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ABSTRACT: The impact of education on participation in leisure activities is of particular relevance when analysing education and educational policies and for understanding leisure and leisure policy design. Yet, despite advances in the measurement and analysis of education, studies of the effects of education on leisure activities have not been especially exhaustive nor have they been sufficiently integrated with leisure studies. We seek to rectify these shortcomings, by analysing the effects of education on leisure participation in Spain based on the study of individuals' time-use patterns. Results highlight the impact of education on the time dedicated to activities that have beneficial individual and social outcomes, including cultural and sports activities, and reading books and the press. We demonstrate the potential of integrating analyses of education and leisure for understanding the benefits of participation in a greater diversity of leisure activities and for developing policies that strengthen the repertoire of leisure options.

JEL Codes: I24, I26

Keywords: Education and leisure, determinants of leisure activity, non-monetary effects of education, quantitative research.

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1. Introduction

The relationship between education and leisure is critical for analysing, understanding and measuring the behaviour of individuals vis-à-vis their leisure activities and the individual and social effects of these activities. As Stalker (2011) has stressed, education is closely related to the diversity of activities that individuals carry out in their free time, in turn having a positive impact on the quality of their leisure, promoting beneficial personal outcomes and enhanced social integration. Given the strength of this relationship, DiMaggio & Useem (1978) claimed that many of the approaches adopted in the literature for analysing education can be applied to furthering our understanding of leisure and, as such, these complementarities should be exploited. However, as these authors also noted, the general analysis of the role of education and the political economy of education, on the one hand, and those of leisure, on the other, have traditionally been developed separately and independently. As a result, a major opportunity for understanding leisure activities and for designing better leisure policies has been missed.

In the field of the analysis of education from an economic perspective (that is, Economics of Education), notable advances have been made in measuring and evaluating education performance and its impact, two aspects deemed as being of fundamental interest in the development of education policy. Studies evaluating the effects of education have focused primarily on the so-called monetary effects, that is, the increase in income associated with the acquisition of a higher level of education (Bils & Klenow, 2000). In parallel with this, other studies have analysed the non-monetary effects of education: those consequences of acquiring a specific level of education not directly associated with a pecuniary benefit (Wolfe & Zuvekas, 1997; Oreopoulos & Salvanes, 2011). Advances in the analysis of these non-monetary effects have been more limited, as their detection, measurement and interpretation are more inherently complex. The non-monetary effects of education are reflected in a broad spectrum of elements, both from the perspective of the individual and society as a whole, and include factors such as health habits, consumer behaviour and patterns of behaviour and decision-making in the family

and social domains. According to the estimations of Haveman & Wolfe (1984), the magnitude of the non-monetary effects of education is no smaller than that of its monetary effects. As a result, the analysis of the non-monetary effects of education is of great importance in fully evaluating the individual and social benefits of education and, therefore, in designing educational policies (Calero et al., 2011).

Among the non-monetary effects of education we consider those linked to decisions taken with regard to leisure. The non-monetary effects of education on leisure correspond to the impact of the level of education acquired on decisions to participate in certain activities, as well as on attitudes, motivations, satisfaction and the repertoire of leisure options, after correcting for the effect of other variables such as income. This correction is important, given that a higher level of education is associated with a higher expected income, which in turn affects leisure decisions (that is, the monetary effects of education on leisure). As these effects are interpreted very differently to the non-monetary effects, they need to be separated when conducting an economic analysis. While the analysis of monetary effects is relatively straightforward, interpreting the non-monetary effects of education on leisure activities is more complex; however, it is fundamental to gaining a full understanding of individual behaviour and attitudes in relation to these activities.

The objective of this article is to analyse the non-monetary effects of education on decision-making in relation to leisure activities. In this way, it seeks to contribute to ensuring that these effects are incorporated not only in the evaluation of education and the design of education policies, but also in the understanding of decision-making in relation to leisure activities and the design of leisure policies. To do so, we undertake an economic study that measures the effects of education on leisure activities by conducting a time-use analysis, in line with the methodology employed by Vaara & Matero (2011). The analysis is conducted for the case of Spain, using information from the latest edition of the Spanish Time Use Survey (*Encuesta de Empleo del Tiempo*, INE, 2011). We conduct a micro-econometric analysis, in which we control for the effects of individuals' socioeconomic characteristics and additional circumstances (including, the

specific quarter of the year and day of the week to which each data item refers) that may have an impact on leisure decisions. As a result, we obtain the effects of the educational level acquired on time use in relation to different leisure activities, focusing above all on certain key activities which stand out in terms of their benefits for the individual and society (cultural activities, sport, reading the press and reading books). The results obtained reflect the relevance of the non-monetary effects of education on the use of this leisure time, and provide additional information to interpret these effects. With this article we seek to enrich existing understanding of the relationship between education and leisure, both from an empirical and theoretical perspective.

The rest of this article is structured as follows. Following on from this introduction, the second section describes those areas in which the literature has identified the existence of particularly relevant non-monetary effects of education, emphasizing those related to leisure activities. The third section examines different interpretations of the nature of these effects. The fourth section describes the source, variables and the methodology used in the analysis. The fifth section presents the results, including those from both the descriptive and econometric analyses. The conclusions and implications of the analysis are discussed in the sixth section.

2. The non-monetary effects of education: an overview

The non-monetary effects of education are characterised by their heterogeneity and variety. They are observable in many different aspects, as reflected in the extensive reviews undertaken by Haveman & Wolfe (1984), Wolfe & Zuvekas (1997), Escardíbul (2002) and Calero et al. (2011).

Much of the literature examining the non-monetary effects of education has focused on those related to health benefits. Studies examining health system use have found a relationship between a higher level of education and a greater use of preventive treatments, greater attention to chronic health problems, and the dedication of more resources to specialist health care (Feinstein et al., 2006), as well as a less inappropriate use of medical services and pharmaceuticals

(Haveman & Wolfe, 1984). In addition, a higher level of education has been related to a series of behaviours that impact health, such as being less likely to smoke or to smoke fewer cigarettes (Bratti & Miranda, 2009), lower probability of alcohol abuse (Escardíbul & Calero, 2006), a greater propensity for physical exercise (Wolfe & Zuvekas, 1997; Feinstein et al., 2006), and a greater probability of eating a balanced diet (Feinstein et al., 2006). A relationship has also been identified between level of education and chosen place of residence (Wolfe & Zuvekas, 1997), which impacts health as a result of general living conditions, neighbourhood relations, air pollution and the probability of having an accident (Feinstein et al., 2006). Similarly, a relationship has been found between higher educational levels and less exposure to occupational hazards (Wolfe & Zuvekas, 1997) and greater job satisfaction (Fabra & Camisón, 2009). All these aspects have a bearing on the non-monetary effects of education detected in relation to health outcomes: lower probability of suffering physical limitations in regular activities, being obese or hospitalised (Feinstein et al., 2006), or of suffering from depression (Miech & Shanahan, 2000) and a greater probability of reporting good health (Groot & Maasen Van den Brink, 2005; Fernández-Gutiérrez & Calero, 2014).

But health is not the only area of relevance in the analysis of the non-monetary effects of education. From a broader perspective, education has an impact on the development of individuals' preferences, which in turn underpin most of their consumer and time-use decisions (Calero et al., 2011; Oreopoulos & Salvanes, 2011). Specifically, education influences the leisure activities individuals might engage in and the amount of time they dedicate to them and, hence, we can speak of the non-monetary effects of education on the use of leisure time. A higher level of education has been shown to increase preferences for activities such as reading, music, art and travel, and the amount of time dedicated to these activities (Haveman & Wolfe, 1984; Favaro & Frateschi, 2007). Differences in preferences are also reflected in patterns of expenditure, an outcome extensively studied in the field of economics. In the case of Spain, research has identified a relationship between the level of education and the amount of money spent on

cultural products (Mañas & Gabaldón, 2001), on going to the theatre and concerts, on travelling for pleasure and on a set of cultural activities (Escardíbul, 2002), and on buying newspapers (Escardíbul & Villaroya, 2009) and books (Fernández-Gutiérrez & Calero, 2011).

Education increases the value that individuals attach to different leisure activities. As education increases, the number of options capable of satisfying an individual's leisure needs also increases, as does the value of the actual diversity of activities. This explains the relation between an individual's level of education and the diversity of leisure activities in which they engage, as highlighted by Stalker (2011). Closely related to this idea, Warde & Gayo-Cal (2009) have developed the concept of "cultural omnivorousness", understood in terms of volume, to define the preferences of the upper social classes (including those with a higher educational level) for a greater number of different leisure activities¹.

