A quantitative analysis of reading habits*

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ABSTRACT
In this paper, reading leisure habits in Spain are analysed as part of the consumers' decision process under a general framework of time allocation and emphasizing the role of cultural background. We used the Survey on Cultural Habits and Practices in Spain 2010-2011 to analyse the factors influencing reading habits, measured by the number of books read, and using a Zero Inflated Binomial Negative model. Time restrictions are a relevant barrier for reading habits. Also, different patterns has been detected among females and educated people. Furthermore, cultural attitudes and consumption are determinants of the probability of being a reader but also of the number of books read. However, we have found this positive effect linked to activities that can be classified inside highbrow culture. Cultural capital, measured by a set of variables related to cultural home equipment, has also a positive impact. Because the survey does not report income, the cultural equipment measure may also capture an income effect on reading. Finally, we have also found relevant urban/rural differences.

Keywords: reading, cultural capital, cultural habits, factorial analysis
Classification JEL: Z11, D11, D12, C25

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1. Introduction

The main aim of this study is to determine which factors influence one of the most basic cultural activities: reading. We consider reading especially important among other cultural activities since the ability of reading is the foundation on which our ability to understand, learn and enjoy all kinds of intellectual creations is based.[1] Thus, it is difficult to have a full cultural life without reading.

Moreover, regarding reading, we must distinguish two different situations. On the one hand, reading can be a professional duty, as in the reading of technical materials for work, for example. In this case, time spent reading is not the result of our own choice but is usually imposed exogenously. On the other hand, reading can be a leisure activity. In this case, to maximise utility, reading competes with other leisure and cultural activities, and we make our decisions taking into account both time and monetary restrictions as in Becker's (1965) model of time allocation. Therefore, we focus only on reading as a leisure activity because it is related with individuals' tastes and restrictions and not influenced by work requirements and can be considered as a genuine cultural activity.

Why do people spend their leisure time reading? In theory, many factors may influence this decision. First, some people have a "fondness" for reading, that is, ceteris paribus, it highlights their preferences or tastes. To simplify, we call this attitude "desire" to read. The desire to read is expected to depend largely on cultural factors, which are closely linked to educational attainment and other proximate factors, such as the cultural level of the environment (family, friends). Further, we will try to proxy these preferences using self-declared interest for different cultural activities as in Fernandez-Blanco et al (2009). It could be interesting to contrast whether there is a relationship between reading habits and the interest for different kinds of cultural activities (highbrow and popular).Second,

[1] There are also important externalities generated by literacy that have been studied repeatedly in the economy, for instance, Gibson (2001), Ferrer et al. (2006) or Boucekkine et al. (2007).

in addition to the preferences or desire, it is necessary for the individual to have access to literature. Thus, reading must be within the individual's budget constraint.

This "budget" constraint includes factors such as availability of time, income, book prices, and household cultural equipment or ease of access to libraries. The first two of these factors are related to the employment status of the reader and her family responsibilities. Access to libraries depends largely on the individual's place of residence, and access is more limited in rural or sparsely populated areas.

Following these arguments, in addition to examining the usual socioeconomic determinants of cultural consumption such as age, gender, and marital status, in this work, we emphasise the effect of cultural background on reading habits. Our framework follows the model of Stigler and Becker (1977), where the consumption decisions regarding a cultural good depend crucially on the individual appraisal ability. In turn, it depends upon a person's cultural capital, which includes training, social and family environment, her general attitude towards cultural consumption, the provision of relevant physical capital for consumption and prior experience and other cultural products that act as alternative or complementary goods. Unfortunately, because our dataset does not include longitudinal information, we cannot include past experiences in our empirical model.

Our work is organised as follows. First, we present a brief literature review. Second, we discuss the information and the available data in Section 3. We present the specification of our empirical model in Section 4. In Section 5, we discuss the results. Finally, our conclusions are provided in Section 6.

