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Molina, Jose Alberto and Campaña, Juan Carlos and Ortega, Raquel

University of Zaragoza, Spain, University of Zaragoza, Spain,
University of Zaragoza, Spain

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Time dedicated by consumers to cultural goods: Determinants for Spain

José Alberto Molina*
University of Zaragoza, Spain
IZA, Germany

Juan Carlos Campaña
University of Zaragoza, Spain

Raquel Ortega
University of Zaragoza, Spain

Abstract

This paper analyzes the time that consumers dedicate to a range of cultural goods (cinema, theatre, museums, and spectator sports) by estimating a SUR model with information from the Spanish Time Use Survey for 2009-2010. Thus, we bridge the gap in the literature of consumption that has omitted the determinants of the time adults spend on cultural goods. Our main results indicate that age influences the time spent going to cinemas and art exhibitions/museums in different ways. Older individuals spend less time going to cinemas, while younger individuals are less frequent visitors to art galleries and museums, and men spend more time than women at sporting events. A university level of education influences the time dedicated to these four activities in a positive and statistically significant manner, and larger families positively influence the time dedicated to attending sporting events.

Keywords: Consumers, Cultural goods, Time use
JEL Classification: D12, Z11, J22

* Corresponding author. J.A. Molina. Email: jamolina@unizar.es. Telephone: 34 976 76 18 18. Fax: 34 976 76 19 96.
Web: <http://dae.unizar.es/jamolina/>

Introduction

In this paper, we analyze the determinants of the time that Spanish consumers spend on cultural goods (cinema, theatre, museums, and spectator sports). The literature on the demand for cultural goods includes the analysis of specifics, on the basis of a range of theoretical and empirical methodologies using monetary variables or data on attendance, but the literature has, perhaps surprisingly, not paid attention to the uses of time, and its determinants, that families dedicate to these cultural goods.

Getzner (2002) models the determinants of public cultural expenditure in Austria by estimating co/integration techniques. Castro (2006) develops a two-stage public goods experiment considering the “public good” nature of cultural expenditures. Diniz and Machado (2011) use a human capital approach to analyze the determinants of the consumption of cultural-artistic goods in Brazil, showing that these expenditures are strongly determined by income and, primarily, by the education level of the consumer. Katsuura (2012) applies a regime-switching model to family cultural expenditures in Japan, with the results showing that cultural expenditures fluctuate cyclically, with unstable leads and lags corresponding to business cycles.

Additionally, certain papers have studied specific cultural goods. Thus, for the case of music, Prieto-Rodríguez and Fernández-Blanco (2000) estimate a bivariate probit model to characterize the audiences for each popular and classical music in Spain, showing that different socio-demographic variables, such as age, education, and occupation have significant effects on the demand for these goods. Favaro and Frateschi (2007) evaluate the probability of choosing different musical genres in Italy, particularly, classical music, popular music, and all music, with age, gender, and education being important determinants of this decision.

For the theatre, Grisolia and Willis (2012) use latent class models to identify, on the basis of socio-economic and educational variables, three market segments for theatre demand in England> the first is the “affluent class”, the second is a “popular class” and the third is an “intellectual class”. Castilglione and Infante (2015) demonstrate that demand for theatre in Italy is consistent with a model of rational addiction, in this way 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 in Italy.¹

¹ 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).

For the case of the cinema, Dewenter and Westermann (2005) apply econometric techniques to identify interrelations with respect to the demand for movies per capita in Germany for the period 1950-2002, and, particularly, uses 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 was the *Fiestas* of Seville, in Palma et al. (2013), in which 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 great majority of other cultural determinants, traditional socio-economic variables, such as education or income, do not appear to be significant factors in attendance at the *Fiestas*.

Against this background, we analyze the time that consumers spend on a range of cultural goods by estimating a SUR model with information from the Spanish Time Use Survey for 2009-2010.² Assuming that cultural consumption has positive effects on the consumer, and on society as a whole, we estimate a simultaneous model of time use that depends on demographic, educational, and family variables, bridging in this way the gap in the literature of consumption that has omitted the determinants of the time that adults spend on cultural goods.

