What do you prefer for a relaxing time at home: Reading, watching TV, or listening to the radio?

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Abstract

This paper studies the determinants of time spent by Spanish consumers on reading, watching TV, and listening to the radio. To that end, we estimate a SUR model with data from the Spanish Time Use Survey for 2009-2010. Our results show that being self-employed has a negative and significant effect on the time dedicated to reading and to watching TV, older individuals spend more time reading, and being male influences the time spent watching TV and listening to the radio, all in a statistically significant and positive way. Additionally, those with a higher level of education spend more time reading, while those with lower levels of education prefer to watch TV. Adults with better health spend less time on both reading and watching TV, and families with larger numbers of children up to age 5 tend to spend less time on all three of our at-home leisure activities. Finally, living in a larger city has a positive effect on the time dedicated to all three options.

Keywords: Reading, Watching TV, Listening to radio, Time uses, SUR model
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I.Introduction

Reading, watching TV, or listening to the radio are three leisure options for a relaxing time for any consumer at home. This paper studies the determinants of the time dedicated by Spanish consumers to these three activities. The literature has paid attention to the demand for specific leisure goods outside the home, but has largely overlooked the matter of the time, and its determinants, that consumers spend on cultural goods at home. We are particularly, but not solely, interested in the choices of wage earners and the self-employed between the three leisure goods. [1]

The study of leisure time is important, given that the kind of leisure resorted to or demanded can tell us something about the nature of society, and what kind of society we are promoting for the future (Paddick, 1982). Particularly, leisure time is important in the context of the conflict between family and work, in such a way that it has become a central life interest, and the values associated with leisure and family life affect attitudes towards work (Hantrais et al., 1984). Effectively, more recent empirical evidence for the cities of London and New York shows that leisure participation is related to an individual's gender and working status, to socioeconomic class, and to family environment (Stockdale et al., 1996). Thus, Craig and Mullan (2012) use time use data to compare leisure times at home in four countries with different maternal work-force participation (USA, Australia, Denmark, and France). Their results indicate that overall leisure time with children varies substantially between countries, but time in shared parent-child leisure, particularly outside the family home, does not. With respect to the family situation, Karsten et al. (2015) reveal that leisure time spent with the family cannot always be classified as leisure time, and the authors distinguish between leisure-caring time, with a high level of parental involvement, own leisure time, mainly directed at the parents' personal activities, and social leisure time, mainly directed at maintaining social relationships beyond the immediate family.

Thus, it is clear that leisure time can be divided between outdoor and indoor home activities, with a number of papers analyzing the former. Thus, Lenskyj (1988) has studied differences between men and women in sports and physical activities, concluding that women may be alienated by sporting activities that are rigidly circumscribed by the clock, the rulebook, and the win-at-all-costs mentality. In this

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[1] The possible conflict between work and family life has recently been analyzed in Molina (2015) and, particularly, for the case of Spain, in Giménez et al. (2012) and García et al. (2010).

context, Quarmby and Dagkas (2010) have shown that family structure plays a vital role as a determinant of participation in leisure time physical activity at the household level. Recently, Kamenik et al. (2015) examine rates of participation in various cultural events, outdoor recreation, and sports in Estonia, showing that important ethnic differences appear in these leisure activities.

Other outdoor leisure activities that come under the heading of cultural goods are, for example, the demand for theatre or cinema. Thus, Grisolía and Willis (2012), on the basis of a range of socio-economic and educational variables, identify three market segments for theatre demand in England: the "affluent class", the "popular class", and the "intellectual class". In Italy, Castilglione and Infante (2015) demonstrate that demand for the theatre is consistent with a model of rational addiction, showing that the model is applicable not only to harmful addictions, such as tobacco or alcohol, but also to "beneficial" addictions, such as theatre attendance. For the case of going to the cinema, Dewenter and Westermann (2005) use co-integration methods to find a long-run relationship between cinema attendance, real income, and prices. Another cultural good studied for the case of Spain is the *Fiestas* of Seville, by Palma et al. (2013), where the authors estimate a zero-truncated count data model using a dataset of attendees at the *Fiestas* in 2009, with one of their main findings being that, contrary to the majority of other cultural determinants, traditional socio-economic variables, such as education or income, do not appear to be significant in attendance at the *Fiestas*.