2. Literature review

The analysis of reading habits and their determinants is a well-established and common research area in the fields of Psychology, Sociology, Pedagogy, Literature, Education, and others. A vast international literature has established a general profile of people who

read for the purposes of both leisure and work and has identified the idiosyncratic characteristics corresponding to the various countries. The four volumes of the Handbook of Reading Research (1984, 1991, 2000, and 2010) provide an extensive overview of such studies. However, the Economics literature has paid little attention to reading habits as a consumption decision, especially with regard to reading for leisure, even though literacy has been a common factor in the analysis of economic development and growth, beginning with Blaug's (1966) classic contribution and continuing in more recent studies such as Gibson (2001); Ferrer *et al.* (2006); Boucekkine *et al.* (2007). Our paper analyses leisure reading habits under the consumer decision approach. Our approach not only considers the effects of the main socioeconomic characteristics that can be proxies of preferences, with particular attention given to the influence of the cultural capital and personal attitude towards culture, but also economic constraints, especially those linked to the opportunity cost of time.

This paper is therefore related to at least two major strands of literature. First is the literature that explores the consumption of cultural goods and that incorporates leisure into the consumers' decision process in a general framework of time allocation (Becker 1965). This literature gives special attention to the influence of cultural capital both as "an asset that embodies, stores or provides cultural value in addition to whatever economic value it may possess" (Throsby, 2001, p. 46) and as an intangible concept linked to the acquisition of cultural competence that is closer to the concepts of human capital in Becker (1964) and cultural consumption capital (Stigler and Becker, 1977) based on previous experiences and both specialised and general training. This literature concludes that the greater the cultural capital, the greater the enjoyment of the consumption of cultural goods.

The second strand of related literature analyses the determinants of reading habits. There is substantial international evidence pertaining to reading habits, and Canoy et al. (2006)

outline the major findings in this area with regard to reading books. They note that large differences exist among countries in the frequency of book reading for leisure. In Europe (Skaliotis, 2002), Sweden has the highest frequency, with 72% of the total population aged 15 years and older stating that they had read a book in the last 12 months. In contrast, Portugal has the lowest frequency at only 15%. The EU-15 average frequency is 63%, and in the USA, 57% of the population aged 18 years and older stated that they had read a book in the last 12 months (National Endowment for the Arts, 2007). In Australia, 78% of adult population reads for leisure (Towse, 2010). In terms of socio-demographic characteristics, it is common to find a positive correlation between age and reading (see Smith, 1996; Canoy et al, 2006; National Endowment for the Arts, 2007).

Guthrie and Greany (1991) provide a comprehensive survey of the previous research on the socioeconomic determinants of reading. They show that women read more than men; for instance, in Denmark, 36% of women aged over 15 years read for pleasure, whereas only 20% of men do. In Belgium, gender differences are the narrowest (15%-12%). Canoy et al. (2006) did some cross-country comparisons highlighting the presence of a positive influence between being female and reading. This positive influence was also found on reading skills by Chiu and McBride-Chang (2010). There are also gender differences in terms of the types of materials that are read: girls prefer books, whereas boys prefer comics (Greaney, 1980; Schrag and Strattman, 2009; Burgess and Jones, 2010).

The positive impact of the family environment in general and parental influence in particular on reading habits, especially among children and teenagers, has also been studied (Greany and Hegarthy, 1987; Stainthorp and Huges, 2000; Gil Flores, 2009). As Guthrie and Greany (1991, p. 85) established, the "amount of leisure reading is related to the existence of a positive home environment and in particular to the value place in reading in the home".

Regarding studies with an economic focus, some authors have investigated how other activities compete with reading in terms of leisure time allocation. These studies find that those individuals involved in a large number of alternative leisure activities devote less time to reading (Neuman, 1986). Further, summer holidays do not seem to increase reading (Hughes-Hassell and Rodge, 2007). Television seems to be the main substitute for reading (Koolstra and Van den Voort, 1996; Knulst and Kraaykamp, 1998), although in the USA, young readers combine reading with watching TV or listening to music. The Internet and new technologies are considered substitutes of reading among young people, especially in the case of video games (Johnsson-Smaragdi and Jonsson, 2006; Sax, 2007; Mokhtari et al., 2009). And even they are changing reading habits and procedure. As Loan (2012) has pointed out, the Internet surfing has increased non-sequential reading, interactive reading, superficial reading, and extensive reading and at the same rates is responsible for decreasing concentrated and in-depth reading.

Some international studies show that reading as a leisure habit has a positive effect on school reading skills and achievement and it increases with one's level of schooling (Anderson et al., 1988; Taylor, et al, 1990; Hughes-Hassell and Rodge, 2007). Furthermore, reading skills are correlated with high levels of financial and job success (National Endowment for the Arts, 2007) or the cultural equipment measured by the number of books at home and cultural possessions (Chiu and McBride-Chang, 2010).