Data and Variables

We use data from the Spanish Time Use Survey from 2009-2010, specifically from the fourth quarter of 2009 to the third quarter of 2010, inclusive. Those interviewed are all familymembers 10 years of age or older. In these surveys, each individual interviewed fills in a diary for a specific day of the week, where he/she indicates 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 time use pr individual and are the typical instrument used to analyse time-allocation decisions (Aguiar and Hurst, 2007; Giménez-Nadal and Sevilla, 2012). Furthermore, 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

² The SUR model has been used to describe the simultaneity of consumption goods (see, for example, for the case of Spain, Molina, 1994, for food; Molina, 1997, for transport goods; Molina, 1999, for leisure; and Molina, 2002, for all consumer goods)

example, the hours that the person surveyed has worked the day or the 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 a strong intertemporal component 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. We focus on analysing the time dedicated by those surveyed to four principal activities: going to the cinema, going to theatres/concerts, going to art exhibits/museums, and going to sporting events.

For the variables that could influence whether those being surveyed dedicate more or less time to these four 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. The gender variable is important in that free time preferences vary with gender (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). 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 in couple, since this can influence the time dedicated to the four 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 leisure activities, so we control for the state of health of the individual (self-reported) with five levels (1=very good health, to 5=very poor health). The number of household members is also included. As to the number of minors in the household, such as in Kalenkoski et al (2005) and Gimenez-Nadal et al (2011), we group them based on their ages in regards 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 individuals interviewed live, with five classifications: municipality with a population greater than 100,000, municipality with a population of between 50,000 and 100,000, municipality with a population of between 20,000 and 50,000, municipality with a population of between 10,000 and 20,000, and municipality with a population of less than 10,000(Table 1)

Table 1 shows the descriptive statistics for the average time that those interviewed dedicated, on a weekly basis, to going to the cinema, theatres/concerts, art exhibits/museums, and sporting events, as well as the descriptive statistics for our socio-demographic variables; Column 1 for men, Column 2 for women, and Column 3 for the whole sample. With regard to time spent going to the cinema, we see that men and women dedicate the same amount of time (0.18 hours weekly). With respect to theatres/concerts, women spend more time on this activity (0.12 hours weekly) than do men (0.08 hours weekly). As for going to art exhibits/museums, both men and women dedicate the same amount of time (0.02 hours weekly) to this activity. Men dedicate more time going to sporting events (0.25 hours weekly) than do women (0.11 hours weekly). The average age for men and women is between 43 and 44 years (considering that our sample is restricted to individuals between the ages of 21 and 65). Concerning education levels, the majority of the individuals have had a primary education (48%) and live with a partner (74%). As for their state of health, the majority of the men (61%) and women (59%) 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 (0.27). Furthermore, the majority of men and women included in our study (46%) live in a municipality with a population of more than 100,000.

Methodology

Hamermesh and Lee (2007) argue that time is scarce and that individuals do not have sufficient time for the things they need, or wish, to do. Based on this, individuals must select their activities, after their daily obligations (market work and domestic production). Each individual in our sample reports four uses for time and, as in other time-use studies (Gimenez-Nadal and Molina, 2013), a SUR (seemingly unrelated regressions) model is estimated for the time individuals dedicate to going to: cinemas, theatres/concerts, art exhibits/museums, and sporting events (this simultaneous equation model is also used by Dewenter and Westermann, 2005).

The statistical model is as follows: For individual “ i ”, T_{ci} , T_{ti} , T_{ai} and T_{si} , represent the hours reported by the individuals that are dedicated to the cinema, theatres/concerts, art exhibits/museums, and sporting events, X_i is the vector of the characteristics of the household and of the individuals, and ε_{ci} , ε_{ti} , ε_{ai} , ε_{si} represent the

random variables for factors not measured. Thus, we estimate the following four equations.