In addition to these individual effects, studies have detected other non-monetary effects of education on the immediate circle of family and friends, and on society as a whole. In the case of the family, these effects contribute notably to explaining the close relation between the educational level achieved by the parents and that subsequently attained by their children (Wolfe & Zuvekas, 1997). As Checchi (1997) commented, this relationship does not only depend on the parents' income, but also on the transmission of culture, determined by the environment and, in particular, by the family. Drawing on Bourdieu's theory of social reproduction, Willekens & Lievens (2014) claim that cultural capital (understood as the cultural practices and goods consumed and the educational level attained) is transmitted from one generation to the next based on the habits formed in the family. For this reason, Nagel (2010) highlights, the family

¹The term "cultural omnivorousness" was first used to describe the way in which the highest social classes embraced the activities characteristic of the lower social classes (Peterson & Simkus, 1992; Peterson & Kern, 1996). This initial use places the emphasis on the composition of activities, whereas Warde & Gayo-Cal (2009) stress the actual volume of cultural activities (the dimension on which we focus our analysis).

environment and the parents' educational level have a marked influence on a child's education. It has been found that parents with higher levels of education dedicate more time to their children, which has an impact on their cognitive development (Gutiérrez-Domènech, 2010), and that the parents' educational level also affects their children's leisure habits, including, for example, their participation in cultural activities and physical exercise (Quarmby & Dagkas, 2010), and their reading habits (Wollscheid, 2014). In the case of Spain, Calero & Escardíbul (2007) found that the number of books in a home, as an indicator of cultural capital, is one of the most important variables in explaining students' results in secondary education, while Caparrós (2014) found that parents' educational level is positively related to the propensity of children aged 10 to 15 to spend their time studying and reading, and negatively related to their propensity to spend time watching television or listening to the radio.

Finally, in the case of the non-monetary effects of education on society as a whole, research has also found a relationship between education and social mobility (Checchi, 1997); a reduction in criminal activity (Haveman & Wolfe, 1984; Escardíbul, 2002); greater civic participation and personal involvement in social activities (Wolfe & Zuvekas, 1997; Huang et al., 2005), and a greater concern and respect for the environment and its conservation (Worsley & Skrzypiec, 1998).

3. The non-monetary effects of education: how to interpret them

As outlined above, the non-monetary effects of education include impacts on an individual's decisions relating to leisure activities, their health outcomes and the behaviour of their immediate circle of family and friends and on that of society as a whole. However, the nature of these effects from the perspective of economic theory has been interpreted differently.

Neoclassical economics explains both the monetary and non-monetary effects of education in terms of human capital theory, emphasising the increase in the efficiency of consumption associated with a higher level of education (Rosenzweig & Schultz, 1989; Kenkel, 1991). Both

the consumption of goods and time use are considered inputs in an individual's production of utility. Thus, work serves to generate income that can be used, in conjunction with an individual's free time, in activities of consumption and leisure, thereby generating utility. The demand for leisure, therefore, is modelled on a decision as to whether an individual opts to allocate their time to leisure or to another activity (such as work) and, if opting for the former, on a decision as to which leisure alternative is preferred. From this perspective, a higher education level would result in a more efficient use of these inputs (consumption and time use) and in their more efficient combination so as to obtain a greater number of positive outputs. Education would also reduce an individual's intertemporal discount rate, which leads to greater value being given to future benefits associated with consumption decisions, and as a result to more appropriate decisions being made throughout their life cycle. As such, the neoclassical approach considers the non-monetary effects of education to be always beneficial, referring to them as the non-monetary *benefits* of education.

From the perspective of institutional economics, the non-monetary effects of education are seen in terms of the influence of the institutional environment (including such elements as the family, the social environment and personal characteristics) in forming individual preferences, which in turn are the basis for making decisions about consumption and lifestyle (Escardíbul, 2002; Escardíbul & Calero, 2006). Here, the level of education is a critical element in the shaping of this institutional environment and, hence, in the development of an individual's patterns of consumption and time use. This approach allows us to connect the economic view on education with that derived from other disciplines, including sociology. Stalker's (2011) analysis of the diversity of leisure activities identifies education as one of the keys, together with economic status, for explaining individual consumption and behaviour in relation to leisure. His analysis is based on Bourdieu's concept of cultural capital (Bourdieu, 1984), seen as a product primarily of education and social class, which would lead to an individual's social position being reproduced through their consumption and leisure decisions. The origins of the perspective afforded by

institutional economics lie in the ideas of Veblen (2007), who analysed individual behaviour and decisions in relation to leisure as a result of their attempts to strengthen their social status, based on the relationship forged with their environment, via emulation or distancing. Scott (2010) has defended Veblen's perspective considering it critical for understanding leisure in modern societies. From the perspective of institutional economics, the non-monetary effects of education do not always result in positive patterns of consumption and behaviour. As a result, this perspective does not speak of "benefits" but rather of the non-monetary *effects* of education.

The aim of this article is not only to present new empirical evidence on the non-monetary effects of education on the use of leisure time, but also to contribute to the analysis and interpretation of the nature of these effects.

4. Data and methodology

To address the above objectives, the following hypotheses are tested:

1. An individual's level of education influences the time they dedicate to a diverse range of leisure activities. Were this hypothesis to be confirmed, it would indicate the existence of non-monetary effects of education in the use of leisure time, the magnitude of which can then be estimated in the subsequent analysis.
2. A higher level of education is associated with the dedication of more time to leisure activities that provide individual and social benefits, in keeping with previous results referring to cultural activities (Haveman & Wolfe, 1984; Favaro & Frateschi, 2007); physical exercise (Wolfe & Zuvekas, 1997; Feinstein et al., 2006); consuming newspapers (Escardíbul & Villaroya, 2009) and books (Fernández-Gutiérrez & Calero, 2011).
3. A higher level of education has an unequivocally positive relationship with the time spent on the leisure activities analysed. Were this hypothesis to be confirmed, the non-monetary effects of education could be explained in terms of the neoclassical perspective. In

contrast, if they were found to be linked exclusively to specific levels of education, the institutional approach would need to be incorporated to an explanation of the effects.

4. A higher level of education is associated with a greater diversity of leisure preferences, in line with the concept of “cultural omnivorousness” as developed by Warde & Gayo-Cal (2009).

To empirically analyse these hypotheses as they apply to the case of Spain, we use microdata from the latest Spanish Time Use Survey (*Encuesta de Empleo del Tiempo*, henceforth, the EET) (INE, 2011), corresponding to the fourth quarter of 2009 and the first, second and third quarters of 2010. This survey provides information on the distribution of time use of the Spanish population, based on the keeping of a diary, in which the sample subjects noted the sequence and duration of all their activities in a 24-hour period, at 10-minute intervals. As Wollscheid (2014) has highlighted, the design of these time-use surveys, common across European countries, means errors linked to the overestimation of activities considered ‘desirable’ by society, and which typically appear in surveys where individuals have to provide information directly, can be avoided. The EET also gathers information on the socioeconomic characteristics of the respondents and their households. The latest EET, with a sample size of 19,925 individuals, provides information on 2,778,480 time intervals, distributed in 115 categories of different activities, in line with the standardised list proposed by Eurostat.

In our analysis of this information, our dependent variable is the logarithm of time (in minutes) dedicated by each individual to the following main activities:

- Cultural activities outside the home. This includes the following survey categories: “Cinema” (category nº 521), “Theatre and concerts” (522), “Art exhibitions and museums” (523) and “Libraries” (524). The cultural activities are deemed beneficial insofar as they increase an individual’s cultural capital and knowledge and, as a result, they are also beneficial for society as a whole.

- Sport. This includes the following survey categories: “Running” (612), “Cycling, skiing and skating” (613), “Ball games” (614), “Gymnastics, fitness and body-building” (615) and “Water sports” (616). This includes those activities of physical exercise undertaken with a specific goal and carried out intensively. These activities are deemed beneficial for the future health of those that participate in them, which also makes them beneficial from a broader social perspective.
- Reading the press (811). This includes reading newspapers, magazines and other periodical publications. We consider the undertaking of these activities to be representative of the cultural capital of the individual and their household, as well as of their level of involvement in matters of social interest. This means these activities are also associated with beneficial effects, linked to greater civic participation and involvement.
- Reading books (812), including novels, manuals, informative and instructive books, etc., for reasons other than work, study or religious practices. Reading books is deemed as being beneficial, increasing the cultural capital and knowledge of those that read, as demonstrated by the relationship between the number of books in a household and educational outcomes (Calero & Escardíbul, 2007).
- Watching television (821). Following courses, study programmes or religious services on TV are not included in this category, neither is watching DVDs or videos – all are included in other categories. This activity is one of the most common leisure options, and one in which individuals remain quite passively in front of the screen. Coulangeon (2013) reports that those in the lower strata of society usually dedicate more time to this activity. In contrast to the other activities itemised above, it is not associated, a priori, with any obvious benefits. It is included in the analysis so that comparisons can be drawn with the results of the other activities.