Finally, there is a historically declining trend in time devoted to voluntary reading, as noted by Guthrie and Greaney (1991). This trend has not only been confirmed in the USA (National Endowment for the Arts, 2007), but also in other countries such as the Netherlands (Hughes-Hassell and Rodge, 2007). This trend can hamper civic, cultural and social life (National Endowment for the Arts, 2007).

3. Data: Survey on Cultural Habits and Practices in Spain 2010-2011

Our empirical analysis is based on Survey on Cultural Habits and Practices in Spain 2010-2011 (SCHP), which was established by the Spanish Ministry of Culture and conducted in Spain between March 2010 and February 2011. In each trimester of those years, a new random sample of people over the age of 15 was interviewed. We must emphasise two main advantages of this database. First, the set of represented persons covers the entire Spanish population aged over 15 years, and it is representative in terms of education level, economic activity, type of residence, and other factors. Therefore, this survey allows us to achieve an accurate description of the features that distinguish those who read as a leisure activity. The second advantage of the database is its size. We have information pertaining to over 16,000 individuals.

SCHP is an opinion survey that covers the most important fields of cultural consumption: performing arts; cultural industries, including attendance to cinemas as well as book and record purchases; and other leisure activities, such as artistic training and attendance at museums, art galleries, archives, libraries, monuments and natural parks. This survey combines this information with a set of socioeconomic characteristics for each subject, including age, level of educational attainment, marital status, family responsibilities and employment activity.

According to the general figures of this survey, reading is not really a quite frequent leisure activity. The survey asks people about the number of books read in the previous quarter and, as we can see on Table 1, 56.1% people have not read any book in this period and only 6.66% have read more than three books. On average, Spanish people read 1.33 books each quarter.

Table 1. Number of books read

Number of books	Frequency	Cumulative percentage
0	7,794	56.10
1	2,420	73.51
2	1,515	84.42
3	871	90.69
4	369	93.34
5 or more	925	100

Obviously, this is a left-censored distribution because this variable only can take non-negative integer values. Then, to analyse what factors determine the number of books read, we must use a count data model. Moreover, many people do not read at all, and, in these cases, we only observe zeros with no information regarding distaste for reading. And this information should be considered when selecting what type of count data model is going to be use, as we discuss in the next section.

4. Specification of the empirical model

To analyse the factors determining reading decisions, our dependent variable is the number of books read not related to work or study in a quarter. As we have said above, given the nature of this dependent variable, we propose the estimation of a count model. The Poisson and Binomial Negative Models (PRM and NBRM, respectively) are the more general among count models. However, as in our case, when the dependent variable has an overabundance of zeros, both models underestimate the actual frequency of zeros. In this case, Zero-Inflated models [Zero-Inflated Poisson (ZIP) and the Zero-Inflated Binomial Negative (ZINB) models] are more appropriate.

Both Zero-Inflated models assume the existence of two types of zero values in the data:

- Always Zero group. It includes those individuals who do not even contemplate the possibility of reading under any circumstances. For these people, the results would be zero with a probability one.

- Not Always Zero group. It includes those individuals may or not read, depending on the restrictions they face. These people have a positive probability of reading. In this case, a zero value would reveal a corner solution.

We will check what of these alternative models fit better our aims. But, previously, we need to say something about our independent variables. We can group them in four categories:

1. Socio-economic variables: age, gender, education, work status, marital status, familiar responsibilities, city size and regional controls
2. Cultural preferences. As Fernández-Blanco et al (2009) have pointed out, self-reported valuation of goods is an adequate proxy for underlying tastes. Then, we include a group of variables that measures the interviewee's self-reported interest in different cultural devices (and taking advantage museums, archaeological sites, cinema, theater, classical and popular music)
3. Cultural consumption. In this group we consider different leisure activities that can act as complementary or substitutive goods. We distinguish among domestic and non-domestic leisure activities. In the first group, we include TV and radio consumption during weekdays and weekends. In the second group, we include some activities that mean an active cultural participation (traditional visual arts, photo and video, musical activities, performing arts and arts courses) and a passive one (attendance to cinema, theatre, classical and popular music concerts, museums, monuments, expositions, consumption of music and video gaming).
4. Cultural capital. To control for this feature, we group all of the available information on domestic cultural equipment and we conduct a factorial analysis to construct a physical home equipment proxy.