On the other hand, the recent study by Beck and Arnold (2009) shows that only about 15% of parents' time at home appears to be dedicated to leisure activities and, of that leisure time, nearly all is experienced indoors, with much of it in passive and often non-interactive contexts like watching TV. Despite this important result, the leisure literature has paid very little attention to the demand of time for specific indoor leisure goods, and no evidence reveals the differences between wage-earners and the self-employed.

Against this background, which shows that leisure time (the bulk of that being outdoor leisure time) has been analyzed in the context of certain family and labor variables, we specifically analyze the time that adults spend on three leisure activities in the home - reading, watching TV, and listening to the radio - differentiating between wage-earners (public and private) and the self-employed. We estimate a SUR model with data from the Spanish Time Use Survey for 2009-2010. Assuming that leisure consumption has positive effects on the individual, and on society as a whole, we

estimate a simultaneous model of time use that depends on demographic, educational, and family variables.

II. Data and variables

This study uses data from the Spanish Time Use Survey for the period from the fourth quarter of 2009 to the third quarter of 2010, inclusive. Those interviewed are all members of the family who are 10 years of age, or older. In the survey, each interviewee fills in a diary for a specific day of the week, indicating what activities were done during the course of the day in intervals of 10 minutes (144 intervals in total). Time-use surveys provide information on individual time use and are the instrument typically used to analyse the time-allocation decisions of individuals (Aguiar and Hurst, 2007; Giménez-Nadal and Sevilla, 2012). An extensive literature confirms the validity and reliability of data from diaries, and its advantages over other time use surveys based on simple questions, in which those being surveyed are asked to estimate the time dedicated to a certain activity on a "typical day", or during a "typical week"; for example, the hours that the respondent has worked the day or week before, etc. (Robinson and Godbey, 1999; Bianchi et al, 2006; Kalenkoski and Pabilonia, 2012).

Following prior time-use studies, and to minimize the role of time-allocation decisions with strong intertemporal components concerning life cycles, such as education and retirement, we restrict our sample to those individuals who are neither students, nor retired, and who are between the ages of 21 and 65 (inclusive), interpreting the results as being within the working age of each adult. [2]

For the variables that could influence whether more or less time is spent on these three activities, we use: age and age squared divided by 100 (Kalenkoski et al, 2005; Aguiar and Hurst, 2007; Gimenez-Nadal., et al 2011), in order to take into account the allocation of time to an activity over the whole life cycle. Gender is an important variable, in that free time preferences can differ, depending on whether the respondent is male or female (Gimenez-Nadal and Sevilla, 2012). We control for three levels of education: primary education, secondary education and university education. The level of education influences the distribution of time that individuals allocate to different activities (Kalenkoski et al., 2005).

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[2] Reading refers to time dedicated to the Reading of diaries, books, and others. Watching TV refers to time spent watching TV, DVDs and videos. Listening to radio refers to time dedicated to listening to radio or recordings.

We consider whether the individuals surveyed are living together as couple, since this may influence the time spent on the three activities. Studies such as Gimenez-Nadal and Molina (2015) show that an individual's good health can lead to the individual dedicating more time to market work and less time to other activities, such as leisure. We control for the state of health of the individuals (self-reported) with five levels (1=very good state of health...5=very poor state of health). The number of household members is also included. As to the number of children in the household, following Kalenkoski et al, (2005) and Gimenez-Nadal et al, (2011), we group them based on their ages in regard to schooling (Number of children from 0-2 years old, number of children from 3-5, number of children from 6-12, number of children from 13-17). We finally consider the size of the municipality where the respondent lives.