- Games. This includes “Solo games, gambling” (731) and “Social games” (732). Computer games and those played on mobile devices, and other unspecified games, are included in other categories. As with watching television, these are leisure activities which are not expected to offer any particular benefits. They are also included so that comparisons can be drawn with the results of the other activities.

Our main independent variables, and the ones that are central to our study, are those representing the level of education attained. Adhering to the simplified classification provided by the EET, these variables allow us to differentiate five levels of education for the survey respondents: primary education or primary education incomplete (*PRIMED*) – which serves as our reference category; lower secondary education (*SECED1*); upper secondary education (*SECED2*); higher level vocational training (*VOCTR*); and university education (*UNIVED*).

The estimations also include a series of control variables designed to correct for effects on time use attributable to the following factors:

- Number of hours usually worked each week (*WORKH*), given that the greater the time spent at work, the less time an individual has available for all other activities.
- Age of respondent (*AGE*) and the square of this variable (*AGE²*).
- Sex, differentiating women (*WOMAN*) from men – which serves as our reference category.
- Nationality, differentiating between those born in Spain – which serves as our reference category – from those born in another EU country (*FOREU*) or in a country outside the EU (*FORNONEU*).
- Individual’s monthly net income to control for the income effect. As stressed by Oreopoulos & Salvanes (2011), this is essential for the analysis as it allows us to separate the monetary (associated with income) effects from the non-monetary effects of the level of education. Based on the income brackets employed in the EET and taking that of 601

to 1,200 euros (the most frequent) as our reference category, we introduce five control variables corresponding to the following income brackets of the individual respondents (representing a proxy of their household income): up to 600 euros (*INC<601*); 1,201 to 1,600 euros (*INC1201-1600*); 1,601 to 2,000 euros (*INC1601-2000*); 2,001 to 2,500 euros (*INC2001-2500*), and more than 2,500 euros (*INC>2500*). The survey only provides this information for employed individuals, and so the analysis is limited to this group. Employed individuals not reporting their income (18.2%) are also excluded.

- The quarter of the year corresponding to the activities reported in the diary by the individual is also included to correct for the effect of the time of year. The first quarter was taken as our reference category and the control variables corresponding to the remaining quarters were included as *QUA2*, *QUA3* and *QUA4*.
- The day of the week corresponding to the activities reported in the diary by the individual, given that this also affects the time dedicated to each activity. The aggregate of Monday, Tuesday, Wednesday and Thursday serves as our reference category and the control variables corresponding to the remaining days of the week were included as *FRIDAY*, *SATURDAY* and *SUNDAY*.

As a result, we obtained a sample of 6,918 individuals, for whom we had all the information required for the analysis. Table 1 shows the distribution of this sample according to their level of education, weighted at the population level.

INSERT TABLE 1 HERE

In the econometric analysis, we first estimate the effects of the level of education on the amount of time dedicated by the individuals to the activities included in the analysis, using ordinary least squares (OLS) and correcting for the effect of the control variables described above. The following equation was applied separately to each of the activities:

$$\ln y_i = x_i' \beta + u_i$$

where:

y_i = time, in minutes, dedicated by individual i to the activity in question,

x_i = vector of independent variables for individual i

The estimated β coefficients indicate the expected percentage increase, for each independent variable x , in the time dedicated by the individual to each activity. The coefficient associated with each educational variable is, therefore, an indicator of the magnitude of the non-monetary effect for that level of education, compared to the reference category (primary education or primary education incomplete).

This methodology represents an initial approximation to the non-monetary effects of education on leisure. However, due to the high number of observations in which the dependent variables present a value of zero (that is, the activity was not performed by the individual on the day of the survey) means this produces a bias in the estimations. In order to correct this bias, we follow the methodology adopted by Vaara & Matero (2011) for modelling time use in relation to leisure activities. This consists in a two-part model, in which the time dedicated to an activity is modelled as a decision made in two sequential and independent stages: the first, whether or not to engage in the activity, and if affirmative, the second, how much time to allocate to it. The two-part model can be expressed as follows:

$$f(y|x) = \begin{cases} \Pr(d = 0|x), & \text{si } y = 0 \\ \Pr(d = 1|x)f(y|d = 1, x), & \text{si } y > 0 \end{cases}$$

where d is a binary variable taking a value of 0 when $y = 0$ (that is, the activity is not carried out), and 1 when $y > 0$ (the activity is carried out).

The effect of the level of education on the probability of each activity being carried out is estimated in the first step of the model, correcting for the effect of the control variables, and using probit estimates as follows:

$$\Pr(d_i = 1|x) = \Phi(x_i'\beta)$$

From these estimates we obtain the marginal effects associated with each educational level, which indicate the expected increase in the probability of carrying out the activity, in absolute values; and the semi-elasticities, which indicate the increase in this probability expressed in percentages.

The effect of the level of education on the time dedicated to each activity by those who opted to carry it out, correcting for the effects of the control variables, is estimated in the second step of the model, using OLS as follows:

$$\ln(y_i|d = 1, x) = x_i'\beta + u_i$$

Finally, to test the fourth hypothesis (concerning “cultural omnivorousness”), we take the number of activities carried out by each individual on the day in question as the dependent variable. The effect of the level of education on this variable, correcting for the effects of the control variables, is estimated using an ordered probit as follows:

$$\Pr(n_i = j) = \Phi(\alpha_j - x_i'\beta) - \Phi(\alpha_{j-1} - x_i'\beta)$$

where $j = 1, \dots, m$, and where m is the number of activities analyzed.

In all the estimations the weighting factors provided by the EET are introduced, obtaining results that are representative at the population level.

5. Results

5.1. Descriptive analysis

Table 2 provides a description of the individuals' time use in relation to the activities analysed. For each activity, the average amount of time spent by the whole population

(unconditional average), the percentage of the population who carried out the activity on the day of the survey, and the average amount of time these individuals spent on the activity (conditional average) are given. This information is also broken down by educational level.

Television is, by far, the activity on which most time is spent (unconditional average). The amount of time spent on the activities is closely linked to the percentage of individuals who carry them out, presenting very similar outcomes. Finally, the amount of time spent on the activities by the individuals that carried them out (conditional average) is clearly higher, and there is a higher degree of similarity between the different leisure options analysed.

Table 2 also shows the distribution of time spent on the activities as a function of the level of education. Here, it is notable that the time spent on cultural activities, sport, and reading the press and books, as well as the percentage of individuals who carried out these activities, increases as the level of education rises. In the case of sport and reading books, this is a general trend taking all educational levels into account. In the case of reading the press and cultural activities, the difference between individuals with university education and the other groups is especially noteworthy. Finally, television and games, however, present the reverse trend: the time spent by individuals as well as the percentage of individuals carrying out these activities tends to decrease as the level of education rises.

INSERT TABLE 2 HERE

5.2. Econometric analysis

Table 3 shows the results of the estimations of the effects of education on the time dedicated to the activities, after correcting for the effects of the control variables.

Cultural activities. There is a significant positive relation between university education and the time dedicated to these activities, being 17.7% higher with respect to the reference category

(primary education or primary education incomplete). Upper secondary education is the only other level that presents a significant effect (+5.5%).

Sport. There is also a positive effect of university education on the time dedicated to sport (+26.4%). Here again, upper secondary education is the only other education level to present a significant positive effect (+13%). None of the other educational levels present statistically significant effects.

Press. All educational levels present a statistically positive effect, compared to the reference category, in relation to the time spent reading the press. The estimated size of these effects tends to increase with educational level, from lower secondary education (+10.8%) through upper secondary and higher level vocational training (+20% and +14.4%, respectively), reaching +32% at university level.

Books. As with the press, all educational levels present a significant positive effect in relation to the amount of time dedicated to reading books, compared to the reference category. The increase in time spent is also in line with the increase in educational level: from lower secondary education (+10%), through upper secondary education (+14.6%) and higher level vocational training (+21.8%) to university level (+36.9%).

