so because workers with a particular education level may have low values of other, unobserved, aspects of human capital, such as knowledge, ability, or other skills (see Mateos-Romero et al. 2017, for the case of Spain). Several studies show that skill mismatch has a stronger negative impact on job satisfaction than has educational mismatch (Allen and van der Velden 2001; Sloane 2003; Green and Zhu 2010; Mateos Romero and Salinas-Jiménez 2018b; see also Badillo-Amador et al. 2012; Badillo-Amador and Vila 2013; Mateos Romero and Salinas-Jiménez 2018a for Spain).[3]

The second line of over-qualification as a result of choices is based on economic factors. In slack labour markets, like Spain, where unemployment is substantial, over-qualification may be used by individuals to either gain access to the labour market, to escape from unemployment, to improve their position in wage bargaining, to search for a better job, or to achieve stability in the workplace (García-Montalvo and Peiro 2008; McGuinness and Wooden 2009; Ortiz 2010; McGuinness and Sloane 2011).[4] In sum, if some over-qualification results from the "voluntary" choices of individuals, this may be not completely sub-optimal, thereby allowing for the possibility of non-

negative relationships between over-qualification and job satisfaction (Erdogan et al. 2011a, b; McGuinness and Sloane 2011). This possibility gains support when different notions of over-qualification and job satisfaction are considered, as discussed in turn.

Over-qualification includes three dimensions: (1) more education than required by the job (over-education); (2) more experience or skills than required (skill under-utilization); (3) employment in a field outside of the area of education. Many aspects of job satisfaction have been considered in empirical studies (see references below). When variability within over-qualification and job satisfaction is considered, it is not uncommon to find that the negative relationship between over-qualification and job satisfaction is mitigated, with marked variations in the strength of the relationship across a range of measures. Maynard et al. (2006) examine the relationship between perceived over-qualification and various job attitudes, including job satisfaction, surveying three distinct samples of US employees. They find that, although perceptions of over-qualification are associated with poor job satisfaction, the relationships are not equally strong for all over-qualification-dimension-attitude-domain combinations; that is, relations between over-qualification and satisfaction are domain-specific, "thus, underscoring the importance of assessing job satisfaction at the facet level" (p. 530). Specifically, they relate a synthetic measure of subjective over-qualification to eight different domains of job satisfaction in one of the samples, and to five in another sample, to find that all these domains are negatively correlated with over-qualification, but that the strength of the relationship markedly varies across domains.[5]

For the case of Spain, Peiro et al. (2010) study the relationship between over-qualification and job satisfaction, constructing three facets of job satisfaction (extrinsic, intrinsic, and social significance) from an initial set of eighteen.[6] All the individual factors are loaded into the three dimensions described through confirmatory factor analysis. Using a representative sample of selected Spanish employees (between 16 and 30 years old), and after controlling for variables such as gender, age, education, and region, the authors find a negative relationship between over-qualification and each of the three domains of job satisfaction. However, the strength of the relationship varies across domains of job satisfaction: the weakest relationship is found with social significance.

Johnson and Johnson (2000), for three different samples of US postal workers, find, at the cross-sectional level, that perceived over-qualification is negatively related to satisfaction with promotion and to satisfaction with pay, but not to the domains of satisfaction with work, and with supervision. Johnson et al. (2002) reach similar conclusions when adding some indicators of the willingness to remain, or not, in the current position. The authors conclude that "job setting is multidimensional and composed of different constituent parts with which an individual may be either satisfied or dissatisfied" (Johnson and Johnson 2000, p. 552).

Other studies also find that the over-qualified are not more dissatisfied than equally-educated, well-matched workers, at least, when particular domains of job satisfaction are considered. Groot and Maassen van den Brink (1999) show that the relationship is non-significant for each of the three different domains of job satisfaction they consider, and for the overall notion of over-qualification, when studying the case of older (aged 43–63) Dutch males. Badillo-Amador and Vila (2013), for Spain, find that while the relationship is negative between skill mismatch and three dimensions of job satisfaction, the relationship is statistically non-significant between educational mismatch and satisfaction with wages. A clearer result is observed in Mavromaras et al. (2013), using panel data from Australia, in that the relationship between over-qualification and job satisfaction is significantly estimated only in the overall concept of job satisfaction and in satisfaction with work, but not when the other four domains of job satisfaction are analyzed. The estimated coefficients lose some statistical significance when panel data is used to control for unobserved individual heterogeneity.

In this respect, it should be noted that the possible existence of endogeneity may affect the observed results. When endogeneity appears, the estimated relationship between over-qualification and job satisfaction cannot be interpreted causally. A range of studies highlight this point, especially when both variables are measured subjectively (Johnson and Johnson 2000; Fine and Nevo 2008; Peiro et al. 2010). Since satisfaction and over-qualification variables are both self-perceived by individuals, unobserved elements or reverse causation may be driving their final evaluations. Individual unobserved heterogeneity may be straightforwardly controlled for when information on cognitive or non-cognitive skills is available (Fine and Nevo 2008) or information is in panel data form (Vieira 2005; Badillo-Amador et al. 2012; Mavromaras et al. 2013). In default of these, Instrumental-Variable-type estimations must be applied.

To conclude, the negative relationship between job satisfaction and over-qualification that is typically observed in the literature may be mitigated when considering stages of life or career, the business cycle, economic or personal factors, or simultaneity. Additionally, increasing evidence shows that the relationship varies across dimensions of over-qualification and facets of job satisfaction, and it is not impossible to find some studies showing the absence of such a relationship. In consequence, there remains a need to investigate the relationship, while considering different domains of job satisfaction to test whether the over-qualified may feel no less satisfied than the adequately-qualified. Furthermore, potential endogeneity must be addressed.

3. Data and Descriptive Results

The data used in this paper come from the Quality of Work Life Survey (*Encuesta de Calidad de Vida en el Trabajo,* ECVT henceforth), a programme in cross-sectional

form, established in 1999 and completed in 2010, by the Spanish Ministry of Employment. It focuses on employment relationships and, more importantly for our research, on the valuations and attitudes of employees towards their work. The survey addresses workers older than 16, living in households, as being representative of the total employed population, and covers a number of issues relating to working conditions, which allows us to control for a range of individual and job attributes. In particular, we focus on those that have to do with the qualifications of individuals and their self-perceived job-match, as well as up to sixteen different dimensions of job satisfaction. Additional information is provided on the socio-demographic variables of employees, and on job conditions and attitudes of employees towards work, which may act as moderators or mediators in the relationship between over-qualification and job satisfaction (McKee-Ryan and Harvey 2011; Liu and Wang 2012). Overall, the data combine objective information on labour, family, and individual characteristics, with purely subjective information on the job match and on satisfaction with various aspects of the job. Our focus is on the most recent period. Specifically, our sample is constructed by pooling the last four consecutive waves, from 2007 to 2010. Using a longer sample is possible, but not advisable. Micro information is available only since 2001. The questionnaire was different before and after 2004. The survey was not carried out in 2005 and, in 2006, information was not present for some of our variables of interest. All this leads us to collect information only for the period 2007–2010. Finally, the self-employed are omitted since most of the dimensions of job satisfaction studied are not fully applicable to this group of workers.[7]

Measures of over-qualification There is much debate about how to measure over-qualification: either with objective or subjective constructs.[8] Although subjective measures can be affected by classification errors, they are generally based on all the relevant information (Green and Zhu 2010) and have more predictive power over the outcome than alternative measures, in that they are meaningful interpretations of the job match and the work environment (Johnson et al. 2002; Maynard et al. 2006). Subjective over-qualification is a more proximal predictor of employee attitudes and behaviours (Feldman et al. 2002; Liu and Wang 2012). All in all, there is some degree of consensus in that subjective assessments mediate between objective measures and labor outcomes (Verhaest and Omey 2009; McKee-Ryan and Harvey 2011; Liu and Wang 2012).

