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# Time spent on cultural activities at home in Spain: Differences between wage-earners and the self-employed

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#### Abstract

We analyze differences between wage-earners and self-employees in the time spent on different cultural activities at home (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, 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 cultural 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, Wage-earners, Self-employees, Time uses, SUR model JEL Classification: D12, D13, J22

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# Introduction

The differences between wage earners and the self-employed have differential effects on their uses of time, at home and at work. In this paper, we are particularly interested in the cultural time of these two categories of work, and specifically in their choices between reading, watching TV, and listening to the radio.<sup>1</sup> The literature has paid some attention to the demand for specific cultural goods, but has overlooked the determinants of the uses of time for cultural activities at home and, particularly, to the differences between wage-earners and the self-employed.

Grisolía and Willis (2012), for example, use latent class models to identify, on the basis of a range of socio-economic and educational variables, 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.<sup>2</sup>

For the case of going to the cinema, Dewenter and Westermann (2005) apply econometric techniques to identify the inter-relationships, per capita, of movie-going in Germany, for the period 1950-2002, and, particularly, these authors 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 the main results 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*.

Specifically, we analyze the time that adults spend on three cultural activities at home (reading, watching TV, and listening to the radio), differentiating between wageearners (public and private) and the self-employed. We estimate a SUR model with data

<sup>&</sup>lt;sup>1</sup> The possible conflict between work and family life has been recently analyzed in Molina (2015) and, particularly, for the case of Spain in Giménez et al. (2012) and García et al. (2010).

<sup>&</sup>lt;sup>2</sup> The rational addiction model was initially developed by Becker and Murphy (1988) and later applied, in the case of Spain, to tobacco (Escario and Molina, 2000, 2001) and alcohol (Duarte and Molina, 2004).

from the Spanish Time Use Survey for 2009-2010.<sup>3</sup> Assuming that cultural consumption has positive effects on the consumer, and on society as a whole, we estimate a simultaneous model of time use which depends on demographic, educational, and family variables.

### **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 simple 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. This study focuses on differences between wage-earners and the self-employed, with respect to the daily athome time spent reading, watching TV, and listening to the radio.<sup>4</sup>

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

<sup>&</sup>lt;sup>3</sup> The SUR model has been used to describe the simultaneity of consumer goods (see, for example, for the case of Spain, Molina, 1994, for food; Molina, 1997, for transport goods; Molina, 1999, for leisure; Molina, 2002, for all consumer goods)

<sup>&</sup>lt;sup>4</sup> Reading refers to time dedicated to the Reading of diaries, books and others. Watching TV refers to time dedicate to watching TV, DVSs and videos. Listening to radio refers to time dedicated to listening to radio or recordings.

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, as in Campaña, et al (2015): primary education (less than a secondary school diploma), Secondary education (a secondary school diploma) and university education (more than a secondary school diploma). The level of education influences the distribution of time that individuals allocate to different activities (Kalenkoski et al., 2005; Guryan et al., 2008).

We consider whether the individuals surveyed are living together as couple (in contrast to those who do not live together as couples), 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 bad 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 also consider the size of the municipality where the respondent lives, with five classifications: municipality with a population greater than 100,000, municipality with a population between 50,000 and 100,000, municipality with a population between 20,000 and 50,000, municipality with a population between 10,000 and 20,000, and municipality with a population less than 10,000.

#### (Table 1)

Table 1 shows the descriptive statistics for the average time the respondents spent on a daily basis 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 displays the descriptive statistics for wage-earners, and column 3 displays the descriptive statistics 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 a couple. As for their 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 of between 6 and 12 years of age (0.34 for the self-employed and 0.7 for the wage-earners). Furthermore, the majority of the self-employed live in cities with more than 100,000 inhabitants, 36% and 35%, respectively. With respect to wage-earners, 50% live in cities with more than 100,000 inhabitants.

