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ABSTRACT

In this paper we propose a method to analyse the differences between the consumption of modern and classical music, that we apply to Spain. Using the information contained in the Survey of Structure, Conscience and Biography of Class, we estimate a bivariate probit model to characterise the audience of each kind of music, we quantify the influence exerted by various socioeconomic features on the demands for these goods and we describe the average profile of their consumers. Besides, we test the independence on the consumption of these kinds of music is tested.

Key words: classical and modern music, audiences, consumer preferences, bivariate probit models.

INTRODUCTION

Studies related to audiences of performing arts in general, and classical music in particular, are very common in cultural economics and we can date their origins on Baumol and Bowen's seminal book published in 1966. However, this kind of study is quite uncommon in relation to modern music and papers that display in-depth comparisons between the audiences of both types of are scarce. Our paper deals with these aspects with reference to Spanish experiences. We begin by displaying the most important socioeconomic features of classical and modern music audiences. We then test the hypothesis of the presence of correlation between both audiences, that is to say, whether or not the fans of one type of music are interested in the other type.

To achieve this task we use a bivariate probit model. This model has an important advantage: it allows us to estimate simultaneously two equations that represent two decisions and to discover if there is a significant correlation between their random disturbances. In our case, therefore, we can identify the principal features of classical and modern music listeners, find if there are common characteristics and discover how similar they are. The data used to estimate this model comes from the Structure, Conscience and Biography of Class (ECBC-91). This survey combines information about individual consumption of cultural goods -including classical and modern music- with various social, demographic and economic variables of the interviewees.

MUSIC AUDIENCES: SOME INTERNATIONAL EXPERIENCES

In every market, knowing something about the profile of those who are potential consumers of a commodity is vital information for producers and also for public agencies that could participate in it. In this sense, culture is not different from any other market and, beginning with Baumol and Bowen's (1966) book, there are many papers that describe the principal

characteristics of performing arts audiences in different countries. We now present a brief outline of those studies that are concerned with classical and/or modern music audiences, which will provide a good point of reference with which to compare our results on Spanish audiences.

For presentational purposes, we group these international studies into two categories. Firstly, we review those papers based purely on classical music. Secondly, we focus our attention on studies that, with different levels of intensity, combine and compare classical and modern music audiences.

The first category begins with Baumol and Bowen's (1966) book. In a general analysis of performing arts, these authors describe the profile of attenders of classical music concerts and find that this audience is basically composed of middle-aged people (the average age is 39), professionals, managers and white collar workers, with high educational and income levels.[1] Throsby and Withers (1979) confirmed these general characteristics in American and Australian audiences, finding, moreover, that the former has a younger profile than the latter.

Abbé-Decarroux and Grin (1992) analyzed the audience of classical music in Switzerland. Their conclusions are, in general, in agreement with those obtained in Baumol and Bowen (1966) and Throsby and Withers (1979). We would like to remark that the methodology of our paper is quite similar to that used by Abbé-Decarroux and Grin (1992). These authors estimated a logit model that allowed them to calculate the effect of some important variables on classical music demand. With this technique they found that "in the case of opera and concerts the older the individual, the higher the likelihood of his attending this kind of performance" (Abbé-Decarroux and Grin, 1992, p. 138). They also detected the presence of positive and statistically significant relationships between concerts attendance and income, studies in music or drama and previous exposure to live arts. These last results can be considered a new qualitative advance in audience

behaviour, because they are an empirical test of the relevance of the learning process in the consumption of classical music.

As we have noted, there are other studies which analyse classical and modern music consumers simultaneously. Towse (1994) studies the effects of employment and qualifications, the latter being a variable that the author uses as a proxy of the social class. She verifies that professionals, managers and administrators (which she associates with upper and/or middle class) are especially attracted by classical music, while skilled and unskilled workers, pensioners, unemployed and widows (lower middle and lower class) are attracted by modern or popular music (rock, folk, country, western, reggae).

O'Hagan (1996) looks at the influence of educational level on music concert attendance and on the TV audience of music in the USA and Ireland.[2] In the USA he finds, again, that real attendance, desired attendance and TV audience grow with educational level. The analysis of the Irish case is more complex. The author defines three categories. First, "Hiart" which includes concerts, opera, plays and musicals; second, "Trad", including traditional folk dance/music and country and western music; and third, "Pop" which refers to film and rock/pop/jazz music. O'Hagan's main results are, firstly that "Pop" is the category most attractive in terms of attendance at events and in terms of TV audience; secondly, he finds that educational level has a positive effect on consumption of every cultural commodity; and thirdly, that this effect is higher on "Hiart", where classical music is incorporated.[3]

Finally, we refer Kurabayashi and Ito's (1992) contribution in which we can find an attempt to address an issue similar the one that adds interest to our paper: to check if classical music and modern music audiences are really different. These authors describe some important socioeconomic characteristics of audiences of symphony concerts in Tokyo and in Japan

generally. They conclude that, in Tokyo, "the centre of gravity of the demographic structure of the orchestra audiences, as a general rule, has gradually shifted in the past decade towards those who are aged 40 and over" (Kurabayashi and Ito, 1992, p.280). They find that there is something of a prevalence of people with high-income levels that are professional and manager workers. So, Kurabayashi and Ito say that, in the case of Tokyo "the audiences (...) belong to occupations which constitute the highest social stratum" (Kurabayashi and Ito, 1992, p. 281), although the presence of students is also notable.