Table 1 first shows the descriptive statistics for the average time spent, on a daily basis, on reading, watching TV, and listening to the radio, along with the descriptive statistics for our socio-demographic variables: Column 1 displays the descriptive statistics for the self-employed, column 2 for wage-earners, and column 3 for the whole sample. With regard to time spent reading, we see that wage-earners (0.26 daily hours) spend more time than the self-employed (0.21 hours daily), and the same is true for watching TV (1.7 daily hours vs 1.66 daily hours). As for listening to the radio, both groups spend the same amount of time (0.03 daily hours). The average age of the self-employed and the wage-earners is 46.07 and 41.83 years, respectively (considering that our sample is restricted to individuals between the ages of 21 and 65). With respect to gender, 63% of the self-employed are male, while 51% of wage-earners are male. Concerning education levels, the primary level is the most common among the self-employed (50%), whereas the distribution is more uniform in the case of the wage-earners (36% primary level, 34% secondary level, and 30% university level). More than 70% of both groups live in couple. With respect to the state of health, the majority of the self-employed (61%) and the wage-earners (62%) report being in good health. With regard to household characteristics, there is an average of more than 3 inhabitants per household and the largest number of minors in the households is in the range between 6 and 12 years of age (0.34 for the self-employed and 0.7 for the wage-earners). Finally, the majority of the self-employed live in cities with more than 100,000 inhabitants and less than 10,000 inhabitants, 36% and 35%, respectively. With respect to wage-earners, 50% live in cities with more than 100,000 inhabitants.

(Table 1)

III. Methodology and empirical results

Hamermesh and Lee (2007) see time as a scarce commodity and point out that individuals must choose their activities after completing their daily obligations of market work and domestic production. In this study, individuals report their uses of time and, as in other time-use studies (Gimenez-Nadal and Molina, 2013), we estimate a SUR (seemingly unrelated regressions) model for the time spent reading, watching TV, and listening to the radio.

The statistical model is as follows: For an individual "i", T_{ri}, T_{wi} and T_{li}, represent the hours reported by the individuals that are spent on our three activities, X_i is a vector of the characteristics for the household and the individuals, and ε_{ri}, ε_{wi}, ε_{li} are the random variables that represent the factors not measured. Using this, we estimate the following three equations:

$$T_{ri} = \beta X_{i\ +}\ \varepsilon_{ri} \qquad (1)$$

$$T_{wi} = \beta X_{i\ +}\ \varepsilon_{wi} \qquad (2)$$

$$T_{li} = \beta X_{i\ +}\ \varepsilon_{li} \qquad (3)$$

Concerning the specification of the error terms for each individual, we permit the correlations in the unobserved determinants of the activities, and the error terms are normally distributed as a whole, without restrictions in the correlation. This specification shows the time limitation that leads individuals to spend more time on one activity and less time on another. We assume that the error components are independent among the individuals:

$$\begin{pmatrix} \varepsilon_{ri} \\ \varepsilon_{wi} \\ \varepsilon_{li} \end{pmatrix} \sim N \left(\begin{bmatrix} 0 \\ 0 \\ 0 \end{bmatrix} \begin{matrix} \sigma^2_{ri} & \rho_{riwi}\sigma_{ri}\sigma_{wi} & \rho_{rili}\sigma_{ri}\sigma_{li} \\ \rho_{wiri}\sigma_{wi}\sigma_{ri} & \sigma^2_{wi} & \rho_{wili}\sigma_{wi}\sigma_{li} \\ \rho_{liri}\sigma_{li}\sigma_{ri} & \rho_{liwi}\sigma_{li}\sigma_{wi} & \sigma^2_{li} \end{matrix} \right)$$

Table 2 shows the results of our estimations for the time dedicated to reading, watching TV, and listening to the radio, respectively. Being self/employed has a negative and significant effect on the time spent reading and watching TV. Age is a significant factor, affecting each activity differently. Older individuals, for example,

spend more time reading. Males spend more time than females watching TV and listening to the radio.

The level of education of the respondents has an influence on the time spent on reading and on watching TV. In particular, those with a higher level of education spend more time reading, while those with a lower level of education watch more TV. Thus, we can confirm that cultural time is strongly determined by the education level of the consumer. Living in couple shows a negative influence on the time spent reading and listening to the radio, whereas watching TV is positively influenced by that same factor. Health has a significant influence on the time spent reading and watching TV, in such a way that adults with better health spend less time on these two activities.