Following Feldman (1996), we attempt to capture the three dimensions included in over-qualification: over-education, skill under-utilization, and employment outside the field of study. Over-education is typically measured in three different ways: subjective, objective, and statistical. An objective measure is based on a comparison between the actual education level and the job-level requirements, established from an evaluation by professional job analysts. The statistical measure of over-education is obtained by comparing years of education attained by an individual with an indicator of the aggregate education level in the occupation of that individual. The subjective measure comes from worker self-assessments, corresponding to the

response to the question whether the individual feels over- or under-educated for the work that they do.

In this study, subjective measures are employed. Specifically, to approximate over-education, we make use of the worker responses to the following question.

QUESTION 1 Do you think that your current job is adequate according to your educational level?

With the possible answers being.

1. *Yes, correct* We label this as adequately-educated.
2. *No, below* We label this as over-educated.
3. *No, above* We label this as under-educated.
4. *No, different* Other.

Less than 3% of surveyed individuals choose answers 3 and 4.[9] In consequence, we discard these individuals in our analyses and consider only adequately-educated and over-educated. This leaves us with an overall sample of 26,027 wage-earner employees. Table 1 shows, in the first column, that 80.7% of surveyed individuals feel that they are adequately-educated, as against 19.3% who feel over-educated.

Table 1

Definitions and percentages of over-qualification.
Source: Own elaboration from ECVT 2007–2010

Question 1	**Question 2**	
	Non-useful education level (under-median) 40.3%	**Useful education level (median and over-median) 59.7%**
Adequately educated (80.7%)	Unadjusted (27.5%)	Adjusted (53.2%)
Over-educated (19.3%)	Genuinely over-educated (12.8%)	Apparently over-educated (6.5%)

AQ1

A second dimension of over-qualification is skill under-utilisation. The increasing dispersion in ability and/or skills among equally-educated workers makes skill mismatch different from educational mismatch.[10] Specifically, as education is only one of several individual skill components, it is not clear whether an individual identified as over-educated would indeed have a negative job/qualification match if all skill components were taken into account (Chevalier 2003; Green and McIntosh

2007); over-educated workers may lack the necessary skills to perform more demanding jobs and use their "surplus" schooling to compensate for deficient human capital in other respects. Skill under-utilization is more difficult to classify and measure objectively. Some authors have used measures of cognitive ability (Fine and Nevo 2008), but only the recent appearance of new databases, such as PIACC in Europe, allows researchers to obtain objective measures of skill mismatch (see Flisi et al. 2017; Mateos-Romero and Salinas-Jiménez 2017, 2018a, b).[11]

In our data base, there is no a direct indicator of this dimension; so it is approached indirectly, following Chevalier (2003) and Chevalier and Lindley (2009). These authors use individual satisfaction with the match between educational level and job to proxy skill heterogeneity among equally-educated individuals. Thus, those who are over-educated but feel satisfied with the job match are labelled as apparent over-educated. While the typical measures of over-education implicitly assume that all workers with a given education level are perfect substitutes, a sizeable portion of the over-educated are only apparent because workers with a particular education level may have low values of other, unobserved, aspects of human capital, such as ability or other skills (McGuinness and Sloane 2011). Those over-educated who feel dissatisfied with the match are dubbed as genuine over-educated.[12]

Accordingly, we combine the responses given to *QUESTION 1* and those given to a second question (*QUESTION 2*) in the ECVT to obtain a classification of workers according to the self-perception of education-job mismatch:

QUESTION 2 To what extent is your education level useful for your job?

Each individual is self-rated on a scale between 0, *not at all*, and 10, *very much*. The response to this may be interpreted as an indicator of skills utilization, since it may well be the case that an individual declares being adequately educated in response to QUESTION 1 and, simultaneously, reports a low degree of usefulness of studies in the current job. Although we concede that the assimilation of the valuation of the utility of the educational level as a practical measure of skill utilization may be problematic, we believe it is a good approximation, given our data. In order to categorize the responses to QUESTION 2, we take two different approaches. First, we consider that the portion of the sample rating between 0 and 5 have acquired educational skills that are hardly applicable to their jobs (*non-useful educational level*), whereas the portion rating 6 or above are considered to make good use of their acquired educational skills (*useful educational level*).[13] Second, given that the feeling about the usefulness of education may vary according to the educational level, we transform responses to QUESTION 2. In particular, we compute the median for each of the 5 educational levels used in the estimation and assign value 0 to those individuals who rate QUESTION 2 below the median, and 1 otherwise. This approach seems more appropriate, since the median values range from 8 at the highest educational level to 5 at the lowest, confirming the positive correlation between

educational level and the self-evaluation of education level utility.[14] In the empirical section, estimates using this second definition are presented. Results for the alternative definition are available from the authors upon request.

Table 1 shows the classification of employees according to the self-evaluated mismatch. Among the adequately-educated, the "adjusted" workers are those who answer 1 to *QUESTION 1* and simultaneously are labelled with 1 according to definition 2. They are adequately educated and find their education level useful; they represent more than half of the whole sample (see upper-right cell in Table 1). There a number of individuals, about 27.5% of observations (see upper-left cell in Table 1), who feel adequately-educated but do not find useful the educational level pertaining to the tasks they perform at work. These are more difficult to classify; they are differentially qualified and we designate them as "unadjusted". They may approximate the third dimension of over-qualification according to Feldman (1996), those who are employed in a field outside of their area of education.

Those who answer 2 to the *QUESTION 1* are labelled as over-educated. We can distinguish between "apparent", those who respond 1 to *QUESTION 2* (over-educated, but their education level is found useful), and "genuine", those who respond 0 to *QUESTION 2* (over-educated and report having a useless education level). Close to 13% of total individuals feel they are genuinely over-educated, and 6.5% feel they are apparently over-educated (see lower row in Table 1).

Whereas responses to QUESTION 1 allow us to distinguish between adequately-educated and over-educated, the combination of responses to both questions permits us to approximate skill-heterogeneity among individuals, and distinguish between adjusted, unadjusted, apparent over-educated, and genuine over-educated. In this second case, a gradation or ordering can be constructed with adjusted (not over-educated, useful education) and genuinely over-educated (over-educated and useless education) at the extremes; and unadjusted (not over-educated and useless education) and apparent over-educated (over-educated and useful education) in between. Both classifications will be considered in our subsequent analyses. The distinction between apparent and genuinely over-educated (or formal and real over-education) has been used in previous studies (Chevalier 2003; Chevalier and Lindley 2009; Green and Zhu 2010) to reveal that apparently over-qualified workers are actually in jobs commensurate with their human capital, and that they are less penalized in earnings than the genuinely over-educated, relative to the non-over-educated. We follow this terminology in the paper.

Measures of Job Satisfaction Workers are asked a number of questions concerning different aspects of job satisfaction. The overall assessment of job satisfaction at the current job is derived from the response to the question "*indicate the satisfaction degree in your current (main) job*", which is rated—on an eleven-point scale—from 0 (*no satisfaction*) to 10 (*very high satisfaction*). While, in many cases (see Johnson et

al. 2002; Peiro et al. 2010, among others) the chosen facets of job satisfaction are constructed through confirmatory factor analysis from the responses of individuals in small samples to different items from large sets (Job Satisfaction Survey, Job Descriptive Index), we use the nationally representative ECVT, which directly offers the rates for each of the satisfaction dimensions under consideration. Similar kinds of sample are used in Badillo-Amador and Vila (2013) (the European Community Household Panel), and in Mavromaras et al. (2013), (the Australian HILDA, Household, Income and Labor Dynamics in Australia). The advantages of using large, nationally-representative samples have been claimed elsewhere (e.g., Liu and Wang 2012).