This factorial analysis includes quantitative variables related to items such as books, CDs, MP3s, computers, Internet connection and others that are available at home and oriented toward cultural consumption. The results are displayed on Table 2.

Table 2. Home cultural equipment factorial analysis

	Eigenvalue	Proportion of Explained Variance
Factor 1	3.6019	0.7154
Factor 2	0.9756	0.1938

Variable	Weights in Factor 1
Radio	0.2206
Cassette	0.4894
Vinyl	0.4276
CD reader	0.6012
Walkman	0.4865
Mp3 reader	0.6073
Number of CDs	0.2627
Number of vinyl albums	0.3273
Number of MP3s	0.1389
Number of music instruments	0.3817
TV set	0.3604
Analogical video reader	0.4439
Digital video reader	0.3493
DVD or Blu-ray reader	0.5032
Other audio-visual equipment	0.3310
Photograph camera	0.3936
Photo and video camera	0.4576
Video camera	0.4474
Smart phone with video camera	0.5158
Number of VHS tapes	0.2920
Number of DVD and Blu-ray disks	0.3090
N	13894
Average Kaiser-Meyer-Olkin Measure	0.825
Bartlett test of sphericity (χ^2 with 210 d.o.f.)	51658.532
Cronbach's Alpha statistics	0.7942

We use the values obtained from the first factor to proxy the physical cultural capital. The coefficient for the first factor is positive and, consequently, the factor analysis predicts that this component of cultural capital is positively correlated with all variables that were a priori regarded as relevant. The eigenvalues of the first factor are 3.6019, and it explains 71.54% of the total variance.

We must bear in mind that those families with better cultural equipment are likely to be more interested in technology and cultural consumption, especially at home. Unfortunately, the dataset does not report any information on income; therefore, this variable may also capture an income effect. The descriptive statistics of the variables used in the regressions are presented in Table 3.

Table 3. Descriptive statistics

	Mean	Std. Dev.	Min.	Max.
DEPENDENT VARIABLE				
NUMBER OF BOOKS READ IN THE LAST QUARTER	1.3311	3.1697	0	50
INDEPENDENT VARIABLES				
AGE	43.6434	18.7719	12	98
FEMALE	0.5150	0.4998	0	1
TERTIARY EDUC	0.1723	0.3777	0	1
VOCATIONAL EDUC	0.1378	0.3447	0	1
SECUND EDUC	0.1378	0.3447	0	1
PRIMARY EDUC	0.3131	0.4638	0	1
LESS THAN PRIMARY ED.	0.2390	0.4265	0	1
FACT(CULT EQ)	1.3e-09	0.9142	-1.8252	9.8665
PROVINCE CAPITAL	0.4101	0.4919	0	1
CITY	0.0899	0.2860	0	1
TOWN	0.0970	0.2960	0	1
SMALL TOWN	0.2146	0.4106	0	1
VILLAGE	0.1883	0.3910	0	1
HOURS TV WORKINGD	2.6426	2.2617	0	23
HOURS TV WEEKEND	2.8873	2.1709	0	23
HOURS RADIO WORKINGD	1.7887	2.4481	0	23
HOURS RADIO WEEKEND	1.2674	1.8243	0	23
HOURS MUSIC WORKINGD	2.0959	2.7723	0	60
HOURS MUSIC WEEKEND	1.6650	2.2591	0	24
NUMBER TIMES MUSEUMS	0.3355	1.3093	0	60
NUMBER TIMES MONUMENTS	0.9654	3.8778	0	90
NUMBER TIMES EXPOSITIONS	0.3127	1.4696	0	60
NUMBER TIMES TEATRE	0.1463	0.7288	0	25
NUMBER TIMES CONCERT CLASIC MUSIC	0.0748	0.5692	0	20
NUMBER TIMES CONCERT POPULAR MUSIC	0.2611	1.1720	0	50
NUMBER TIMES CINEMA	1.1209	2.5221	0	48
VIDEO GAMING	0.5715	1.3753	0	5
TRAD VISUAL ARTS	0.1685	0.3743	0	1
PHOTO & VIDEO	0.2990	0.4579	0	1
MUSICAL ACTIVITIES	0.0910	0.2877	0	1
PERFORMING ARTS	0.0541	0.2261	0	1
ARTS COURSE	0.0679	0.2517	0	1
SELF EMPLOYED	0.0797	0.2708	0	1
EMPLOYEE	0.3829	0.4861	0	1
UNEMPLOYED	0.1270	0.3330	0	1
RETIRED	0.1899	0.3923	0	1
DISABLED	0.0061	0.0780	0	1
STUDENT	0.0972	0.2963	0	1
INDEPENDENT	0.1583	0.3650	0	1
MARRIED	0.6267	0.4837	0	1
HOUSE SIZE	3.1465	1.3228	1	20
NUMBER CHILDREN	0.2644	0.6118	0	7
INTEREST MUSEUM	4.7951	3.1539	0	10
INTEREST ARCHEOLOGICAL SITES	4.2173	3.1955	0	10
INTREST CINEMA	6.3033	2.8990	0	10
INTEREST THEATER	5.0750	3.1739	0	10
INTEREST CLASSICAL MUSIC	4.2667	3.3499	0	10
INTEREST POPULAR MUSIC	6.0918	3.1526	0	10