Television. The educational level shows an inverse relation to the time spent on this activity. Compared to the reference category, those with upper secondary education and higher level vocational training spend, respectively, 19.9% and 21.6% less time on this activity. At the level of university education, the time spent is 45.5% less.

Games. In this case, in contrast to the other activities, none of the variables associated with educational level presents a statistically significant effect on the time dedicated to this activity.

As for the effects associated with the control variables, there is a positive relation between income and the time dedicated to sport, reading the press and reading books, and an inverse relation between the number of hours spent working and the time dedicated to watching television, reading books, sport and cultural activities. There are also significant effects of age,

sex and nationality, and the quarter of the year and the day of the week on which the survey was conducted, on the time spent on the activities analysed.

INSERT TABLE 3 HERE

As for the results of the two-part model, Table 4 shows the marginal effects obtained from the probit estimations, which capture the variation in probability of each of the activities being carried out as a function of educational level and the control variables. Table 5 shows the semi-elasticities obtained from these estimations, which show that variation in terms of percentage values. Table 6 shows the effects of educational level and of the other variables on the amount of time spent on each activity by those individuals that actually carried them out.

Cultural activities. According to the semi-elasticities estimated, an individual with a university level of education is 138.4% more likely to engage in cultural activities than an individual in the reference category (primary education or primary education incomplete); that is, the probability is 2.38 higher, after controlling for the effects of the control variables. In the case of the other educational levels, only individuals with an upper secondary education present a significant positive effect, with the probability of their engaging in this activity being 61.8% higher than for the reference category. No significant effect is associated with the other educational levels. When we consider only those individuals that actually carried out this activity, educational level shows no significant effect on the amount of time dedicated to it, except in the case of individuals with higher level vocational training, where more time is spent on this activity.

Sport. A higher educational level is associated with a greater probability of engaging in this activity, with the exception of lower secondary education. In comparison with the reference category, the probability of being involved in a sports activity increases by 47.8% and 38.3%, respectively, for individuals with upper secondary education and higher level vocational training. In the case of university education, the expected increase is 70.8%. When we consider only those

individuals that actually carried out this activity, educational level shows no significant effect on the amount of time dedicated to it.

Press. Educational level presents a positive relation with the probability of engaging in this activity. The effect tends to increase as the level of education rises; thus, the probability of reading the press increases by 44.7% for those with lower secondary education (compared to the reference category), 85% for those with upper secondary education, 61.7% for those with higher level vocational training, and 125.5% in the case of university trained individuals. When we consider only those individuals that actually carried out this activity, the amount of time dedicated to reading the press by those with lower secondary education and university education is lower, while there is no significant effect for the remaining educational levels.

Books. As with reading the press, education has a positive effect on the probability of reading books, tending to increase with rising educational levels. Compared to the reference category, the probability increases by 44.6% in the case of lower secondary and by 67.9% in the case of upper secondary education, by 95.1% in the case of higher level vocational training, and 134.9% for individuals with a university education. Educational level has no significant effect on the actual time dedicated to this activity by those who reported carrying it out.

Television. Having a university education reduces the probability of watching television by 8.7% (compared to the reference category). However, no significant relation is found between the other educational levels and the probability of carrying out this activity. When we consider only those individuals that actually carried out this activity, a higher educational level is associated with the dedication of less time to it: 9.4% less for those individuals with upper secondary education, 12.8% for higher grade vocational training, and 18.6% for university education, compared to the reference category.

Games. In this case, in contrast to the other activities, educational level has no effect on the probability of carrying out this activity, or on the amount of time dedicated to it.

INSERT TABLE 4 HERE

INSERT TABLE 5 HERE

INSERT TABLE 6 HERE

In order to complete the empirical analysis, the fourth hypothesis (concerning “cultural omnivorousness”) is tested by estimating the effects of educational level on the number of activities carried out on the actual day of the survey. As shown (Table 7), educational level has a significant and positive effect on this number, the effect being greater at higher levels of education. As for the control variables, the number of activities carried out is positively related to the level of income, and negatively related to the number of hours worked, being female and being foreign. The day of the week also has a significant effect on this variable.

INSERT TABLE 7 HERE

6. Conclusions

Studies that analyse and measure the non-monetary effects of education stress the importance of these effects when undertaking a full evaluation of the returns to education and when designing educational policies (Haveman & Wolfe, 1984; Calero et al., 2011). Among these effects – defined as the consequences of acquiring a certain level of education that are not associated with any pecuniary benefits – are those corresponding to the impact of education on an individual’s participation in leisure activities. These effects, in addition to their importance from an educational perspective, are highly relevant for understanding an individual’s leisure behaviour and attitudes to leisure and shed considerable light on society’s broader leisure policies. In this

paper, taking both perspectives into account, we have analysed the non-monetary effects of education on leisure decisions based on a study of time use in Spain.

In response to our first hypothesis, the results show that educational level has a marked effect on the time dedicated to the specific leisure activities analysed here. In many cases, these effects are considerable, exceeding those associated with other variables, including income. These, therefore, are relevant non-monetary effects of education on leisure decisions that need to be taken into consideration both in the evaluation of educational performance and the design of educational policies, as well as in the analyses of leisure activities and related policies.

In the case of our second hypothesis, in line with results published elsewhere in the literature, we found that a higher educational level is related to a greater propensity to dedicate more time to activities that generate individual and social benefits. These include cultural activities outside the home, sport, reading the press and reading books. In contrast, similar effects are not detected for all activities; hence, the relation between educational level and the time dedicated to watching television is negative, while its relation with playing games is not statistically significant.

In the case of our third hypothesis, the effects of education on leisure activities were more complex than could be expected *a priori* – not only did the effects vary with the type of activity, they also varied with the level of education considered. Compared to the most basic level of education, all levels showed a positive effect on the amount of time dedicated to reading both the press and books. The magnitude of these effects tends to increase as the level of education attained rises, and is particularly marked in the case of university education. In contrast, the positive effects on the time dedicated to cultural activities away from the home and sport are limited to specific educational levels (again most notably university education). As such, these results demonstrate that a higher level of education is not automatically associated with non-monetary effects of education as far as time dedicated to leisure activities is concerned. This evidence does not necessarily contradict the neoclassical view, where the explanation of these

effects is centred on the increase in efficiency of consumption derived from education. However, it does suggest that the institutionalist view, centred on the role of education in shaping an individual's social environment and, therefore, on their leisure and lifestyle decisions, is key for explaining the effects of education on leisure activities. The social environment linked to the acquisition of a higher level of education does not have an impact on all the leisure decisions that are beneficial for individuals, but only on those that are particularly valued in terms of position and status in that social environment.

In relation to our fourth hypothesis, we can conclude that a higher level of education is related to a greater diversity of leisure options, an effect that is intensified as the educational level rises. This finding is in line with the concept of "cultural omnivorousness", from the point of view of the volume of activities, as described by Warde & Gayo-Cal (2009), where, while a higher level of education may not increase the amount of leisure time available, it does increase the diversity of options open to the individual for making use of it. The results show that educational level is negatively linked to the amount of time spent watching television, the activity that absorbs the greatest amount of leisure time. Thus, as the educational level increases, the probability of spending time on other activities, such as culture, sport and reading the press and books, increases.

Our results provide further evidence of the importance of the non-monetary effects of education on decisions taken with regard to participation in leisure activities. A higher level of education, therefore, is not only associated with monetary benefits (higher income), but also with a greater propensity for individuals to dedicate time to those leisure activities that provide them with specific beneficial outcomes, positively affecting their future health (as is the case of sport), their cultural capital and knowledge (as is the case of cultural activities and reading books), and their social involvement (as is the case of reading the press). The diverse repertoire of leisure activities associated with a higher level of education as well as being beneficial in its own right is also linked to a better quality of leisure time and greater social integration (Stalker, 2011). These

benefits not only impact the individuals who engage in the activities in question, but also the society of which they form a part, what in economic terms might be defined as positive externalities.

Detecting and measuring the non-monetary effects of education on the time spent on leisure activities from which positive externalities accrue provides a more complete view of the individual and social benefits of education. These effects constitute an extra dimension – one that is often ignored (due essentially to the difficulties encountered in their detection and measurement) but which is, nevertheless, extremely relevant in terms of both individual decision-making and the design of policies that impact on promoting the acquisition of higher educational levels. Similarly, these effects are a key element for understanding individual decisions and motivations in relation to leisure activities, and the policies that, in coordination with educational policies, aim to exploit the potential benefits derived from specific leisure activities. Our analysis also highlights interesting lines for future research including a more detailed examination of the way in which the nature of the effects of education on leisure might be interpreted and explained, in particular their role in shaping the social environment and their impact on leisure decisions. In short, in this paper we have demonstrated the notable potential of applying a multidisciplinary perspective to furthering the study of the relation between education and leisure.