Not surprisingly, a larger number of children in the first two age groups (0 to 2 and 3 to 5) has a statistically significant negative influence on the time spent by individuals on all three of our variables, reading, watching TV, and listening to the radio, while a larger number of children between the ages of 6 and 12 in the household has a negative and statistically significant influence only on the time spent reading and watching TV. Thus, we can observe that the negative influence of children diminishes as the children grow older. With respect to the size of the city, we can observe significant and positive values for the larger municipalities (100,000 inhabitants), with respect to reading. Regarding watching TV and listening to the radio, living in a city with more than 20,000 inhabitants produces a positive and significant effect on these two activities.

(Table 2)

IV. Conclusions

We analyze here the time that adults spend on three different cultural activities at home, reading, watching TV, and listening to the radio. We estimate a SUR model with data from the Spanish Time Use Survey for 2009-2010.

Results indicate that being self-employed has a negative and significant effect on the time spent reading and on watching TV. We further establish that older individuals spend more time reading, that being male influences the time spent watching TV and listening to the radio, in a statistically significant and positive way, and that those who have a higher level of education spend more time reading, while those with a lower level of education watch more TV. Individuals with better health spend less time on

both reading and watching TV. A larger number of children up to age 5 has a statistically significant negative influence on the time spent reading, watching TV, and listening to the radio, although we can say that this effect diminishes as the children grow older. Finally, living in a larger city has a positive effect on the time dedicated to all three cultural options, reading, watching TV, and listening to the radio.

In the context of the general debate on leisure policies, some recommendations can be derived from our empirical results for the case of Spain. Thus, if individuals at home behave according to certain socio-demographic variables, policy makers may have an influence on the "beneficial" consumption of leisure goods by devising policy instruments to increase the at-home demand for such activities, perhaps by encouraging private contributions and opening a discussion about subsidies.

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Table 1. Descriptive statistics

Variables	Self-employee		Wage-earner		Total	
	Average	SD	Average	SD	Average	SD
Reading (daily hours)	0.21	(0.571)	0.26	(0.606)	0.25	(0.600)
Watching TV (daily hours)	1.66	(1.609)	1.70	(1.605)	1.69	(1.606)
Listening to radio (daily hours)	0.03	(0.292)	0.03	(0.222)	0.03	(0.237)
Age	46.07	(10.094)	41.83	(10.240)	42.66	(10.348)
Primary education	0.63	(0.483)	0.51	(0.500)	0.53	(0.499)
Secondary education	0.50	(0.500)	0.36	(0.481)	0.39	(0.488)
University education	0.32	(0.467)	0.34	(0.474)	0.34	(0.472)
Living as a couple	0.18	(0.382)	0.30	(0.457)	0.27	(0.446)
Very good health	0.79	(0.405)	0.73	(0.444)	0.74	(0.437)
Good health	0.23	(0.424)	0.27	(0.442)	0.26	(0.439)
Acceptable health	0.61	(0.489)	0.62	(0.485)	0.62	(0.486)
Poor health	0.13	(0.339)	0.09	(0.292)	0.10	(0.302)
Very poor health	0.02	(0.152)	0.01	(0.121)	0.02	(0.128)
N. household members	0.004	(0.066)	0.002	(0.042)	0.002	(0.048)
N. children 0-2	3.34	(1.241)	3.26	(1.207)	3.27	(1.214)
N. children 3-5	0.11	(0.343)	0.14	(0.378)	0.13	(0.372)
N. children 6-12	0.12	(0.353)	0.13	(0.368)	0.13	(0.366)
N. children 13-17	0.34	(0.628)	0.27	(0.549)	0.29	(0.565)
Municipality size 1	0.21	(0.483)	0.21	(0.477)	0.21	(0.478)
Municipality size 2	0.36	(0.479)	0.50	(0.500)	0.47	(0.499)
Municipality size 3	0.10	(0.299)	0.11	(0.319)	0.11	(0.315)
Municipality size 4	0.09	(0.289)	0.11	(0.310)	0.10	(0.306)
Municipality size 5	0.10	(0.302)	0.09	(0.283)	0.09	(0.287)
Observations	0.35	(0.477)	0.19	(0.392)	0.22	(0.415)
Reading (daily hours)	1611		6683		8294	