Table 2 displays the different dimensions of satisfaction in the workplace (classified in extrinsic, intrinsic, and social aspects, as in Peiro et al. 2010), and their corresponding average values for the overall sample, as well as distinguishing between over-educated and adequately-educated (according to *QUESTION 1*), and across the four aforementioned groups (combining answers to *QUESTIONS 1* and *2*). Average general job-satisfaction for the pooled 2007–2010 period is rated at 7.29 (fewer than 20% of respondents admit to a job satisfaction rate below 6). Whereas many domains show an average value between 6.5 and 7.7, pay satisfaction is near 6, less than 5 is observed for satisfaction with promotion prospects and with training, and the lowest value, 3.3, corresponds to satisfaction with social benefits or aid provided by the firm. Cronbach's α shows an internal consistency among different domains, with a value of 0.89.

Table 2

Average job satisfaction across groups. Average values for different worker groups according to th

Source: Own elaboration from ECVT 2007–2010

Please, rate your satisfaction with the following aspects in your job place. How satisfied are you with the following job aspects? (0 not at all-10 very much)	**Overall sample**	**Adequately-educated**	**Over-educated**	**Adequately-educated**		**Over-**
				Adjusted	**Unadjusted**	**Apare over-educa**
Overall job satisfaction	7.29	7.47	6.47	7.67	7.16	6.84
Extrinsic						
Firm's work organisation	6.89	7.05	6.17	7.24	6.80	6.42
Promotion prospects	4.99	5.20	4.09	5.50	4.65	4.60

Please, rate your satisfaction with the following aspects in your job place. How satisfied are you with the following job aspects? (0 not at all-10 very much)	Overall sample	Adequately-educated	Over-educated	Adequately-educated		Over-
				Adjusted	Unadjusted	Apare over-educa
Workday/working day	7.16	7.26	6.68	7.44	6.97	6.96
Hour flexibility	6.27	6.41	5.65	6.65	6.00	6.15
Duration of work breaks	6.63	6.76	6.07	6.94	6.46	6.39
Paid vacations	7.41	7.53	6.87	7.75	7.13	7.18
Job stability	7.38	7.54	6.69	7.79	7.12	7.13
Earnings/pay/salary	6.01	6.20	5.16	6.41	5.85	5.41
Health and safety at work	7.31	7.43	6.79	7.60	7.14	7.01
Intrinsic						
Activity in work	7.68	7.87	6.88	8.06	7.54	7.38
Personal development/self-fulfilment	7.42	7.67	6.31	7.89	7.30	6.94
Level of freedom/autonomy at work	7.27	7.43	6.60	7.62	7.10	7.01
Participation in decisions related to job tasks	6.57	6.78	5.62	7.06	6.32	6.29
Firm-provided training	5.73	6.00	4.53	6.45	5.21	5.34
Social						
Recognition of the work/relations with management	7.09	7.26	6.35	7.43	6.97	6.61
Firm-provided social support	3.29	3.43	2.67	3.68	2.97	3.02

The over-educated systematically report lower rates of satisfaction for all domains than those who are adequately educated. Many differences are around one scale-point, with the two largest exceeding 1.3 (satisfaction with personal development and with

training), and the two lowest being smaller than 0.7 (satisfaction with the working day and health and safety). When considering the differences in the set of satisfactions between the four types defined, a general result is that the adjusted are more satisfied than the unadjusted, these more than the apparently over-educated, and the latter more than the genuinely over-educated (values ranging from adjusted to genuine over-qualified, between 1 and 2 scale-points). In some few cases, rates for the apparently over-educated are not, in fact, lower than those of the unadjusted. The rest of the variables used in the study are described ~~in Table 5~~ in the "Appendix".

4. Methodology and Results

4.1. Ordered Probit Estimation of Job Satisfaction

We follow the standard approach, regressing each dimension of job satisfaction, and overall job satisfaction, on a range of personal and job characteristics at the individual level, including self-perceived variables capturing mismatch, according to the following expression:

$$DS_{it}^{j} = \alpha + \beta_0 X_{it} + \gamma_0 M_{it} + \varepsilon_{it} \quad (1)$$

where self-reported satisfaction, *DS* for each dimension *j*, of individual *i*, in year *t* depends on a vector of individual socio-demographic and job characteristics (X_{it}) and dummies capturing mismatch/over-qualification (M_{it}).[15] One important matter concerning our dependent variable is whether the different domains of satisfaction are assumed to be ordinal-interpersonal comparable, or cardinal-interpersonal comparable (Ferrer-i-Carbonell and Frijters 2004). Interpersonal comparability means that when two respondents give the same answer, they are assumed to enjoy similar satisfaction levels. That is, "individuals have a common understanding of how to translate internal feelings into a number scale, so that numerical values from different individuals are roughly the same" (Ferrer-i-Carbonell and Frijters 2004, 644). Assuming cardinality supposes that the differences between satisfaction rates are not dependent on the rate itself (i.e. the difference between rating 7 and rating 6 is the same as the difference between scores 3 and 2). In consequence, an individual rating 8, for example, is twice as satisfied as an individual rating 4. In this context, empirical analysis can be done with OLS. However, when only ordinality is assumed, differences between the rates are not considered to be independent of the rate itself. In this case, an individual rating 8 is more satisfied than another individual rating 4, but the difference is not informative of the relative valuation. The empirical analysis hence requires the use of latent variable models, ordered probit or ordered logit. The assumption of ordinal-interpersonal comparability is then less restrictive and results for the ordered probit are now examined in detail.

At the moment, we present ordered probit estimates of Eq. (1), without considering the bias associated with potential endogeneity, to be discussed below. Thus, causality

is not investigated and coefficients should be interpreted as only partial correlations. Table 3 shows the results of estimating the relationship between self-perceived over-qualification and the overall concept of job satisfaction, while controlling for a set of (observable) personal and job characteristics. We consider alternatively the specification comparing the over-educated and the adequately-educated (first two columns, Table 3), and the one that simultaneously considers adjusted, unadjusted, apparently over-educated, and genuinely over-educated (second block of two columns, Table 3).

Table 3

Overall job satisfaction. Ordered probit and MLE estimates with over-education and misma variables.

Source: Own elaboration from ECVT 2007–2010

	Ordered probit				**MLE**			
	Coef.	**SE**	**Coef.**	**SE**	**Coef.**	**SE**	**Coef.**	**SE**
Job satisfaction (Eq. 1)								
Over-educated	−0.556***	0.017			−0.336***	0.079		
Unadjusted			−0.238***	0.015				
Apparently over-educated			−0.468***	0.027				
Genuinely over-educated			−0.735***	0.021				
Ordered variable of mismatch							−0.207**	0.09
Personal and family variables								
Male	−0.063***	0.015	−0.062***	0.015	−0.068***	0.015	−0.056***	0.01
Lower secondary	0.007	0.021	− 0.008	0.021	0.005	0.021	− 0.005	0.02
Upper secondary	0.036	0.026	0.035	0.026	0.029	0.026	0.057**	0.02
Vocational	0.029	0.021	0.040*	0.022	0.026	0.021	0.059***	0.02
Bachelor	− 0.003	0.024	0.005	0.024	− 0.027	0.025	0.014	0.02
Age	−0.035***	0.005	−0.034***	0.005	−0.036***	0.005	−0.033***	0.00

*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$

[a]Instrument variable that is an objective measure of over-education that takes value 1 if the employee has university studies but works in a manual or services unskilled occupation, and 0 otherwise