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Table 1. Distribution of the sample according to educational level, weighted at the population level.

Educational level	%
Primary education or primary education incomplete	16.5
Lower secondary education	21.8
Upper secondary education	24.2
Higher level vocational training	10.4
University education	27.1

Source: Based on INE (2011)

Table 2. Time spent on activities, in function of educational level.

ACTIVITY		TOTAL	PRIMED	SECED1	SECED2	VOCTR	UNIVED
Cultural activities	Time dedicated (unconditional average)	3.68	1.84	2.23	3.30	3.16	6.49
	% carrying out activity	3.05%	1.51%	2.05%	2.57%	2.07%	5.58%
	Time dedicated (conditional average)	120.71	121.66	108.93	128.31	152.66	116.37
Sport	Time dedicated (unconditional average)	9.57	5.61	6.80	8.55	11.99	14.17
	% carrying out activity	9.90%	5.21%	7.06%	9.74%	10.74%	14.83%
	Time dedicated (conditional average)	96.68	107.77	96.32	87.82	111.70	95.51
Press	Time dedicated (unconditional average)	4.31	3.82	2.78	4.10	3.45	6.35
	% carrying out activity	8.74%	5.87%	5.90%	8.66%	6.77%	13.58%
	Time dedicated (conditional average)	49.33	65.07	47.17	47.29	50.89	46.81
Books	Time dedicated (unconditional average)	5.29	2.49	3.37	4.55	5.94	8.96
	% carrying out activity	8.26%	3.78%	5.00%	6.84%	8.17%	14.89%
	Time dedicated (conditional average)	64.13	65.99	67.41	66.48	72.69	60.20
Television	Time dedicated (unconditional average)	101.43	124.40	112.09	99.54	94.28	83.34
	% carrying out activity	78.85%	83.25%	80.90%	78.50%	79.41%	74.62%
	Time dedicated (conditional average)	128.64	149.43	138.55	126.81	118.72	111.68
Games	Time dedicated (unconditional average)	3.39	3.60	4.23	3.42	3.25	2.61
	% carrying out activity	3.21%	3.07%	3.87%	3.20%	3.04%	2.85%
	Time dedicated (conditional average)	105.41	117.18	109.30	106.67	107.00	91.54
Number of activities carried out			1.12	1.03	1.05	1.10	1.26

Source: Based on INE (2011)

Table 3. Results of the OLS estimations of the time spent on the activities analysed.

		CULT. ACT.	SPORT	PRESS	BOOKS	TV	GAMES
Control variable	<i>Constant</i>	0.535**	0.483*	-0.033	-0.050	3.387***	0.602***
	<i>WORKH</i>	-0.002*	-0.004**	-0.001	-0.005***	-0.022***	-0.001
	<i>AGE</i>	-0.024**	0.006	-0.012	0.001	0.051**	-0.026***
	<i>AGE^2</i>	0.000**	-0.000	0.000***	0.000	-0.000	0.000***
	<i>WOMAN</i>	0.015	-0.228***	-0.154***	0.221***	-0.322***	-0.028
	<i>FOREU</i>	-0.122***	-0.120	-0.125**	-0.143**	-0.145	-0.052
	<i>FORNONEU</i>	-0.056	-0.246***	0.026	-0.102**	-0.125	-0.085**
	<i>INC<601</i>	-0.051	-0.114**	-0.088**	-0.032	-0.399***	-0.025
	<i>INC1201-1600</i>	0.015	-0.008	0.009	0.094**	-0.173**	0.012
	<i>INC1601-2000</i>	0.091*	0.175**	0.037	0.090	-0.111	-0.003
	<i>INC2001-2500</i>	-0.068	0.107	0.269***	0.214**	-0.156	0.062
	<i>INC>2500</i>	0.103	0.409***	0.146	0.185**	-0.416***	0.007
	<i>QUA2</i>	-0.049	0.000	-0.041	-0.007	0.024	-0.091***
	<i>QUA3</i>	-0.022	0.323***	0.042	0.059	-0.241***	0.042
	<i>QUA4</i>	-0.020	-0.042	-0.027	0.025	0.072	-0.039
	<i>FRIDAY</i>	0.051**	0.046	0.054	-0.013	0.034	0.033
	<i>SATURDAY</i>	0.162***	-0.038	0.135***	-0.019	0.083	0.121***
<i>SUNDAY</i>	0.148***	0.021	0.309***	0.071	0.545***	0.139***	
Educational level	<i>SECED1</i>	0.032	0.012	0.108**	0.100**	-0.030	0.050
	<i>SECED2</i>	0.055*	0.130**	0.200***	0.146***	-0.199*	0.020
	<i>VOCTR</i>	0.038	0.119	0.144**	0.218***	-0.216*	0.016
	<i>UNIVED</i>	0.177***	0.264***	0.320***	0.369***	-0.455***	-0.007
N F PROB>F		6,918	6,918	6,918	6,918	6,918	6,918
		3.65	10.29	14.15	11.56	12.71	3.21
		0.000	0.000	0.000	0.000	0.000	0.000

Statistical significance: *>90%, **>95%, ***>99%

Source: Based on INE (2011)

Table 4. Marginal effects obtained from the probit estimations of the probability of carrying out the activities analysed.

		CULT. ACT.	SPORT	PRESS	BOOKS	TV	GAMES
Control var.	<i>WORKH</i>	-0.001*	-0.001**	-0.000	-0.001***	-0.004***	-0.000
	<i>AGE</i>	-0.004**	0.001	0.009***	0.004	0.010**	-0.005***
	<i>AGE^2</i>	0.000***	-0.000	-0.000	-0.000	-0.000	0.000***
	<i>WOMAN</i>	0.002	-0.050***	-0.035***	0.056***	-0.041***	-0.006
	<i>FOREU</i>	-0.036*	-0.039	-0.060**	-0.041*	-0.043	-0.011
	<i>FORNONEU</i>	-0.019*	-0.072***	0.001	-0.039**	-0.045*	-0.036**
	<i>INC<601</i>	-0.013	-0.046**	-0.051***	-0.002	-0.079***	-0.012
	<i>INC1201-1600</i>	0.003	0.002	0.001	0.019*	-0.039**	-0.001
	<i>INC1601-2000</i>	0.017**	0.032**	0.006	0.016	-0.011	-0.001
	<i>INC2001-2500</i>	-0.015	0.027	0.034**	0.037**	-0.006	0.009
	<i>INC>2500</i>	0.016	0.077***	0.013	0.043***	-0.070**	0.003
	<i>QUA2</i>	-0.010	-0.002	-0.008	0.001	0.016	-0.023***
	<i>QUA3</i>	-0.003	0.061***	0.011	0.011	-0.037**	0.008
	<i>QUA4</i>	-0.002	-0.011	-0.004	0.009	0.021	-0.006
	<i>FRIDAY</i>	0.017**	0.004	0.021*	-0.002	-0.002	0.010
	<i>SATURDAY</i>	0.037***	-0.021*	0.040***	-0.009	-0.032**	0.026***
	<i>SUNDAY</i>	0.036***	-0.003	0.073***	0.014	0.054***	0.029***
Educational level	<i>SECED1</i>	0.011	0.011	0.031**	0.032**	0.000	0.013
	<i>SECED2</i>	0.016*	0.042***	0.059***	0.048***	-0.026	0.007
	<i>VOCTR</i>	0.012	0.034**	0.043**	0.068***	-0.025	0.004
	<i>UNIVED</i>	0.037***	0.062***	0.087***	0.096***	-0.067***	0.001
N F PROB>F		6,918	6,918	6,918	6,918	6,918	6,918
		106.03	230.66	310.88	248.87	148.46	87.97
		0.000	0.000	0.000	0.000	0.000	0.000

Statistical significance: *>90%, **>95%, ***>99%

Source: Based on INE (2011)

Table 5. Effects of educational level on the increase in probability of carrying out the activities, in percentages (semi-elasticities), from probit estimations.

		CULT. ACT.	SPORT	PRESS	BOOKS	TV	GAMES
Educational level	<i>SECED1</i>	0.413	0.129	0.447**	0.446*	0.000	0.444
	<i>SECED2</i>	0.618*	0.478***	0.850***	0.679***	-0.035	0.253
	<i>VOCTR</i>	0.448	0.383*	0.617**	0.951***	-0.033	0.151
	<i>UNIVED</i>	1.384***	0.708***	1.255***	1.349***	-0.087***	0.049

Statistical significance: *>90%, **>95%, ***>99%

Source: Based on INE (2011)

Table 6. Results of the OLS estimations of the time spent on the activities by those individuals that actually carried them out.