$$T_{ci} = \beta X_i + \varepsilon_{ci} \quad (1)$$

$$T_{ti} = \beta X_i + \varepsilon_{ti} \quad (2)$$

$$T_{ai} = \beta X_i + \varepsilon_{ai} \quad (3)$$

$$T_{si} = \beta X_i + \varepsilon_{si} \quad (4)$$

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

$$\begin{pmatrix} \varepsilon_{ci} \\ \varepsilon_{ti} \\ \varepsilon_{ai} \\ \varepsilon_{si} \end{pmatrix} \sim N \left(\begin{pmatrix} 0 \\ 0 \\ 0 \\ 0 \end{pmatrix}, \begin{pmatrix} \sigma_{ci}^2 & \rho_{citi} \sigma_{ci} \sigma_{ti} & \rho_{ciai} \sigma_{ci} \sigma_{ai} & \rho_{cisi} \sigma_{ci} \sigma_{si} \\ \rho_{tici} \sigma_{ti} \sigma_{ci} & \sigma_{ti}^2 & \rho_{tiai} \sigma_{ti} \sigma_{ai} & \rho_{tisi} \sigma_{ti} \sigma_{si} \\ \rho_{aici} \sigma_{ai} \sigma_{ci} & \rho_{aiti} \sigma_{ai} \sigma_{ti} & \sigma_{ai}^2 & \rho_{aisi} \sigma_{ai} \sigma_{si} \\ \rho_{sici} \sigma_{si} \sigma_{ci} & \rho_{siti} \sigma_{si} \sigma_{ti} & \rho_{siai} \sigma_{si} \sigma_{ai} & \sigma_{si}^2 \end{pmatrix} \right)$$

Columns 1 to 4 of Table 2 show the results of our estimations for the time spent on each of our four cultural goods. As can be seen, age influences the time dedicated to cinemas and art exhibits/museums differently, such that older individuals spend less time per week at the cinema and more time at art exhibits/museums, than do younger individuals. Being male influences the time dedicated to sporting events in a statistically significant and positive way. Men dedicate more time to spectator sports than do women (Table 1). Thus, we do not detect, as do Prieto-Rodríguez and Fernández-Blanco (2000) for the case of music in Spain, statistical gender differences in the Spanish consumption of the majority of cultural goods, that is to say, cinema, theatre, and art exhibits/museums.

Having a university education influences the time dedicated to our four activities in a positive and statistically significant way as, again, in Prieto-Rodríguez and

Fernández-Blanco (2000) for the case of music in Spain. That is to say, university-educated individuals spend more time in the consumption of cultural goods than do those with a lower level of education. Thus, cultural time is strongly determined by the education level of the consumer, as also shown by Diniz and Machado (2011) for artistic and cultural expenditures in Brazil.

A larger number of household members positively influences the time spent attending sporting events. Taking into account the number of minors in the household, we observe that a larger number of minors between the ages of 0 and 2 has statistically significant negative influence on the time spent by individuals on going to cinemas, theatres, and sporting events, while a larger number of minors between the ages of 6 and 12 in the household influences the time spent at sporting events in a positive and statistically significant way. We can see that more minors in a household influences the time dedicated to different cultural goods differently, depending on the age bracket of the children. These results are in accordance with those of Favaro and Frateschi (2007) with respect to the music good in Italy, where the presence of the youngest children at home is an inhibiting factor in the demand for all kinds of music goods.

Conclusions

This paper analyzes the time that consumers spend on different cultural goods by estimating a SUR model, with information from the Spanish Time Use Survey for 2009-2010, in an attempt to bridge a gap in the literature of consumption of cultural goods.

Results indicate that age influences the time spent in going to cinemas and art exhibits/museums differently. Older individuals spend less time going to cinemas, and more time at art exhibits/museums, and men dedicate more time than do women to sporting events. The university education level influences the time dedicated to our four activities in a positive and statistically significant way, while a larger number of family members positively influences the time spent at spectator sports.

In the context of the general debate on cultural policies, certain recommendations can be derived from our empirical results for the case of Spain. If consumers respond to specific socio-demographic variables, policy makers may influence the “beneficial” attendance to cultural events by considering such factors when devising policy instruments designed to increase attendance, encouraging private contributions to these cultural goods and opening the discussion of cultural subsidies.

For example, it is clear that policy can particularly promote policies in order to encourage more *seniors* to go to the cinema. There is also a political dimension, given that consumers with a university education demonstrate a high level of positive response to cultural matters. Finally, it is clear that the size of the family does not limit attendance at sporting events, and perhaps policy-makers can find ways to facilitate the attendance of children at other kinds of cultural events.

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Table 1 Descriptive Statistics