	Ordered probit				MLE			
	Coef.	**SE**	**Coef.**	**SE**	**Coef.**	**SE**	**Coef.**	**SE**
$Age^2/100$	0.044***	0.006	0.043***	0.006	0.046***	0.006	0.043***	0.00
Spanish	−0.038**	0.016	−0.036**	0.016	−0.039**	0.016	−0.036**	0.01
City medium	−0.060***	0.014	−0.062***	0.014	−0.060***	0.014	−0.069***	0.01
City large	−0.196***	0.024	−0.197***	0.024	−0.194***	0.024	−0.198***	0.02
Unemployment rate	0.015***	0.001	0.014***	0.001	0.016***	0.001	0.014***	0.00
Married	0.062***	0.016	0.058***	0.016	0.062***	0.016	0.054***	0.01
Children 0–5	−0.011	0.019	−0.011	0.019	−0.012	0.019	−0.008	0.01
Children 6–14	0.032***	0.011	0.034***	0.011	0.035***	0.011	0.039***	0.01
Work related variables								
Hours worked	−0.006***	0.001	−0.006***	0.001	−0.006***	0.001	−0.006***	0.00
Income 1200–2100	0.152***	0.016	0.140***	0.016	0.158***	0.016	0.133***	0.01
Income > 2100	0.277***	0.027	0.252***	0.027	0.294***	0.028	0.230***	0.02
Permanent	0.204***	0.018	0.196***	0.018	0.202***	0.018	0.195***	0.01
Training	0.271***	0.014	0.259***	0.014	0.270***	0.014	0.257***	0.01
Public sector	0.090***	0.017	0.068***	0.017	0.091***	0.017	0.068***	0.01
Industry	0.172***	0.042	0.150***	0.042	0.164***	0.041	0.155***	0.04
Construction	0.172***	0.043	0.150***	0.043	0.163***	0.043	0.150***	0.04
Services	0.258***	0.040	0.229***	0.040	0.255***	0.040	0.228***	0.04
Tenure	−0.013***	0.002	−0.013***	0.002	−0.013***	0.002	−0.013***	0.00
$Tenure^2/100$	0.022***	0.006	0.021***	0.006	0.023***	0.006	0.022***	0.00
First job	0.050***	0.016	0.049***	0.016	0.050***	0.016	0.046***	0.01
Union	−0.131***	0.017	−0.129***	0.017	−0.131***	0.017	−0.129***	0.01
Firm medium	−0.086***	0.019	−0.081***	0.019	−0.086***	0.019	−0.076***	0.01

*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$

[a]Instrument variable that is an objective measure of over-education that takes value 1 if the employee has university studies but works in a manual or services unskilled occupation, and 0 otherwise

	Ordered probit				MLE			
	Coef.	**SE**	**Coef.**	**SE**	**Coef.**	**SE**	**Coef.**	**SE**
Firm large	−0.102***	0.016	−0.093***	0.016	−0.103***	0.016	−0.087***	0.01
Mismatch (Eq. 2)								
OOE[a]					1.135***	0.038	1.065***	0.03
Unemployment rate					0.001	0.002	− 0.002*	0.00
_constant					−0.996***	0.023		
Age							0.004	0.00
$Age^2/100$							−0.019***	0.00
/cut1	−3.041***	0.110	−3.176***	0.110	−3.029***	0.111	−3.155***	0.11
/cut2	−2.847***	0.108	−2.981***	0.109	−2.837***	0.109	−2.954***	0.11
/cut3	−2.600***	0.107	−2.732***	0.108	−2.597***	0.108	−2.702***	0.11
/cut4	−2.312***	0.106	−2.442***	0.107	−2.310***	0.107	−2.414***	0.11
/cut5	−2.018***	0.106	−2.146***	0.106	−2.018***	0.107	−2.118***	0.11
/cut6	−1.453***	0.106	−1.576***	0.106	−1.453***	0.106	−1.544***	0.11
/cut7	−0.984***	0.106	−1.105***	0.106	−0.985***	0.106	−1.069***	0.11
/cut8	−0.336***	0.105	−0.452***	0.106	−0.339***	0.106	−0.413***	0.11
/cut9	0.514***	0.105	0.404***	0.106	0.511***	0.106	0.444***	0.11
/cut10	1.059***	0.106	0.951***	0.106	1.057***	0.106	0.993***	0.11
/cut_2_1							− 0.085	0.09
/cut_2_2							0.728***	0.09
/cut_2_3							1.013***	0.09
ρ12					−0.071**	0.034	−0.062**	0.02

*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$

[a]Instrument variable that is an objective measure of over-education that takes value 1 if the employee has university studies but works in a manual or services unskilled occupation, and 0 otherwise

	Ordered probit				MLE			
	Coef.	**SE**	**Coef.**	**SE**	**Coef.**	**SE**	**Coef.**	**SE**
Log likelihood	− 47,644.38		− 47,488.28		− 59,689.98		− 72,915.42	
Number of observations	26,027							
*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$								
[a]Instrument variable that is an objective measure of over-education that takes value 1 if the employee has university studies but works in a manual or services unskilled occupation, and 0 otherwise								

Controls that moderate the relationship between over-qualification and the domains of job satisfaction include gender, educational attainment, age (in quadratic terms), nationality, city-population size, the unemployment rate, family variables (marital status, number of children in different age ranges), working hours, income ranges, type of contract, training at work, public sector, activity branches, tenure (in quadratic terms), being in a first job, unionization, and firm size.[16] The inclusion of earnings is essential. With no market failures, preferences over job amenities would be internalised in the labour market through wages (compensating wage differentials) and one would then not find any separate effect of, say, worked hours or type of contract, on any domain of job satisfaction after controlling for income or wages. Nevertheless, studies systematically do find statistical and quantitatively significant effects of various job amenities on job satisfaction, such as, for example, type of contract (Booth et al. 2002), over-education (Vieira 2005), job stability (Origo and Pagani 2009) and empowerment (Erdogan and Bauer 2009). In other words, any job characteristics that influence job satisfaction may offset, or reinforce, the effect of over-qualification. In consequence, it is necessary to condition the analysis on the characteristics of the job.[17]

The estimates for variables included in our analysis show that men are less satisfied than women. Education is not related to job satisfaction. Age (and tenure) variables have the typical U shape, indicating that satisfaction declines in the early years and then increases. Foreign workers are more satisfied, *ceteris paribus*, than native Spanish workers. Larger-population cities are associated with lower job satisfaction. When the unemployment rate is higher the associated job satisfaction is also higher, revealing that having a job is valued positively by employees. The family structure is found to be an important element in shaping job satisfaction: marriage and having children over age 6 is associated with greater job satisfaction. Regarding work-related variables, working longer hours is associated with lower satisfaction. Higher income is positively associated with greater job satisfaction. Labour stability, training at work, and working in the public sector all lead to increases in job satisfaction, with workers being generally more satisfied in services. Finally, being in a first job is

positively related to job satisfaction, while large firm size and unionisation both reduce job satisfaction.[18] These results typically follow the standard behaviour in the literature (see Dolan et al. 2008; and García-Mainar et al. 2016, for the case of Spain). The only notable case refers to education variables. The literature is varied, with existing evidence in favour either of a positive relationship to job satisfaction, or negative, or an absence of any relationship (Holton et al. 2002; Johnson and Johnson 2000; Verhofstadt et al. 2007). Our results do not help in elucidating which hypothesis is not rejected. Estimated coefficients in the ordered probit are non-significant.[19]

Focusing on our variables of interest, both specifications yield similar results. When comparing the over-educated and the adequately-educated, it is observed that the over-educated are less satisfied than those who are equally educated but who are working in a job compatible with their level of education. When comparing different degrees of mismatch, it can be seen that the negative relationship is the strongest in the case of the genuinely over-educated, followed by the apparently over-educated, and finally by the unadjusted; that is, the greater the mismatch, the less satisfied an individual is. The fact of trying to capture skill heterogeneity among equally-educated workers through the consideration of the utility of the education level does not change the fact that mismatch is negatively related to job satisfaction.

Overall, the conclusion is that mismatches convey losses in satisfaction for employees with respect to those who are adequately-educated, and adjusted, respectively. According to these results, the negative relationship between measures of over-qualification and job satisfaction is confirmed, and therefore the mismatch is sub-optimal—a situation not pursued by employees—so that these results fit well with any of the aforementioned theories (relative deprivation, person-job fit, or human capital).