As we have noted above, the average number of books read is 1.33. With regard to the independent variables, 51.5% of the interviewees are women, 23.9% have less than a primary education, 41% live in a provincial capital and 18.83% live in villages with less than 10,001 inhabitants.

In terms of TV and radio consumption, the difference in average TV consumption during the weekdays and weekends and holidays is very small and much smaller than the difference in radio consumption. Watching TV, listening to music and going to the movies are the most relevant passive cultural activities. And photo and video is the preeminent active cultural activity. In terms of self-reported interest cinema and popular music are the most valuated cultural goods (they rank 6.30 and 6.09 up to 10, respectively). Finally, the cultural capital variable is a standardised prediction from the factorial analysis; thus, its mean is close to zero while its standard deviation is around one.

Due to the nature of our dependent variable (number of books read), we have decided to use a count model to estimate reading habits in Spain. But we have to choose between four different alternative models at least: the Posisson Regresion Model (PRM), the Negative Binomial Regression Model (NBRM), the Zero-Inflated Poisson Model (ZIP) and the Zero-Inflated Negative Binomial Model (ZINB).

According to the Bayesian Information Criteria (BIC), we have selected the ZINB model because it is very strongly preferred to any other alternative model (Table 4).

Table 4. Selection Models Criteria

PRM	**BIC=-78009.582**	**AIC= 3.897**	**Prefer**	**Over**	**Evidence**
vs ZINB	BIC=-93790.708	dif= 15781.126	ZINB	PRM	Very strong
	AIC= 2.725	dif= 1.172	ZINB	PRM	
NBRM	BIC=-93011.094	AIC= 2.817	Prefer	Over	Evidence
vs ZINB	BIC=-93790.708	dif= 779.614	ZINB	NBRM	Very strong
	AIC= 2.725	dif= 0.092	ZINB	NBRM	
ZIP	BIC=-85081.004	AIC= 3.353	Prefer	Over	Evidence
vs ZINB	BIC=-93790.708	dif= 8709.704	ZINB	ZIP	Very strong
	AIC= 2.725	dif= 0.627	ZINB	ZIP	

The ZINB distinguish two different data-generating processes: one that determines the probability of an individual never read (this person can be considered as a real non-reader), and another that determines the probability of an individual attending a positive number of times (some of the zeros are zero-corner solutions that have a non-zero probability of reading a book). Belonging to either of those groups is determined by a latent binary process (in our case, a logit model), and the behaviour of the zero-corner solutions and of the positive counts is ruled by a negative binomial process. The former binary process determines the inflation part of the model, and we estimate the effect of each of the covariates over the probability of being a non-reader. The latter count process is estimated to obtain the effect of each of the explanatory variables over the probability of reading a given number of books.[2] The explanatory variables that determine the probabilities in both parts are not necessarily the same. In our case, those variables that can approximate restrictions to reading in terms of income, time or cultural interest are included only in the inflation equation. We consider that these restrictions influence your decision of being a reader or not more than the intensity of reading that it is covered by the count equation. In the following section, we present the results of the estimated model.