		CULT. ACT.	SPORT	PRESS	BOOKS	TV	GAMES
Control var.	<i>Constant</i>	5.674***	4.442***	4.455***	4.594***	4.592***	3.716***
	<i>WORKH</i>	0.005	-0.009**	0.004	-0.005	-0.005***	0.003
	<i>AGE</i>	-0.070***	0.022	-0.046	-0.031*	0.002	0.015
	<i>AGE^2</i>	0.001***	-0.000	0.000	0.000*	0.000	-0.000
	<i>WOMAN</i>	-0.043	-0.192***	-0.183***	0.012	-0.156***	-0.108
	<i>FOREU</i>	0.354**	0.484***	0.079	-0.577***	0.076	0.368
	<i>FORNONEU</i>	0.193	-0.217	0.139	0.135	0.126***	0.793**
	<i>INC<601</i>	-0.100	-0.184	0.123	-0.059	-0.012	0.538**
	<i>INC1201-1600</i>	-0.110	-0.094	0.091	0.178*	0.008	-0.220
	<i>INC1601-2000</i>	-0.112	-0.073	-0.017	0.062	-0.067	0.077
	<i>INC2001-2500</i>	-0.009	-0.157	0.049	0.082	-0.158***	0.091
	<i>INC>2500</i>	-0.136	-0.269**	-0.008	-0.212	-0.100	-0.374
	<i>QUA2</i>	-0.048	0.050	-0.076	0.002	-0.057	-0.112
	<i>QUA3</i>	-0.123	0.066	0.026	0.159*	-0.077**	0.011
	<i>QUA4</i>	-0.142	-0.081	-0.086	-0.138*	-0.017	-0.186
	<i>FRIDAY</i>	0.340**	0.062	-0.007	-0.056	0.059*	0.020
<i>SATURDAY</i>	0.457***	0.362***	0.081	0.001	0.312***	0.581***	
<i>SUNDAY</i>	0.296**	0.300***	0.237***	0.170**	0.389***	0.673***	
Educational level	<i>SECED1</i>	-0.049	-0.152	-0.243*	-0.039	-0.030	-0.089
	<i>SECED2</i>	0.087	-0.182	-0.181	-0.060	-0.094**	-0.152
	<i>VOCTR</i>	0.393*	0.025	-0.090	0.125	-0.128**	-0.118
	<i>UNIVED</i>	0.117	-0.079	-0.226*	-0.132	-0.186***	-0.207
N		194	691	668	621	5,503	215
F		2.21	4.55	3.10	3.16	17.63	3.18
PROB>F		0.003	0.000	0.000	0.000	0.000	0.000

Statistical significance: *>90%, **>95%, ***>99%

Source: Based on INE (2011)

Table 7. Results of the ordered probit estimations of the number of activities carried out on the actual day of the survey.

		N OPTIONS
Control variable	<i>WORKH</i>	-0.013***
	<i>AGE</i>	0.005
	<i>AGE^2</i>	0.000
	<i>WOMAN</i>	-0.123***
	<i>FOREU</i>	-0.310***
	<i>FORNONEU</i>	-0.281***
	<i>INC<601</i>	-0.299***
	<i>INC1201-1600</i>	-0.035
	<i>INC1601-2000</i>	0.116*
	<i>INC2001-2500</i>	0.223***
	<i>INC>2500</i>	0.180*
	<i>QUA2</i>	-0.029
	<i>QUA3</i>	0.083
	<i>QUA4</i>	0.010
	<i>FRIDAY</i>	0.054
<i>SATURDAY</i>	0.040	
<i>SUNDAY</i>	0.308***	
Educational level	<i>SECED1</i>	0.121**
	<i>SECED2</i>	0.173***
	<i>VOCTR</i>	0.153**
	<i>UNIVED</i>	0.315***
N		6,918
F		0.000
PROB>F		369.03

Statistical significance: *>90%, **>95%, ***>99%

Source: Based on INE (2011).

2012

- 2012/1, **Montolio, D.; Trujillo, E.:** "What drives investment in telecommunications? The role of regulation, firms' internationalization and market knowledge"
- 2012/2, **Giesen, K.; Suedekum, J.:** "The size distribution across all "cities": a unifying approach"
- 2012/3, **Foremny, D.; Riedel, N.:** "Business taxes and the electoral cycle"
- 2012/4, **García-Estévez, J.; Duch-Brown, N.:** "Student graduation: to what extent does university expenditure matter?"
- 2012/5, **Durán-Cabré, J.M.; Esteller-Moré, A.; Salvadori, L.:** "Empirical evidence on horizontal competition in tax enforcement"
- 2012/6, **Pickering, A.C.; Rockey, J.:** "Ideology and the growth of US state government"
- 2012/7, **Vergolini, L.; Zanini, N.:** "How does aid matter? The effect of financial aid on university enrolment decisions"
- 2012/8, **Backus, P.:** "Gibrat's law and legacy for non-profit organisations: a non-parametric analysis"
- 2012/9, **Jofre-Monseny, J.; Marín-López, R.; Viladecans-Marsal, E.:** "What underlies localization and urbanization economies? Evidence from the location of new firms"
- 2012/10, **Mantovani, A.; Vandekerckhove, J.:** "The strategic interplay between bundling and merging in complementary markets"
- 2012/11, **García-López, M.A.:** "Urban spatial structure, suburbanization and transportation in Barcelona"
- 2012/12, **Revelli, F.:** "Business taxation and economic performance in hierarchical government structures"
- 2012/13, **Arqué-Castells, P.; Mohnen, P.:** "Sunk costs, extensive R&D subsidies and permanent inducement effects"
- 2012/14, **Boffa, F.; Piolatto, A.; Ponzetto, G.:** "Centralization and accountability: theory and evidence from the Clean Air Act"
- 2012/15, **Cheshire, P.C.; Hilber, C.A.L.; Kaplanis, I.:** "Land use regulation and productivity – land matters: evidence from a UK supermarket chain"
- 2012/16, **Choi, A.; Calero, J.:** "The contribution of the disabled to the attainment of the Europe 2020 strategy headline targets"
- 2012/17, **Silva, J.I.; Vázquez-Grenno, J.:** "The ins and outs of unemployment in a two-tier labor market"
- 2012/18, **González-Val, R.; Lanaspa, L.; Sanz, F.:** "New evidence on Gibrat's law for cities"
- 2012/19, **Vázquez-Grenno, J.:** "Job search methods in times of crisis: native and immigrant strategies in Spain"
- 2012/20, **Lessmann, C.:** "Regional inequality and decentralization – an empirical analysis"
- 2012/21, **Nuevo-Chiquero, A.:** "Trends in shotgun marriages: the pill, the will or the cost?"
- 2012/22, **Piil Damm, A.:** "Neighborhood quality and labor market outcomes: evidence from quasi-random neighborhood assignment of immigrants"
- 2012/23, **Ploeckl, F.:** "Space, settlements, towns: the influence of geography and market access on settlement distribution and urbanization"
- 2012/24, **Algan, Y.; Hémet, C.; Laitin, D.:** "Diversity and local public goods: a natural experiment with exogenous residential allocation"
- 2012/25, **Martínez, D.; Sjögren, T.:** "Vertical externalities with lump-sum taxes: how much difference does unemployment make?"
- 2012/26, **Cubel, M.; Sanchez-Pages, S.:** "The effect of within-group inequality in a conflict against a unitary threat"
- 2012/27, **Andini, M.; De Blasio, G.; Duranton, G.; Strange, W.C.:** "Marshallian labor market pooling: evidence from Italy"
- 2012/28, **Solé-Ollé, A.; Viladecans-Marsal, E.:** "Do political parties matter for local land use policies?"
- 2012/29, **Buonanno, P.; Durante, R.; Prarolo, G.; Vanin, P.:** "Poor institutions, rich mines: resource curse and the origins of the Sicilian mafia"
- 2012/30, **Anghel, B.; Cabrales, A.; Carro, J.M.:** "Evaluating a bilingual education program in Spain: the impact beyond foreign language learning"
- 2012/31, **Curto-Grau, M.; Solé-Ollé, A.; Sorribas-Navarro, P.:** "Partisan targeting of inter-governmental transfers & state interference in local elections: evidence from Spain"
- 2012/32, **Kappeler, A.; Solé-Ollé, A.; Stephan, A.; Väilä, T.:** "Does fiscal decentralization foster regional investment in productive infrastructure?"
- 2012/33, **Rizzo, L.; Zanardi, A.:** "Single vs double ballot and party coalitions: the impact on fiscal policy. Evidence from Italy"
- 2012/34, **Ramachandran, R.:** "Language use in education and primary schooling attainment: evidence from a natural experiment in Ethiopia"
- 2012/35, **Rothstein, J.:** "Teacher quality policy when supply matters"
- 2012/36, **Ahlfeldt, G.M.:** "The hidden dimensions of urbanity"
- 2012/37, **Mora, T.; Gil, J.; Sicras-Mainar, A.:** "The influence of BMI, obesity and overweight on medical costs: a panel data approach"
- 2012/38, **Pelegrín, A.; García-Quevedo, J.:** "Which firms are involved in foreign vertical integration?"