Note: Standard deviations in parenthesis. Data from the Spanish TUS 2009-2010. The sample is restricted to individuals between the ages of 21 and 65 (inclusive, and who are neither students nor retired). Municipality size 1 is equivalent to a municipality with a population greater than 100,000, municipality size 2 is equivalent to a municipality with a population between 50,000 and 100,000, municipality size 3 is equivalent to a municipality with a population between 20,000 and 50,000, municipality size 4 is equivalent to a municipality with a population between 10,000 and 20,000, and municipality size 5 is equivalent to a municipality with a population less than 10,000.

Table 2. Estimations of the SUR model

Variables	Reading (1)	Watching TV (2)	Listening to radio (3)
Self-employed worker	-0.0482***	-0.168***	0.00252
	(0.0166)	(0.0440)	(0.00680)
Age	0.00926*	-0.00789	-0.00270
	(0.00505)	(0.0134)	(0.00208)
Age squared	0.000630	0.0179	0.00289
	(0.00589)	(0.0156)	(0.00242)
Men	-0.00143	0.283***	0.0292***
	(0.0129)	(0.0342)	(0.00529)
Secondary education	0.107***	-0.211***	0.00390
	(0.0152)	(0.0405)	(0.00627)
University education	0.285***	-0.405***	0.0127*
	(0.0166)	(0.0441)	(0.00681)
Living as a couple	-0.0283*	0.201***	-0.0185***
	(0.0166)	(0.0440)	(0.00681)
Very good health	-0.353***	-0.877**	-0.0133
	(0.133)	(0.353)	(0.0546)
Good health	-0.360***	-0.840**	-0.0199
	(0.132)	(0.352)	(0.0545)
Acceptable health	-0.392***	-0.774**	-0.0110
	(0.134)	(0.355)	(0.0549)
Poor health	-0.416***	-0.452	-0.0203
	(0.141)	(0.374)	(0.0579)
N. household members	0.00737	-0.00494	-0.000359
	(0.00608)	(0.0162)	(0.00250)
N. children 0-2	-0.0822***	-0.222***	-0.0165**
	(0.0185)	(0.0492)	(0.00760)
N. children 3-5	-0.0505***	-0.215***	-0.0156**
	(0.0184)	(0.0490)	(0.00758)
N. children 6-12	-0.0222*	-0.149***	-0.00509
	(0.0129)	(0.0344)	(0.00532)
Municipality size 1	0.0636***	0.142***	0.0163**
	(0.0167)	(0.0444)	(0.00687)
Municipality size 2	0.000200	0.167***	0.0288***
	(0.0234)	(0.0622)	(0.00962)
Municipality size 3	0.0258	0.186***	0.0249**
	(0.0238)	(0.0634)	(0.00980)
Municipality size 4	-0.0255	-0.0123	0.00828
	(0.0250)	(0.0665)	(0.0103)
Intercept	0.198	3.051***	0.102
	(0.169)	(0.449)	(0.0695)
Observations	8,294	8,294	8,294

Note: Standard errors in parenthesis. Data from the Spanish TUS 2009-2010. The sample is restricted to individuals between the ages of 21 and 65 (inclusive, and who are neither students nor retired). Municipality size 1 is equivalent to a municipality with a population greater than 100,000, municipality size 2 is equivalent to a municipality with a population between 50,000 and 100,000, municipality size 3 is equivalent to a municipality with a population between 20,000 and 50,000, municipality size 4 is equivalent to a municipality with a population between 10,000 and 20,000, and municipality size 5 is equivalent to a municipality with a population less than 10,000. Sunday taken as a reference day. * Significant at 90%. ** Significant at 95%. *** Significant at 99%.