# Methodology

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 same simultaneous equation model is also used for estimating cultural goods in Dewenter and Westermann (2005).

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  $\varepsilon_{ri}$ ,  $\varepsilon_{wi}$ ,  $\varepsilon_{li}$  are the random variables that represent the factors not measured. Using this, we estimate the following three equations:

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

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

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

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:

$$\begin{pmatrix} \boldsymbol{\epsilon}_{r_i} \\ \boldsymbol{\epsilon}_{w_i} \\ \boldsymbol{\epsilon}_{l_i} \end{pmatrix} \sim N \begin{pmatrix} 0 & \boldsymbol{\sigma}_{r_i}^2 & \boldsymbol{\rho}_{riw_i}\boldsymbol{\sigma}_{r_i}\boldsymbol{\sigma}_{w_i} & \boldsymbol{\rho}_{ril_i}\boldsymbol{\sigma}_{r_i}\boldsymbol{\sigma}_{l_i} \\ \rho_{wiri}\boldsymbol{\sigma}_{w_i}\boldsymbol{\sigma}_{r_i} & \boldsymbol{\sigma}_{w_i}^2 & \boldsymbol{\rho}_{wil_i}\boldsymbol{\sigma}_{w_i}\boldsymbol{\sigma}_{l_i} \\ \rho_{liri}\boldsymbol{\sigma}_{l_i} & \boldsymbol{\sigma}_{r_i} & \boldsymbol{\rho}_{liw_i}\boldsymbol{\sigma}_{l_i} \boldsymbol{\sigma}_{w_i} & \boldsymbol{\sigma}_{l_i}^2 \end{pmatrix}$$

Columns 1, 2, and 3 of Table 2 show 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, as also shown by Diniz and Machado (2011), who studied artistic and cultural expenditures in Brazil. Living in a 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 chidren grow older. These results are in accord with those of Favaro and Frateschi (2007) in Italy, with respect to listening to music, where the presence of the youngest children at home is an inhibiting factor on the demand for all kinds of music. With respect to the size of the city, we can observe significant and positive values for the larger municipality (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)

# Conclusions

We analyze here the time that adults, differentiating between wage-earners (public and private) and the self-employed, 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 as 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 cultural policies, some recommendations can be derived from our empirical results for the case of Spain. Thus, if consumers at home behave according to certain socio-demographic variables, policy makers may have an influence on the "beneficial" consumption of cultural goods by devising policy instruments to increase the "at-home" demand for such activities, perhaps by encouraging private contributions and opening a discussion about cultural subsidies.

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	Self-employee		Wage-e	Wage-earner		Total	
Variables	Average	SD	Average	SD	Average	SD	
Reading (daily hours) Watching TV (daily	0.21	(0.571)	0.26	(0.606)	0.25	(0.600)	
hours) Listening to radio (daily	1.66	(1.609)	1.70	(1.605)	1.69	(1.606)	
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)	
Bad health	0.13	(0.339)	0.09	(0.292)	0.10	(0.302)	
Very bad 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)	16	11	60	583	82	.94	

#### Table 1 Descriptive Statistics

Note: Standard deviation 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). Primary education is equivalent to having less than a secondary school diploma. Secondary education is equivalent to having a secondary school diploma. University education is equivalent to having more than a secondary school diploma. 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 10,000 and 20,000, and municipality size 5 is equivalent to a municipality with a population less than 10,000.

	Reading	Watching TV	Listening to radio	
Variables	(1)	(2)	(3)	
Self-employed worker	-0.0482***	-0.168***	0.00252	
	(0.0166)	(0.0440)	(0.00680)	
Age	0.00926*	-0.00789	-0.00270	
C C	(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)	
Bad 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	

#### Table 2 Estimations of the SUR model

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). Primary education is equivalent to having less than a secondary school diploma. Secondary education is equivalent to having a secondary school diploma. University education is equivalent to having more than a secondary school diploma. 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 10,000 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%.

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