2012/39, Agasisti, T.; Longobardi, S.: "Inequality in education: can Italian disadvantaged students close the gap? A focus on resilience in the Italian school system"

2013

2013/1, Sánchez-Vidal, M.; González-Val, R.; Viladecans-Marsal, E.: "Sequential city growth in the US: does age matter?"

2013/2, Hortas Rico, M.: "Sprawl, blight and the role of urban containment policies. Evidence from US cities"

2013/3, Lampón, J.F.; Cabanelas-Lorenzo, P.; Lago-Peñas, S.: "Why firms relocate their production overseas? The answer lies inside: corporate, logistic and technological determinants"

2013/4, Montolio, D.; Planells, S.: "Does tourism boost criminal activity? Evidence from a top touristic country"

2013/5, García-López, M.A.; Holl, A.; Viladecans-Marsal, E.: "Suburbanization and highways: when the Romans, the Bourbons and the first cars still shape Spanish cities"

2013/6, Bosch, N.; Espasa, M.; Montolio, D.: "Should large Spanish municipalities be financially compensated? Costs and benefits of being a capital/central municipality"

2013/7, Escardíbul, J.O.; Mora, T.: "Teacher gender and student performance in mathematics. Evidence from Catalonia"

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2013/9, Asensio, J.; Gómez-Lobo, A.; Matas, A.: "How effective are policies to reduce gasoline consumption? Evaluating a quasi-natural experiment in Spain"

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2013/11, Segarra, A.; García-Quevedo, J.; Teruel, M.: "Financial constraints and the failure of innovation projects"

2013/12, Jerrim, J.; Choi, A.: "The mathematics skills of school children: How does England compare to the high performing East Asian jurisdictions?"

2013/13, González-Val, R.; Tirado-Fabregat, D.A.; Viladecans-Marsal, E.: "Market potential and city growth: Spain 1860-1960"

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2013/16, Lampón, J.F.; Lago-Peñas, S.: "Factors behind international relocation and changes in production geography in the European automobile components industry"

2013/17, Guío, J.M.; Choi, A.: "Evolution of the school failure risk during the 2000 decade in Spain: analysis of Pisa results with a two-level logistic model"

2013/18, Dahlby, B.; Rodden, J.: "A political economy model of the vertical fiscal gap and vertical fiscal imbalances in a federation"

2013/19, Acacia, F.; Cubel, M.: "Strategic voting and happiness"

2013/20, Hellenstein, J.K.; Kutzbach, M.J.; Neumark, D.: "Do labor market networks have an important spatial dimension?"

2013/21, Pellegrino, G.; Savona, M.: "Is money all? Financing versus knowledge and demand constraints to innovation"

2013/22, Lin, J.: "Regional resilience"

2013/23, Costa-Campi, M.T.; Duch-Brown, N.; García-Quevedo, J.: "R&D drivers and obstacles to innovation in the energy industry"

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2013/25, Dargaud, E.; Mantovani, A.; Reggiani, C.: "The fight against cartels: a transatlantic perspective"

2013/26, Lambertini, L.; Mantovani, A.: "Feedback equilibria in a dynamic renewable resource oligopoly: pre-emption, voracity and exhaustion"

2013/27, Feld, L.P.; Kalb, A.; Moessinger, M.D.; Osterloh, S.: "Sovereign bond market reactions to fiscal rules and no-bailout clauses – the Swiss experience"

2013/28, Hilber, C.A.L.; Vermeulen, W.: "The impact of supply constraints on house prices in England"

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2013/31, Dargaud, E.; Mantovani, A.; Reggiani, C.: "The fight against cartels: a transatlantic perspective"

2013/32, Saarimaa, T.; Tukiainen, J.: "Local representation and strategic voting: evidence from electoral boundary reforms"

2013/33, Agasisti, T.; Murtinu, S.: "Are we wasting public money? No! The effects of grants on Italian university students' performances"

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2013/35, Carozzi, F.; Repetto, L.: "Sending the pork home: birth town bias in transfers to Italian municipalities"

2013/36, Coad, A.; Frankish, J.S.; Roberts, R.G.; Storey, D.J.: "New venture survival and growth: Does the fog lift?"

2013/37, Giuliotti, M.; Grossi, L.; Waterson, M.: "Revenues from storage in a competitive electricity market: Empirical evidence from Great Britain"

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2014/1, Montolio, D.; Planells-Struse, S.: "When police patrols matter. The effect of police proximity on citizens' crime risk perception"

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2014/3, Piolatto, A.; Rablen, M.D.: "Prospect theory and tax evasion: a reconsideration of the Yitzhaki puzzle"

2014/4, Cuberes, D.; González-Val, R.: "The effect of the Spanish Reconquest on Iberian Cities"

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2014/6, Cubel, M.; Sanchez-Pages, S.: "Difference-form group contests"

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2014/17, González-Val, R.: "Cross-sectional growth in US cities from 1990 to 2000"

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2014/19, Curto-Grau, M.: "Voters' responsiveness to public employment policies"

2014/20, Duro, J.A.; Teixidó-Figueras, J.; Padilla, E.: "The causal factors of international inequality in CO₂ emissions per capita: a regression-based inequality decomposition analysis"

2014/21, Fleten, S.E.; Huisman, R.; Kilic, M.; Pennings, E.; Westgaard, S.: "Electricity futures prices: time varying sensitivity to fundamentals"

2014/22, Afcha, S.; García-Quevedo, J.: "The impact of R&D subsidies on R&D employment composition"

2014/23, Mir-Artigues, P.; del Río, P.: "Combining tariffs, investment subsidies and soft loans in a renewable electricity deployment policy"

2014/24, Romero-Jordán, D.; del Río, P.; Peñasco, C.: "Household electricity demand in Spanish regions. Public policy implications"

2014/25, Salinas, P.: "The effect of decentralization on educational outcomes: real autonomy matters!"

2014/26, Solé-Ollé, A.; Sorribas-Navarro, P.: "Does corruption erode trust in government? Evidence from a recent surge of local scandals in Spain"

2014/27, Costas-Pérez, E.: "Political corruption and voter turnout: mobilization or disaffection?"

2014/28, Cubel, M.; Nuevo-Chiquero, A.; Sanchez-Pages, S.; Vidal-Fernandez, M.: "Do personality traits affect productivity? Evidence from the LAB"

2014/29, Teresa Costa, M.T.; Trujillo-Baute, E.: "Retail price effects of feed-in tariff regulation"

2014/30, Kilic, M.; Trujillo-Baute, E.: "The stabilizing effect of hydro reservoir levels on intraday power prices under wind forecast errors"

2014/31, Costa-Campi, M.T.; Duch-Brown, N.: "The diffusion of patented oil and gas technology with environmental uses: a forward patent citation analysis"

2014/32, Ramos, R.; Sanromá, E.; Simón, H.: "Public-private sector wage differentials by type of contract: evidence from Spain"

2014/33, Backus, P.; Esteller-Moré, A.: "Is income redistribution a form of insurance, a public good or both?"