4.2. Addressing Endogeneity

When estimating Eq. (1), we face certain difficulties. The fact that perceived over-qualification and job satisfaction are both evaluated subjectively, makes endogeneity biases more likely to arise. Whereas results in the first block of columns of Table 3 show that there exists a strong negative relationship between self-perceived over-qualification and the general measure of job satisfaction; this result may be driven by reverse causation. Individuals who feel somehow mismatched may become more dissatisfied in the workplace, and then report lower levels of job satisfaction; at the same time, individuals with low levels of job satisfaction may report being more discontented with their qualification-job match. In addition, common unobserved determinants, from individual psychological characteristics or personal traits—such as self-esteem, anger, or boredom, for example—and that are omitted from the equation, are likely to simultaneously influence both the perceived educational mismatch and job satisfaction. Although this potential heterogeneity is partially

addressed when considering different degrees of mismatch (unadjusted, apparent, and genuine over-educated) some other and measurement errors may remain unaccounted for. Both possibilities suggest the risk of an endogeneity problem, leading to biased and inconsistent estimates of the causal effect of self-perceived mismatch on the subjective evaluation of job satisfaction.

The data used in this paper, the ECVT, has no information on psychological and personal traits. Furthermore, it is in cross-sectional form, which precludes longitudinal analysis. Thus, to address simultaneity, it is necessary to use some type of Instrumental Variables, for which subjective educational mismatch should be instrumented in order to obtain consistent estimates. Taking into account both the ordered nature of the dependent variable (satisfaction) and the (plausible) appearance of endogeneity bias, however, is not straightforward. The two-step method (2SLS) can be viewed only as an approximation of the correct estimator (see e.g. Van de Ven and Van Praag 1981; Bryson et al. 2004; García-Mainar et al. 2016). A simple way to circumvent this is to assume that the dependent variable is cardinal, given that assuming either ordinality or cardinality of happiness scores has little effect on the qualitative empirical results (Ferrer-i-Carbonell and Frijters 2004). A second alternative takes advantage of the simultaneous estimation of different equations by allowing the unobserved individual components of such equations to be jointly distributed. It consists of the joint estimation of the job satisfaction equation (by an ordered probit), together with a selection equation on self-perceived mismatch (by a probit or an ordered probit, depending on the specification in each case).

The selection equation used is represented by Eq. (2)

$$M_{it} = \alpha + \delta_0 Z_{it} + \delta_1 OOE_{it} + \upsilon_{it} \qquad 2$$

where Z_{it} is a vector of the explanatory exogenous variables included in Eq. (1) and OOE_{it} is the instrument for either the dummy variable capturing over-education or the ordered variable of mismatch (whose values are, respectively, 0 adjusted, 1 unadjusted, 2 apparently over-educated, and 3 genuinely over-educated). The instrument OOE_{it} is constructed as an objective measure of over-education. It is a dummy variable that takes value 1 if the employee has university studies but works in a manual or services unskilled occupation, and 0 otherwise.[20] Expressed in this way, any self-perceived mismatch acts as a mediator between objective over-education and job satisfaction.[21]

The simultaneous estimation of both equations is included in the general class of multiple equation models with discrete endogenous variables. Following Roodman (2011), we model job satisfaction and the potential endogenous regressor as a system of two equations, which is estimated on a simulated maximum likelihood method (MLE) from multivariate normal distribution functions. This resembles the Geweke–Hajivassiliou–Keane (GHK) simulator. The joint modelling of the two equations allows for the error terms to be correlated across equations controlling for

measurement errors and common method bias. This model is not fully recursive, since over-qualification enters the equation explaining job satisfaction, but the reverse does not apply. The cross-equation correlations (ρ) of estimated errors perform as a test of the endogeneity of regressors. When ρ is significantly different from zero, exogeneity is rejected.

We prefer this latter approach to a traditional IV estimation, since it takes into account both the ordered nature of our dependent variables and, furthermore, the possible lack of strong or valid instruments, since the endogeneity is corrected by way of the error correlation estimates (Roodman 2011). However, a certain level of endogeneity ~~coming from measurement errors~~ may remain if the objective measure of over-qualification is still correlated with unobserved personal traits.[22] As a way to determine this, the estimation of Eq. (1) is carried out by 2SLS with OOE_{it} acting as instrument of self-perceived over-qualification. The results of this estimation, for the variables capturing mismatch, are presented and discussed in the "Appendix" ~~(see Table 6)~~. Results are qualitatively the same, serving as a robustness check of the estimates reported in Tables 3 and 4.

Table 4

Over-education and over-qualification coefficients for all dimensions of job satisfaction. *Source*: Own elaboration from ECVT 2007–2010

	Ordered probit						
	Over-education		**Over-qualification**				
	Coef.	**SE**	**Unadjusted**		**Apparent**		**Genuine**
			Coef.	**SE**	**Coef.**	**SE**	**Coef.**
Overall job satisfaction	−0.556***	0.017	−0.238***	0.015	−0.468***	0.027	−0.735***
Extrinsec							
Firm's work organisation	−0.390***	0.017	−0.190***	0.015	−0.374***	0.027	−0.509***
Promotion prospects	−0.358***	0.018	−0.255***	0.016	−0.306***	0.029	−0.536***
Workday/working day	−0.225***	0.017	−0.174***	0.015	−0.187***	0.027	−0.346***
Hour flexibility	−0.239***	0.017	−0.199***	0.016	−0.151***	0.027	−0.400***
Duration of work breaks	−0.241***	0.017	−0.164***	0.015	−0.192***	0.027	−0.360***

The rest of the controls in the estimation are the same as in Table 3

*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$

	Ordered probit						
	Over-education		Over-qualification				
	Coef.	SE	Unadjusted		Apparent		Genuine
			Coef.	SE	Coef.	SE	Coef.
Paid vacations	−0.249***	0.017	−0.203***	0.016	−0.228***	0.028	−0.376***
Job stability	−0.224***	0.018	−0.169***	0.016	−0.185***	0.028	−0.342***
Earnings/pay/salary	−0.426***	0.017	−0.200***	0.015	−0.419***	0.027	−0.544***
Health and safety at work	−0.294***	0.017	−0.208***	0.016	−0.227***	0.027	−0.422***
Intrinsec							
Activity in work	−0.552***	0.018	−0.280***	0.016	−0.411***	0.027	−0.796***
Personal development/Self-fulfilment	−0.629***	0.018	−0.280***	0.016	−0.483***	0.027	−0.877***
Level of freedom/autonomy at work	−0.345***	0.017	−0.194***	0.016	−0.276***	0.027	−0.495***
Participation in decisions related to job tasks	−0.395***	0.018	−0.198***	0.016	−0.324***	0.028	−0.543***
Firm-provided training	−0.421***	0.018	−0.289***	0.017	−0.348***	0.028	−0.675***
Social							
Recognition of the work/relations with management	−0.365***	0.017	−0.149***	0.015	−0.334***	0.029	−0.501***
Firm-provided social support	−0.232***	0.017	−0.201***	0.016	−0.235***	0.028	−0.444***
The rest of the controls in the estimation are the same as in Table 3							
*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$							

The results, when we take into account the ordered nature of job satisfaction and estimate the two-equation system, are shown in the last columns of Table 3. Considering self-reported over-qualification as endogenous, it stands as a significant determinant of job satisfaction, with the estimated correlation between the error terms ρ being statistically significant, showing a negative sign. The significance of ρ confirms the endogeneity of over-qualification, whereas the negative sign indicates

that unaccounted factors, that tend to increase over-qualification, also tend to reduce job satisfaction. Our variables of interest maintain the same character as in the previous estimation. After considering the possible existence of endogeneity, over-qualification is still negatively correlated with job satisfaction, indicating that over-qualification reduces individual worker job satisfaction.

The rest of the estimated coefficients maintain the same character as in previous specifications. The only marked difference is in the case of education. When endogeneity is taken into consideration, and only in the specification for the four different types of match, coefficients for the intermediate level of studies are positively significant. Workers with medium education are relatively more satisfied than the low- and highly-educated. This result is maintained, even when considering the alternative definition of the instrument OOE, as described in footnote 21.