5. Results

The estimation of the ZINB model is displayed on Table 5. In general, our results confirm those obtained in multiple international studies devoted to different cultural goods (see Seaman, 2006 and Escardíbul and Villarroya, 2009).

[2] For a complete description of the underlying behavioural assumptions of using a latent class model, see Ateca-Amestoy (2008) and Fernandez-Blanco, *et al.* (2009). Ateca-Amestoy (2008) further discusses the selection criteria among count data models: Poisson and negative binomial, and zero inflated and hurdle models.

Table 5. Zero inflated Negative binomial estimation

	Logit		Negative binomial eq	
	Coefficient	t stat	Coefficient	t stat
CONSTANT	2.8030***	4.830	-0.4497***	-2.626
AGE	-0.0384**	-2.074	0.0157**	2.404
AGE/100 SQUARED	0.0361**	2.074	-0.0059	-0.804
FEMALE	-0.7645***	-6.511	0.1381***	2.913
TERTIARY EDUC	-2.7491***	-8.047	0.4347***	3.930
VOCATIONAL EDUC	-1.5455***	-6.779	0.1183	1.030
SECUND EDUC	-1.4549***	-7.019	0.2291**	2.055
PRIMARY EDUC	-0.5986***	-4.262	-0.0444	-0.420
FACT(CULT EQ)	-0.4726***	-5.802	0.2110***	5.826
FACT(CULT EQ) SQUARED	0.0812***	3.709	-0.0239**	-1.972
PROVINCE CAPITAL	-0.2209	-1.459	0.1023	1.523
CITY	0.4008*	1.847	0.0843	0.816
TOWN	-0.1365	-0.632	0.1176	1.212
SMALL TOWN	0.2253	1.411	0.0517	0.707
HOURS TV WORKINGD	0.0896**	2.397	-0.0076	-0.430
HOURS TV WEEKEND	0.0588	1.467	-0.0170	-0.974
HOURS RADIO WORKINGD	-0.0259	-0.697	-0.0131	-1.007
HOURS RADIO WEEKEND	0.0445	0.984	0.0069	0.398
HOURS MUSIC WORKINGD	-0.0236	-0.712	-0.0107	-1.140
HOURS MUSIC WEEKEND	-0.0403	-0.844	0.0297**	2.352
NUMBER TIMES MUSEUMS	-0.9073***	-2.89	0.0286**	2.338
NUMBER TIMES MONUMENTS	-0.1032	-0.548	0.0089**	2.463
NUMBER TIMES EXPOSITIONS	-1.0169*	-1.818	0.0164	1.489
NUMBER TIMES TEATRE	-0.6229	-1.167	0.0135	0.835
NUMBER TIMES CONCERT CLASIC MUSIC	-0.3850	-0.569	0.0165	0.679
NUMBER TIMES CONCERT POPULAR MUSIC	-0.1164	-0.919	0.0041	0.416
NUMBER TIMES CINEMA	-0.1009	-1.509	0.0236***	3.598
VIDEO GAMING	0.0180	0.361	0.0412**	2.470
TRAD VISUAL ARTS	-0.4385**	-2.367	0.1210**	2.190
PHOTO & VIDEO	-0.5458***	-3.161	-0.0510	-1.061
MUSICAL ACTIVITIES	-0.2129	-0.889	0.1416**	2.146
PERFORMING ARTS	0.1393	0.433	0.0834	0.935
ARTS COURSE	-0.3182	-1.134	0.1902**	2.403
SELF EMPLOYED	-0.1146	-0.518		
EMPLOYEE	-0.1285	-0.754		
UNEMPLOYED	-0.5709***	-2.935		
RETIRED	-0.5136***	-3.035		
DISABLED	-0.4100	-0.773		
STUDENT	-0.7409**	-2.305		
INDEPENDENT	0.2152	1.019		
MARRIED	0.2230	1.139		
HOUSE SIZE	0.1145***	2.923		
NUMBER CHILDREN	-0.0458	-0.494		
INTEREST MUSEUM	-0.0961***	-4.301		
INTEREST ARCHEOLOGICAL SITES	-0.0564**	-2.542		
INTREST CINEMA	-0.0020	-0.091		
INTEREST THEATER	-0.1050***	-4.939		
INTEREST CLASSICAL MUSIC	-0.0705***	-3.723		
INTEREST POPULAR MUSIC	-0.0195	-1.008		
Alpha	1.1381***	23.34		
N	13894			
Zero obs	7794			
Wald chi2(51)	435.78			
Log likelihood	-18815.51			
Rest. Log likel.	-19167.67			
AIC	37865.02			
BIC	38747.11			