Variables	Men		Women		Total	
	Average	DS	Average	DS	Average	DS
Cinema	0.18	(1.689)	0.18	(1.650)	0.18	(1.668)
Theatre	0.08	(1.240)	0.12	(1.489)	0.11	(1.382)
Exhibits	0.02	(0.501)	0.02	(0.468)	0.02	(0.483)
Sporting events	0.25	(2.259)	0.11	(1.328)	0.17	(1.811)
Age	43.34	(10.817)	44.10	(11.225)	43.76	(11.048)
Primary education	0.48	(0.499)	0.49	(0.500)	0.48	(0.500)
Secondary education	0.33	(0.469)	0.29	(0.452)	0.30	(0.460)
University education	0.20	(0.398)	0.22	(0.416)	0.21	(0.408)
Living as a couple	0.75	(0.436)	0.73	(0.442)	0.74	(0.439)
Very good health	0.24	(0.424)	0.22	(0.413)	0.23	(0.418)
Good health	0.61	(0.488)	0.59	(0.491)	0.60	(0.490)
Acceptable health	0.11	(0.316)	0.14	(0.343)	0.13	(0.331)
Bad health	0.04	(0.186)	0.04	(0.207)	0.04	(0.197)
Very bad health	0.01	(0.075)	0.01	(0.086)	0.01	(0.081)
N. household members	3.29	(1.253)	3.25	(1.270)	3.27	(1.263)
N. minors 0-2	0.13	(0.375)	0.13	(0.365)	0.13	(0.369)
N. minors 3-5	0.13	(0.361)	0.13	(0.359)	0.13	(0.360)
N. minors 6-12	0.27	(0.561)	0.27	(0.553)	0.27	(0.557)
N. minors 13-17	0.20	(0.468)	0.20	(0.466)	0.20	(0.467)
Municipality size 1	0.45	(0.498)	0.47	(0.499)	0.46	(0.498)
Municipality size 2	0.12	(0.324)	0.11	(0.318)	0.12	(0.321)
Municipality size 3	0.11	(0.309)	0.11	(0.316)	0.11	(0.313)
Municipality size 4	0.09	(0.290)	0.09	(0.289)	0.09	(0.290)
Municipality size 5	0.23	(0.422)	0.21	(0.409)	0.22	(0.415)
Observations	5624		6809		12433	

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, 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 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	Cinema	Theatre	Exhibits	Sporting Events
	(1)	(2)	(3)	(4)
Age	-0.0295*** (0.0110)	0.00196 (0.00912)	0.00562* (0.00319)	-0.0182 (0.0119)
Age squared	0.0306** (0.0125)	-0.00449 (0.0104)	-0.00567 (0.00364)	0.0164 (0.0136)
Men	0.0174 (0.0299)	-0.0361 (0.0249)	0.00221 (0.00872)	0.138*** (0.0325)
Secondary education	0.0842** (0.0358)	0.0443 (0.0298)	0.0204* (0.0104)	0.0475 (0.0388)
University education	0.290*** (0.0409)	0.107*** (0.0340)	0.0257** (0.0119)	0.103** (0.0444)
Living as a couple	-0.0234 (0.0381)	0.0107 (0.0317)	-0.000410 (0.0111)	0.00574 (0.0414)
Very good health	-0.00956 (0.186)	0.0853 (0.155)	0.0259 (0.0540)	-0.107 (0.201)
Good health	0.000938 (0.183)	0.0999 (0.153)	0.0172 (0.0534)	-0.129 (0.199)
Acceptable health	-0.0101 (0.187)	0.0669 (0.155)	0.0210 (0.0544)	-0.0918 (0.203)
Bad health	-0.0627 (0.196)	0.143 (0.163)	0.0409 (0.0571)	-0.115 (0.213)
N. household members	-0.0204 (0.0140)	-0.0112 (0.0117)	-0.00570 (0.00407)	0.0439*** (0.0152)
N. minors 0_2	-0.141*** (0.0438)	-0.0705* (0.0365)	-0.00267 (0.0128)	-0.154*** (0.0475)
N. minors 3_5	-0.00249 (0.0440)	0.0451 (0.0367)	-0.00418 (0.0128)	-0.118** (0.0478)
N. minors 6_12	-0.0493 (0.0308)	-0.00834 (0.0256)	-0.00812 (0.00896)	0.0961*** (0.0334)
Municipality size 1	0.0332 (0.0390)	0.0352 (0.0324)	0.0126 (0.0113)	0.0158 (0.0423)
Municipality size 2	-0.00740 (0.0540)	-0.0326 (0.0450)	0.0231 (0.0157)	-0.0183 (0.0586)
Municipality size 3	-0.0680 (0.0549)	0.0595 (0.0457)	-0.0114 (0.0160)	0.0694 (0.0596)
Municipality size 4	-0.0727 (0.0583)	0.0208 (0.0485)	-0.00564 (0.0170)	0.112* (0.0633)
Constant	0.950*** (0.294)	0.0565 (0.245)	-0.0872 (0.0857)	0.649** (0.319)
Observations	12,433	12,433	12,433	12,433
R-squared	0.014	0.005	0.004	0.015

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, 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 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%.