4.3. Dimensions of Job Satisfaction

The results obtained so far confirm what was already advanced by the various theories proposed: a negative relationship between job satisfaction and over-qualification, even when some source of endogeneity is addressed. That is, the over-educated, and the mismatched in general, are less satisfied than other equally-educated individuals working in a matched job. However, as argued above, the strength of this relationship may differ when considering different domains of job satisfaction. This is what we investigate in turn. As before, we begin by estimating Eq. (1) alone, without controlling endogeneity, for each of the sixteen domains of job satisfaction under consideration.

Table 4 shows only the estimated coefficients of the mismatch variables for overall job satisfaction, and for each of their facets.[23] The first block of columns reports the results when comparing the over-educated and the adequately-educated; the next block of columns compares the unadjusted, the apparent over-educated, and the genuine over-educated, with respect to the adjusted. Estimated coefficients across domains of job satisfaction are negative and statistically significant. As in the case of the overall job satisfaction, the over-educated are less satisfied than the adequately-educated for every domain of job satisfaction, even after controlling for an ample set of personal, family, and job-related variables. Similarly, for the case of different degrees of mismatch, the negative relationship is stronger the greater is the mismatch. Being in a job requiring less qualifications than those held by the employee supposes less satisfaction in all the dimensions of job satisfaction studied.

The next block of two columns reports estimated coefficients for the mismatch variable, again making the comparisons between the over-educated and the adequately educated, once it is taken into account through MLE that the self-perceived mismatch may be endogenous. Given that the estimate of parameter ρ performs as a test of the endogeneity of the regressors, results show that, in almost all cases, this coefficient is significant, rejecting the null of exogeneity of the mismatch

variable. In particular, the exceptions to this general rule are satisfaction with hour flexibility, paid vacations, and activity. These results point to the possibility that simultaneity may be biasing the estimates, with dissatisfied workers likely reporting being inadequately matched.

The estimated coefficients exhibit a marked difference from those shown in the first column of Table 4. There are many domains of job satisfaction for which the over-educated are not less satisfied than the adequately-educated. Only in the dimensions of pay and in those considered as intrinsic - personal self-fulfilment, autonomy, training and participation - as well as in the overall dimension, are the over-educated significantly less satisfied than the adequately-educated.[24] In the rest of the cases, the relationship is negative, but no longer statistically significant.

The ordered variable indicating the degree of mismatch is found to be exogenous—ρ is statistically non-significant—only in the cases of satisfaction with activity and satisfaction with personal development. This leads us to focus on the ordered probit estimates of these two domains only, finding that the relationship between over-qualification and these two facets is negative. This suggests that, except in the two cases aforementioned, the same elements influencing self-perceived over-qualification affect the reported value of satisfaction. Dealing with endogeneity, we find similar results to those obtained in the case where we distinguish only between the adequately-educated and the over-educated. The relationship is negative and statistically significant in the same dimensions as before: overall, pay and all the intrinsic (activity, personal self-fulfilment, autonomy, participation, and satisfaction with training). Only in these cases do the over-qualified really feel deprived or unfairly treated with respect to workers who are well-matched and similarly educated.

In the other domains of job satisfaction studied, the mismatched are similarly satisfied to the adjusted, suggesting that over-qualification does not necessarily lead to lower levels of satisfaction or to a sense of deprivation. Although the relationships are always estimated as negative, they are not statistically significant. Thus, in domains such as organization, promotion, workday, duration of breaks, paid vacations, job stability, health, social and relations with management, there are very few differences in satisfaction between the mismatched and the adequately-educated, and the adjusted.

If job satisfaction can be considered a predictor of job performance or voluntary turnover, it seems that the general concept is, in fact, negatively related to over-qualification and, in those cases, individuals may feel deprived. However, in many other dimensions this relationship is weak, and it cannot be discarded that mismatched workers are as satisfied as perfectly-matched workers. Thus, it is possible that, at least some individuals may be over-qualified, not only as a consequence of mismatch due to frictions in job search, job mobility, or other labour market imbalances, but also as a way to obtain some reward compensating for the

disadvantages of over-qualification. Specifically, the evidence of our study indicates that such individuals do not feel less satisfied in different dimensions of job satisfaction; specifically, those known as extrinsic and social. The fact that overall job satisfaction is negatively related to over-qualification suggests that the general perception workers have about their job is more dependent on intrinsic facets than on those that are extrinsic or of social relations.

5. Discussion and Conclusions

There is much empirical international evidence showing the negative influence of over-qualification on job satisfaction, that can be rationalised into alternative theories, such as relative deprivation, human capital mismatch, or person-job fit discrepancy. However, job satisfaction can be seen as an array of different aspects of satisfaction related to performance in the job place, paving the way for a distinct relationship between over-qualification and each facet of job satisfaction; that is, relations between over-qualification and satisfaction are domain-specific. In fact, a variety of studies find that over-qualified workers feel less satisfied in many domains than the adequately-matched, but the evidence is less clear in some other studies. For example, if workers are over-qualified, but they obtain a more permanent position, or simply escape from unemployment, or achieve job stability, then they may report a self-evaluation of satisfaction with job stability or job promotion not very different from that reported by an adequately-educated worker.

In this paper, we examine this argument by hypothesising that individuals who are over-qualified may be no less satisfied than the adequately-qualified, if their aim is to hide or compensate for their lack of skills, to access employment, or to consider other job characteristics. Whereas over-qualification is habitually considered as suboptimal, the consequences of a mismatch due to search or job frictions, the increasing dispersion of abilities or skills among equally-educated workers may induce individuals to acquire more qualifications, even if they cannot effectively use them in their jobs. This signalling role of over-education may be especially important in periods of recession, and/or in areas where unemployment is high, since the decision to invest in education is not only regarded as a way to access higher wages, but also as a form of insurance against unemployment or job instability. In these circumstances, workers may consider additional rewards from the job that can be reflected in different facets of job satisfaction.

The analysis explicitly takes into account the heterogeneity among equally-educated individuals by differentiating between those who find their education level useful and those who do not, following prior literature, such as Chevalier (2003) and Green and Zhu (2010). Thus, apart from the difference between the adequately-educated and the over-educated, we establish a second sorting that distinguishes between the adjusted (those adequately-educated who find their education level useful); the unadjusted (the adequately-educated who do not find their education level useful); the apparently

over-educated (those over-educated who find their education level useful); and the genuinely over-educated (those over-educated who do not find their education level useful).

Our results confirm that mismatch is associated with lower levels of job satisfaction and that an ordering exists from the least job satisfied, the genuinely over-educated, to the adjusted, with the apparently over-educated being more satisfied than the genuinely so, but less than the unadjusted.[25] Focusing on the fact that job satisfaction is multifaceted, our results suggest that the relationships between over-qualification and job satisfaction are better measured when considering different dimensions of job satisfaction. Initial estimates, when the issue of simultaneity is not addressed, show a similar behaviour to that of overall job satisfaction, with certain differences in coefficients across the sixteen facets of job satisfaction.

Given that job satisfaction and over-qualification are both measured subjectively, endogeneity is likely to appear. A procedure that accounts for the simultaneous determination of the valuation of both perceptions is applied, finding that qualitative results substantially change in certain domains of job satisfaction. When taking into account the issue of endogeneity, a negative relationship remains in the general notion of job satisfaction, in earnings, as well as in intrinsic factors of job satisfaction, such as activity developed, self-fulfilment, autonomy, participation in decisions and training. All these facets, except for earnings, can be ascribed to the personal perceptions of workers, which are intimately related to their feelings and that are difficult to value objectively. The negative relationship between the fact of being mismatched and these facets of job satisfaction may be revealing feelings of deprivation, unfulfilled expectations, or unfairness. In the case of earnings, the observed negative relationship seems to confirm the sensation by the over-qualified of being underpaid with respect to those with the same level of education who are adequately-matched.[26] In contrast, the relationship is not negative, and the over-qualified do not feel relatively worse with respect to the adequately-educated in most of the extrinsic factors (organization, promotion, the workday, duration of breaks, paid vacations, job security/stability, and health) or social relations and relations with management. Extrinsic facets correspond to external aspects of the job that can be easily evaluated objectively. These results are robust to both a less-restrictive definition of the objective measure of over-qualification, and to an alternative estimation by 2SLS.