* p<0.10, ** p<0.05, *** p<0.01

We discuss first the estimated results from the inflation (logit) equation, which allows us to distinguish between real non-readers (Always Zero group) from those that have not read any book during the considered quarter (Not Always Zero group).[3]

The effect of age on the probability of being a real non-reader follows a U-shape, with a minimum at the age of 53. Then, non-readers are more frequent among the youngest and the oldest people. Related to cultural capital, measured through home cultural equipment, the probability of being a non-reader decreases with cultural capital, but following a decreasing trend. Women have lower probability of being a non-reader, and the same can be said for people living in a city over 100.000 inhabitants. As expected, it appears that people who live in cities read more than those residing in rural municipalities. Education has a positive, increasing and significant effect on reading: as expected, people with a university degree have the lowest probability of being a non-reader.

Time restrictions seem to be a very relevant factor to drive the probability of being a non-reader. There are several outcomes that reinforce this idea. First, unemployed, retired and student variables show significant negative coefficients: the weaker the relationship to labor (lower opportunity cost of time), the smaller the probability of being a non-reader. Second, house size, a variable that can be considered as a proxy of familiar responsibilities, increases the probability of being a non-reader. And third, the same effect is observed in the case of TV consumption on working days, those days when people has less time devoted to leisure activities, so the opportunity cost of reading is higher. We also confirm that television is the main substitute for reading (Neuman 1988; Koolstra and Van der Voort, 1996; Koolstra et al. 1997). However, no significant link is found regarding the time devoted to listen the radio or music even when these activities could be done simultaneously to reading.

[3] The sign of the coefficient shows us how an explanatory variable affects the probability of being an Always Zero individual. Then a positive sign means this variable has a positive influence on the probability of being a real non-reader.

Finally, we can pay attention to cultural covariates where we can find some remarkable outcomes. To proxy reading preferences, we include self-declared interest on some cultural activities. As expected, we only find one type of statistically significant effect: the higher the self-declared interest, the higher the probability of being a reader. However this is only true in the case of those cultural activities that we can link to highbrow culture (museums, archaeological site, theatre and classical music). This effect is reinforced with the positive influence of attendance to museums, expositions and traditional visual arts courses[4]. On the other hand, interest on cinema or popular music do not have any statistically significant influence on the likelihood of being a reader. This can be considered as empirical evidence of the existence of *watertight compartments* regarding reading habits and the interest for popular culture. We could argue that this situation is not entirely new. Traditionally popular culture was poorly linked to readings habits because most of the population was illiterate, i.e., there was a bound between these two areas that was binding for the largest part of the population. However, the situation now is similar, although most people are able to read, individuals with a high interest for popular culture activities do not have a significant different probability of being readers than those that do not care at all about cinema and/or popular music.

After analysing the probability of being a reader, we pay attention to the intensity of reading, measured by the number of books read. We start highlighting that there are some variables (city size and TV consumption) that only affect the decision of reading but not the intensity. The number of books read increases with age, following a linear path, and women read more books than men.[5] Education has a positive and statistically significant effect as seen in international studies pertaining to the performing arts consumption (see, for instance,

[4] Practising photo and video courses also affects positively the probability of being a reader.

[5] This result is in line with the findings of Guthrie and Greany (1991) on reading, Ringstad and Løyland (2006) for books demand, Kurabayashi and Ito (1992) and Prieto-Rodríguez and Fernandez-Blanco (2000) for the consumption of classical and popular music, Kane (2004) for high cultural goods, Ateca-Amestoy (2008) for theatre, and Ringstad and Løyland (2006) for books demand.

Seaman, 2006, or Ateca-Amestoy, 2008). And this effect is increasing: the coefficient of tertiary education is twice the corresponding to secondary education. And considering the size of all the coefficients involved in our estimation, tertiary education has the highest impact on the number of books read.[6] Moreover, cultural capital has a positive, but decreasing, effect like in the inflation equation. These positive effects of education and cultural equipment could be due to the existence of a positive income effect or to the effect of general training that was explicitly incorporated in the models of Stigler and Becker (1977) and Becker and Murphy (1988). Because no information was available on income, it is impossible to separate these effects. It is also interesting to note that the combined effect of education is significantly different in the two periods, even though differences are not significant for individuals with a primary education or vocational training.