2014/34, Huisman, R.; Trujillo-Baute, E.: "Costs of power supply flexibility: the indirect impact of a Spanish policy change"

- 2014/35, Jerrim, J.; Choi, A.; Simancas Rodríguez, R.: "Two-sample two-stage least squares (TSTSLS) estimates of earnings mobility: how consistent are they?"
- 2014/36, Mantovani, A.; Tarola, O.; Vergari, C.: "Hedonic quality, social norms, and environmental campaigns"
- 2014/37, Ferraresi, M.; Galmarini, U.; Rizzo, L.: "Local infrastructures and externalities: Does the size matter?"
- 2014/38, Ferraresi, M.; Rizzo, L.; Zanardi, A.: "Policy outcomes of single and double-ballot elections"

2015

- 2015/1, Foremny, D.; Freier, R.; Moessinger, M-D.; Yeter, M.: "Overlapping political budget cycles in the legislative and the executive"
- 2015/2, Colombo, L.; Galmarini, U.: "Optimality and distortionary lobbying: regulating tobacco consumption"
- 2015/3, Pellegrino, G.: "Barriers to innovation: Can firm age help lower them?"
- 2015/4, Hémet, C.: "Diversity and employment prospects: neighbors matter!"
- 2015/5, Cubel, M.; Sanchez-Pages, S.: "An axiomatization of difference-form contest success functions"
- 2015/6, Choi, A.; Jerrim, J.: "The use (and misuse) of Pisa in guiding policy reform: the case of Spain"
- 2015/7, Durán-Cabré, J.M.; Esteller-Moré, A.; Salvadori, L.: "Empirical evidence on tax cooperation between sub-central administrations"
- 2015/8, Batalla-Bejerano, J.; Trujillo-Baute, E.: "Analysing the sensitivity of electricity system operational costs to deviations in supply and demand"
- 2015/9, Salvadori, L.: "Does tax enforcement counteract the negative effects of terrorism? A case study of the Basque Country"
- 2015/10, Montolio, D.; Planells-Struse, S.: "How time shapes crime: the temporal impacts of football matches on crime"
- 2015/11, Piolatto, A.: "Online booking and information: competition and welfare consequences of review aggregators"
- 2015/12, Boffa, F.; Pingali, V.; Sala, F.: "Strategic investment in merchant transmission: the impact of capacity utilization rules"
- 2015/13, Slemrod, J.: "Tax administration and tax systems"
- 2015/14, Arqué-Castells, P.; Cartaxo, R.M.; García-Quevedo, J.; Mira Godinho, M.: "How inventor royalty shares affect patenting and income in Portugal and Spain"
- 2015/15, Montolio, D.; Planells-Struse, S.: "Measuring the negative externalities of a private leisure activity: hooligans and pickpockets around the stadium"
- 2015/16, Batalla-Bejerano, J.; Costa-Campi, M.T.; Trujillo-Baute, E.: "Unexpected consequences of liberalisation: metering, losses, load profiles and cost settlement in Spain's electricity system"
- 2015/17, Batalla-Bejerano, J.; Trujillo-Baute, E.: "Impacts of intermittent renewable generation on electricity system costs"
- 2015/18, Costa-Campi, M.T.; Paniagua, J.; Trujillo-Baute, E.: "Are energy market integrations a green light for FDI?"
- 2015/19, Jofre-Monseny, J.; Sánchez-Vidal, M.; Viladecans-Marsal, E.: "Big plant closures and agglomeration economies"
- 2015/20, Garcia-López, M.A.; Hémet, C.; Viladecans-Marsal, E.: "How does transportation shape intrametropolitan growth? An answer from the regional express rail"
- 2015/21, Esteller-Moré, A.; Galmarini, U.; Rizzo, L.: "Fiscal equalization under political pressures"
- 2015/22, Escardíbul, J.O.; Afcha, S.: "Determinants of doctorate holders' job satisfaction. An analysis by employment sector and type of satisfaction in Spain"
- 2015/23, Aidt, T.; Asatryan, Z.; Badalyan, L.; Heinemann, F.: "Vote buying or (political) business (cycles) as usual?"
- 2015/24, Albæk, K.: "A test of the 'lose it or use it' hypothesis in labour markets around the world"
- 2015/25, Angelucci, C.; Russo, A.: "Petty corruption and citizen feedback"
- 2015/26, Moriconi, S.; Picard, P.M.; Zanj, S.: "Commodity taxation and regulatory competition"
- 2015/27, Brekke, K.R.; Garcia Pires, A.J.; Schindler, D.; Schjelderup, G.: "Capital taxation and imperfect competition: ACE vs. CBIT"
- 2015/28, Redonda, A.: "Market structure, the functional form of demand and the sensitivity of the vertical reaction function"
- 2015/29, Ramos, R.; Sanromá, E.; Simón, H.: "An analysis of wage differentials between full-and part-time workers in Spain"
- 2015/30, Garcia-López, M.A.; Pasidis, I.; Viladecans-Marsal, E.: "Express delivery to the suburbs the effects of transportation in Europe's heterogeneous cities"
- 2015/31, Torregrosa, S.: "Bypassing progressive taxation: fraud and base erosion in the Spanish income tax (1970-2001)"

- 2015/32, Choi, H.; Choi, A.:** "When one door closes: the impact of the hagwon curfew on the consumption of private tutoring in the republic of Korea"
- 2015/33, Escardíbul, J.O.; Helmy, N.:** "Decentralisation and school autonomy impact on the quality of education: the case of two MENA countries"
- 2015/34, González-Val, R.; Marcén, M.:** "Divorce and the business cycle: a cross-country analysis"
- 2015/35, Calero, J.; Choi, A.:** "The distribution of skills among the European adult population and unemployment: a comparative approach"
- 2015/36, Mediavilla, M.; Zancajo, A.:** "Is there real freedom of school choice? An analysis from Chile"
- 2015/37, Daniele, G.:** "Strike one to educate one hundred: organized crime, political selection and politicians' ability"
- 2015/38, González-Val, R.; Marcén, M.:** "Regional unemployment, marriage, and divorce"
- 2015/39, Foremny, D.; Jofre-Monseny, J.; Solé-Ollé, A.:** "'Hold that ghost': using notches to identify manipulation of population-based grants"
- 2015/40, Mancebón, M.J.; Ximénez-de-Embún, D.P.; Mediavilla, M.; Gómez-Sancho, J.M.:** "Does educational management model matter? New evidence for Spain by a quasiexperimental approach"
- 2015/41, Daniele, G.; Geys, B.:** "Exposing politicians' ties to criminal organizations: the effects of local government dissolutions on electoral outcomes in Southern Italian municipalities"
- 2015/42, Ooghe, E.:** "Wage policies, employment, and redistributive efficiency"

2016

- 2016/1, Galletta, S.:** "Law enforcement, municipal budgets and spillover effects: evidence from a quasi-experiment in Italy"
- 2016/2, Flatley, L.; Giulietti, M.; Grossi, L.; Trujillo-Baute, E.; Waterson, M.:** "Analysing the potential economic value of energy storage"
- 2016/3, Calero, J.; Murillo Huertas, I.P.; Raymond Bara, J.L.:** "Education, age and skills: an analysis using the PIAAC survey"
- 2016/4, Costa-Campi, M.T.; Daví-Arderius, D.; Trujillo-Baute, E.:** "The economic impact of electricity losses"
- 2016/5, Falck, O.; Heimisch, A.; Wiederhold, S.:** "Returns to ICT skills"
- 2016/6, Halmenschlager, C.; Mantovani, A.:** "On the private and social desirability of mixed bundling in complementary markets with cost savings"
- 2016/7, Choi, A.; Gil, M.; Mediavilla, M.; Valbuena, J.:** "Double toil and trouble: grade retention and academic performance"
- 2016/8, González-Val, R.:** "Historical urban growth in Europe (1300–1800)"
- 2016/9, Guio, J.; Choi, A.; Escardíbul, J.O.:** "Labor markets, academic performance and the risk of school dropout: evidence for Spain"
- 2016/10, Bianchini, S.; Pellegrino, G.; Tamagni, F.:** "Innovation strategies and firm growth"
- 2016/11, Jofre-Monseny, J.; Silva, J.I.; Vázquez-Grenno, J.:** "Local labor market effects of public employment"
- 2016/12, Sanchez-Vidal, M.:** "Small shops for sale! The effects of big-box openings on grocery stores"
- 2016/13, Costa-Campi, M.T.; García-Quevedo, J.; Martínez-Ros, E.:** "What are the determinants of investment in environmental R&D?"
- 2016/14, García-López, M.A.; Hémet, C.; Viladecans-Marsal, E.:** "Next train to the polycentric city: The effect of railroads on subcenter formation"
- 2016/15, Matas, Anna; Raymond, José-Luis; Dominguez, Andrés:** "Changes in fuel economy: An analysis of the Spanish car market"
- 2016/16, Leme, Alfonso; Escardíbul, Josep-Oriol:** "The effect of a specialized versus a general upper secondary school curriculum on students' performance and inequality. A difference-in-differences cross country comparison"
- 2016/17, Scandurra, Rosario Ivano; Calero, Jorge:** "Modelling adult skills in OECD countries".



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