The fact that workers who self-report that they are mismatched, but do not really feel less satisfied than other similarly-educated, well-matched, reveals that perceptions of those facets of job satisfaction are not significantly different between these groups of workers. In this sense, it is straightforward to conclude that workers who are over-qualified may find some reward from this situation in some of these conditions. A similar argument can be extended to the case of relations with management or social support. Whereas a full control of simultaneity is not possible given the cross-

sectional character of the data, our study provides empirical support (when considering different domains of job satisfaction) for the line of the study by Mavromaras et al. (2013) of what some authors call voluntary or intentional mismatch (Erdogan et al. 2011a, b; McKee-Ryan and Harvey 2011).

These results differ from those of Peiro et al. (2010), who find that all three factors (extrinsic, intrinsic, and social) are negatively related to over-qualification. Three circumstances may explain these different findings. First, whereas we make use of a nationally-representative sample of Spanish workers for an evaluation of sixteen different dimensions of job satisfaction, Peiro et al. (2010) use short-survey data of individuals from three regions of Spain and construct the aggregates of job satisfaction from 18 items in the survey through confirmatory analysis. Second, the sample used in Peiro et al. (2000) is of young workers. For this group, it is possible that the feelings of mismatch in the early days of a working career supposes a higher sense of unfulfilled expectations and they tend to report lower satisfaction more readily [see, for example, the studies by Verhaest and Omey (2009) and Verhaest and Verhofstadt (2016), for the case of young Flemish in Belgium]. Our sample considers wage earners of any age. Finally, as Peiro et al. (2010) acknowledge, the relationships they find cannot be interpreted causally, calling for the use of IV techniques. This is what we have done here, so that simultaneity bias is dealt with. In fact, our results mimic theirs, in that a negative relationship is observed between over-qualification and any dimension of job satisfaction, when endogeneity is ignored.

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These results are for Spain and it should be noted that the Spanish labor market is characterized by strong segmentation between permanent and temporary workers, high unemployment, and a large number of over-educated workers. These circumstances may induce workers to consider the situation of over-qualification as a way of escaping from unemployment, gaining access to the labor market, or pursuing job stability. In this line, the period under consideration covers the transition from the best moments in recent decades to the onset of the Great Recession (the unemployment rate soared from less than 8% in 2007 to more than 20% in 2010). Since our sample is of wage earners only, it is to be expected that the greater the difficulties workers perceive in being re-employed, the higher valuation they make of job satisfaction. Our results confirm this, since regional unemployment rates enter with an estimated positive coefficient. An alternative approach, of including year dummies, yields a similar result, because the estimated coefficient is increasing by the year. Both of these approaches seem to control well for the business cycle: when estimating separately, the years 2007 and year 2010 estimates maintain the same character as for the pooled sample.

In short, whereas the over-qualified are less satisfied in the overall dimension of job satisfaction, this is not completely true when considering different facets of it, suggesting that a robust assessment of the determinants of job satisfaction requires an

analysis of different factors in the workplace. Our results may be interpreted as showing that not all over-qualification necessarily supposes that workers feel worse than the adequately-matched in all domains of job satisfaction. The mechanism driving this behaviour remains to be explained. The cross-sectional nature of our data limits this analysis and requires us to leave this for future research.

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Publisher's Note

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6. Appendix

See Table 5 for a description varieables used in the analysis. We estimate Eq. (1) by 2SLS, considering our objective measure of over-qualification as an instrument for self-perceived over-qualification in Eq. (2). This supposes that job satisfaction is cardinal. Results are presented in Table~~s 5 and~~ 6.

Table 5

Variable definitions and average values (2007–2010).
Source: Own elaboration from ECVT 2007–2010

Variable		Mean
Male	1: man, 0: woman	0.56
Less lower secondary	Less than lower level secondary	0.18
Lower secondary	Lower secondary	0.21
Upper secondary	Upper secondary	0.10
Vocational	Vocational	0.24
Bachelor	Bachelor and above	0.27

Variable		Mean
Age	Age in years	41.32
$Age^2/100$	Age squared divided by 100	18.23
Spanish	1: Spanish, 0: foreign	0.68
City small	City size lower than 100,000 inhabitants	0.59
City medium	City size between 100,001 and 1,000,000 inhabitants	0.33
City large	City size higher than 1,000,000 inhabitants	0.08
Unemployment rate	Unemployment rate by year and region	13.44
Married	1: live in couple	0.66
Children 0–5	1: children 0–5 years old	0.17
Children 6–14	1: children 5–14 years old	0.30
Hours worked	Number of hours worked per week	38.92
Income < 1200	Up to 1,200 euro per month (net)	0.53
Income1200–2100	Between 1,201 and 2,100 euro per month (net)	0.37
Income > 2100	More than 2,100 euro per month (net)	0.10
Permanent	Permanent contract: 1, fixed-term contract: 0	0.77
Training	The firm has provided some training in the last 12 months	0.50
Public sector	The employee works in Public Sector	0.25
Agriculture	The employee works in Agriculture	0.03
Industry	The employee works in Industry	0.18
Construction	The employee works in Construction	0.10
Services	The employee works in Services	0.69
Tenure	Number of years in the same firm	10.19
$Tenure^2/100$	Tenure squared divided by 100	2.11
First job	1: This is the first job	0.23
Union	The employee is unionised	0.21
Firm small	Firm size lower than 50 employees	0.45
Firm medium	Firm size between 51 and 250 employees	0.16
Firm large	Firm size higher than 250 employees	0.38
OOE	Instrument for over-education: 1 if the employee has university studies but works in a manual or services unskilled occupation, and 0 in otherwise	0.04

Table 6

Over-education and over-qualification coefficients for all dimensions of job satisfaction. 2SLS est

Source: Own elaboration from ECVT 2007–2010

	Over-education					Over-qualification		
	Coef.	**SE**	**C-endog.**	**CD/SY**	**H**	**Coef.**	**SE**	**C-en**
Overall job satisfaction	−0.675***	0.195	1.63	26***	1.43	−0.228***	0.065	9,1
Extrinsic								
Firm's work organization	− 0.105	0.141	9.96***	50***	1.42	− 0.037	0.083	17
Promotion prospect	− 0.065	0.061	10.23***	46***	1.41	− 0.023	0.126	20
Workday/working day	− 0.308	0.217	11.30***	50***	1.42	− 0.107	0.088	18
Hour flexibility	− 0.579*	0.317	0.16	51***	1.44	−0.305**	0.155	0.5
Duration of work breaks	− 0.035	0.027	5.35**	51***	1.42	− 0.012*	0.007	10
Paid vacations	− 0.119	0.117	3.62*	51***	1.46	− 0.041	0.036	9.1
Job stability	− 0.036	0.028	5.55**	51***	1.42	− 0.013	0.016	11
Earnings/pay/salary	−0.198**	0.100	9.78***	52***	1.38	−0.169***	0.065	17
Health and safety at work	− 0.190	0.244	3.23*	51***	1.42	− 0.066	0.046	8.1
Intrinsic								
Activity in work	−0.114***	0.020	0.52	51***	1.40	−0.117***	0.016	0.1
Personal development/self-fulfilment	−0.946**	0.473	8.16***	51***	1.42	− 0.675*	0.396	1.9
Level of freedom/autonomy at work	−0.820***	0.255	17.96***	51***	1.41	−0.632***	0.216	10
Participation in decisions related to job tasks	−0.113***	0.018	12.58***	43***	1.39	−0.103***	0.016	4.3

C-test on endogeneity. Null: A potential endogenous regressor can actually be treated as exoge distributed as a Chi Squared 1 degree of freedom. Critical value at 5% is 3.84. CD/SY Cragg-D on weak instruments. Null: There exists a weak instrument problem. F-statistic. Critical value test on over-identification. Null: Over-identifying restrictions are valid. Critical value at 5% is