Some cultural activities increase the number of books read, but now we cannot attribute this effect to some highbrow or lowbrow cultural commodities, because the positive effects come from a mix of both: consumption of music in general (not classical or popular), attendance to museums and monuments, but also to cinema and video gaming;[7] and attendance to traditional visual arts and arts courses, but also musical activities in general.

Finally we can pay some attention to some features that characterize non-readers. In fact, we consider age, gender and education characteristics (Table 6).

Table 6. Some characteristics of Always Zero Individuals.

	age<=25		25<age<=50		age<50		TOTAL	
	Male	Female	Male	Female	Male	Female	Male	Female
Less primary	56.65	39.87	69.08	53.62	78.23	65.01	73.55	61.10
Primary education	40.85	26.56	49.20	33.54	53.03	36.51	48.34	33.06
Vocational education	19.01	10.55	20.52	10.19	21.27	7.03	20.28	9.90
Secondary education	19.67	8.41	22.03	11.71	22.31	10.90	21.35	10.47
Tertiary education	4.09	2.12	4.00	1.82	4.41	1.84	4.12	1.87
Total	31.33	17.04	32.57	19.42	52.78	45.44	39.16	28.20

[6] We can say that people with a university degree read 0.43 books more per quarter than people with less than primary education (the category of reference). At first sight, this difference seems narrow. But this is not really true when we take into account than, on average, in Spain and individual reads 1.33 books per quarter.

[7] This outcome on video game contrast with other previous studies that have found video games as substitutes of reading (Johnsson-Smaragdi and Jonsson, 2006; Sax, 2007; Mokhtari et al., 2009).

The probability of being a non-reader increases with age and it is always higher for men than for woman and this difference is most important among younger cohorts of population. This gender effect is confirmed between all the educational levels. But, in any case, this Table confirms the strong influence of education on reading habits once again. Among people with less than primary education, 73.55% of males and 61.1% of females are non-readers. These percentages decrease as educational level increase. Then, only 4.12% on men and 1.87% of women are non-readers among people with a university degree.

6. Conclusions

In this paper, we study the determinants of reading as a leisure activity in Spain, with special emphasis on the role of "cultural capital," which has thus far received little attention in the empirical economic literature. Today, everyone has at her disposal a wide range of goods and services to satisfy her cultural demands. Reading is always a foundation of cultural consumption, both as an independent activity or as a necessary part of other activities. Our intention is not to approach reading as an indispensable instrument of professional activity or the educational process but as a leisure activity.

For the empirical analysis, we used the Survey on Cultural Habits and Practices in Spain 2010-2011 (SCHP), which provides information on number of books not related to study or professional activity read in a quarter. This Survey also provides data on a large number of socioeconomic variables that, in principle, can affect reading decisions.

Using these data, and due to the overabundance of zeros, we estimated a Zero-Inflated Negative Binomial (ZINB) model to analyse number of books read in a quarter. The first result that deserves to be highlighted is that the probability of being a non-reader is higher among men and among younger and older people. For younger people, leisure activities are increasingly visual in nature, and the traditional policies encouraging reading seem to be ineffective. In addition, older cohorts may not have been targeted by incentive

measures promoting reading. These cohorts are worthy of attention, especially because life expectancy is increasing and reading generates positive effects on leisure and maintaining cognitive capacities.

On the other hand, the probability of being a non-reader decreases with education and cultural capital. Moreover, these two factors also increase the number of books read, confirming the implications of Stigler and Becker's (1977) theoretical model. Interest in highbrow cultural activities encourages reading but this is not the case of interest in lowbrow cultural activities. In fact, we see that there is a significant difference in the link between reading habits and self-declared interest for highbrow and popular culture. In fact, we did not find any relevant connection between the interest for popular culture and reading (once other factors were taken into account).

Finally, our research confirms common findings from other studies on participation in and consumption of cultural goods, such as the relevance of time constraints as determinants of leisure reading and the presence of some urban/rural differences.

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