The rest of the controls in the estimation are the same as in Table 3

*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$

	Over-education					Over-qualification		
	Coef.	**SE**	**C-endog.**	**CD/SY**	**H**	**Coef.**	**SE**	**C-en**
Firm's provided training	− 0.849***	0.210	1.62	20***	1.42	− 0.694***	0.173	11
Social								
Recognition of the work/relations with management	− 0.013	0.244	13.25***	27***	1.40	− 0.149	0.150	21
Firm's provided social support	− 0.049	0.356	3.23*	22***	1.40	− 0.051	0.046	6.9
C-test on endogeneity. Null: A potential endogenous regressor can actually be treated as exoge distributed as a Chi Squared 1 degree of freedom. Critical value at 5% is 3.84. CD/SY Cragg-D on weak instruments. Null: There exists a weak instrument problem. F-statistic. Critical value test on over-identification. Null: Over-identifying restrictions are valid. Critical value at 5% is								
The rest of the controls in the estimation are the same as in Table 3								
*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$								

C-tests for endogeneity find that over-education cannot be rejected as exogenous for the overall dimension of job satisfaction, as well as in the dimensions of hour flexibility, activity at work, and firm-provided training. In the rest of the cases, exogeneity of over-education is rejected and the 2SLS estimation is more appropriate than the ordered probit. With respect to the case of MLE for dealing with endogeneity, there are some few differences in the dimensions in which over-education can be considered to be exogenous. Similarly, in the case of the over-qualification variable, there are no differences with respect to the MLE estimation, except that, now, with the 2SLS estimation, satisfaction with hour flexibility cannot be rejected as exogenous. Cragg–Donald/Stock–Yogo tests on weak instruments, and Hansen tests on over-identifying restrictions confirm the validity of the instrument and the reliability of our estimates.

Qualitative results are the same as in the MLE estimation: in most of the extrinsic dimensions (organization, promotion, the workday, duration of breaks, job security/stability, and health) as well as in social relations and relations with management, the over-qualified do not feel less satisfied than the adequately-educated.

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[1] Liu and Wang (2012) discuss the advantages of using this type of data.

[2] However, most recent studies tend to challenge the career mobility hypothesis (see Baert et al. 2013 and references therein) and find that over-qualification is a permanent phenomenon leading to permanent losses in earnings throughout individual careers (McKee-Ryan and Harvey 2011; for the Spanish case, see Acosta-Ballesteros et al. 2018).

[3] The lack of relevant data on skill mismatch has led some authors (Chevalier 2003; Green and Zhu 2010, among others) to try to capture it from the responses of workers to satisfaction with their education and/or

skills acquired in school. We follow a similar approach to capture unobserved heterogeneity among equally-educated workers, as described in Sect. 3.

[4] This may be especially important in periods of recession (Tam 2010), and/or in areas where unemployment is high, since the decision to invest in education is not only regarded as a way to gain higher wages but also as a way of insuring against unemployment (Fernández 2006).

[5] In a first sample, the eight different domains of job satisfaction are derived from an initial set of 36 items from the job satisfaction survey (JSS), and are: benefits, communication, co-workers, nature of work, pay, promotion, rewards, and supervision. In a second sample, the five domains are derived from an initial set of 18 items from the Job Descriptive Index (JDI): they are work, pay, promotion, supervision, and co-workers, plus a general item of job satisfaction.

[6] Extrinsic factors include salary, physical conditions, generous holidays, job security, promotion, and work-times. Intrinsic factors cover work attitudes like autonomy, skill utilization, task variety, learning opportunities, task significance, allowing initiative, and work with responsibility. Social significance includes contact with customers, contact with co-workers, social service, social status, and supervisor guidance.

[7] This supposes a reduction of close to 19% from the initial sample.

[8] See, for example, the contrasting views between Erdogan et al. (2011b) and Maltarich et al. (2011) about the binary or continuum character of over-qualification. See also the study of Verhaest and Omey (2006) that compares various measures of over-qualification.

[9] Apart from a possible reluctance of individuals to acknowledge being under-educated, it is reasonable to consider that experience and on-the-job training may help workers to reduce the self-perception of being under-educated.

[10] Some causes are innate characteristics; the spread of tertiary education and college institutions (which has given rise to heterogeneity in the distribution of graduate abilities and of university quality), and the choice of the academic degree (see Chevalier 2003; Green and McIntosh 2007; Ordine and Rose 2009).

[11] PIAAC: Programme for the International Assessment of Adult Competencies~~, developed and~~ conducts the Survey of Adult Skills. More information on http://www.oecd.org/skills/piaac/.

[12] Green and Zhu (2010) follow a similar approach using self-declared measures of skill mismatch.

[13] Other cut-points have also been considered in estimations, giving rise to different groupings. Estimates using any of these groupings yield qualitatively similar results to those presented in the following section, that are obtained according to the second approach described in the text.

[14] This evidence makes clear that low-educated individuals are more likely to be in jobs where they feel their education is useless, as opposed to the case of highly-educated individuals. We thank an anonymous referee for this important point.

[15] In the rest of the paper, we will use interchangeably the terms of mismatch or over-qualification to capture the different dimensions considered: over-educated as against adequately educated, on one hand; and adjusted, unadjusted, apparent over-educated, and genuine over-educated, on the other.

[16] In the data base there is no information on cognitive or emotional reactions.

[17] Similar arguments are alleged by Verhaest and Omey (2009) and Kampelmann and Rycx (2012), among others. In order to consider that the inclusion of these factors may capture any compensation to the job and then mask the true direct effect of over-qualification on job satisfaction, we have carried out a similar analysis without including job characteristics: key results remain unaltered. Results are not shown, but are available from the authors upon request.

[18] Occupational categories are not included, since they are correlated strongly with education. An alternative to including the unemployment rate is using year dummies to capture the moment in the business cycle. When doing that, estimated coefficients for each year are positive and increasing as time goes by, suggesting that satisfaction increased in the sample years, as did unemployment rates.

[19] When endogeneity is considered, however, intermediate levels of education are associated with higher job satisfaction (see below).

[20] Following Gobernado (2007), Manual and services occupations correspond to groups 4, 5, 8 and 9 of the one-digit 1994 *CNO Clasificación Nacional de Ocupaciones* (National Classification of Occupations). This is based on the 1988 ISCO classification, but they do not entirely coincide. Group 4: Clerks; group 5: Services and sales workers; group 8: Machine operators and assemblers; group 9: Elementary occupations. The use of instruments to account for measurement errors in estimating returns to over-education dates back to Robst (1994).

[21] We experimented with a less-restrictive, alternative definition of the objective measure of over-education. Specifically, this alternative definition takes value 1 if the employee has university studies, upper secondary, or vocational education attainments but works in a manual or services unskilled occupation, and 0 otherwise. Qualitative results remain unchanged. We thank an anonymous referee for this suggestion.

[22] We thank an anonymous referee for noting this.

[23] The rest of the coefficients are not reported to save space. They show a similar pattern to that described for overall job satisfaction, and results are available from the authors upon request.

[24] The other dimensions in which the relationship is estimated to be negative, satisfaction with vacations, activity, and hour flexibility, the relevant sign is obtained from ordered probit estimations (first pair of columns in Table 4) since, in these cases, the assumption of exogeneity of over-education is not rejected.

[25] Whereas these results coincide with those by Chevalier (2003), Chevalier and Lindley (2009) and Green and Zhu (2010) for the UK, other studies for Spain, using a different approach based on specific measures for educational and skill mismatch, tend to show that the latter has stronger influence on job satisfaction than educational mismatch (Badillo-Amador et al. 2012; Mateos-Romero and Salinas-Jimenez 2018a). Our approach does not allow a direct comparison of our results with theirs.

[26] Badillo-Amador et al. (2012) find, however, that educational mismatch is not related to satisfaction with wage, even though skill mismatch is associated with lower satisfaction with wages, in data from the European Community Household Panel for years 1994–2001.