The authors try to discover who are the audiences and if there are correlations among classical music, Japanese popular melodies, popular music of traditional type (jazz, swing, folk, country, western,...) and popular music in the modern fashion (blues, rock and roll, soul music, "pop" songs, etc.). They find that the popular music audience is basically made up of teenage and younger adult groups, whereas classical and Japanese music audiences belong to older age groups. There are also significant differences revealed when they consider people's occupation: manual workers and proprietors are more interested in Japanese music while administrative and professional workers tend towards classical and light music. The authors connect these differences with the presence of a process of taste formation: "the different tastes (...) might be explained by the difference in academic attainment and cultural background, when we recognise that those who belong to administrative and professional occupations have higher academic achievement and/or are strongly influenced by their intellectual or cultural heritage" (Kurabayashi and Ito, 1992, p. 279).

Finally, Kurabayashi and Ito try to discover the correlation of preference between types of music and they find a negative correlation between the two groupings of popular music and Japanese music, for both sexes, and classical music for males.

We now analyse the presence of such correlation between classical and modern music audiences in Spain. We begin by discussing our data source and the principal figures of music audience in our country.

THE STRUCTURE, CONSCIENCE AND CLASS BIOGRAPHY SURVEY AND THE MUSIC AUDIENCE IN SPAIN.

In this Section we offer the general figures of classic and modern music audition in Spain, using the information given by the Structure, Conscience and Class Biography Survey (ECBC-91).

The ECBC-91 was conducted between December of 1990 and March of 1991 using a sample of 6632 people over eighteen years old. It is the only source that combines cultural and socioeconomic variables for the Spanish economy and it has two differentiated parts. The first group of questions gives us information about socioeconomic characteristics of the individuals such as age, marital status, level of studies, family income and labour experience. The second part is an opinion survey on different topics including usage and habits of leisure time, cultural goods consumption and audience of classic and modern music.[4]

Although at the time we did this paper the ECBC was the only published source that includes cultural and socioeconomic variables for the Spanish economy, it has some important deficiencies, especially in the case of music audiences. First, it considers listening to music but it does not make a distinction between the different ways of listening to music and we cannot make an isolated study of the attendance at live musical events. Second, it does not define the concept of modern music, so we can not distinguish between pop, rock, jazz or popular (traditional) music. However, this Survey has an important advantage therefore: it allows us to combine these

two parts and to identify the main socioeconomic characteristics relevant to the demand for these goods.

Table I

CLASSICAL AND MODERN MUSIC AUDITION IN SPAIN

(Percentages)

	Listening to Classical Music	Listening to Modern Music
Never	38.2	20.9
Annually	21.1	13.4
Monthly	15.9	15.6
Weekly	14.1	20.8
Daily	8.8	27.7
Others[a]	1.8	1.6
TOTAL	100	100

Source: ECBC-91
[a] In this category we include people that do not answer or do so erroneously

In the ECBC-91 survey each individual is asked how often he or she listens to modern and classical music. The interviewee could choose among five alternative answers: never, annually, monthly, weekly or daily. Table I shows the frequencies of listening to music in Spain, and we can observer clear differences: 40% of the interviewees say that they never listen to classical music, but this percentage falls to 21% in the case of modern music. On the opposite side, about 10% of the interviewees say that they listen to classical music daily, while the percentage corresponding to modern music adds up to approximately 50%. If we define as fans those people who listen to music at least once a week, we can say that about a half of the interviewees can be considered modern music followers and that only a quarter of them are classical music fans.

Next, we present the most important characteristics of these two types of fans and analyse whether these two groups are different or whether people who are fans of one kind of music also listen the other kind. Prior to this, however, we present a theoretical model that enables us to understand the behaviour of cultural consumers, the empirical specification of the model, and the variables that can be included in it.

LISTENING TO MUSIC: THEORETICAL APPROACH AND EMPIRICAL SPECIFICATION.

To describe the behaviour of the music listeners we follow the Lévy-Garboua and Montmarquette (1996) model that describes theatre demand in a learning-by-consuming process, based on previous consumption experiences, including pleasant and unpleasant surprises in these experiences. Since we only have a cross-section survey we can not use this dynamic formulation of the model. However, Lévy-Garboua and Montmarquette (1996) also include a static formulation, without a learning process, where the accumulated experience remains constant.

...

In accordance with this model the consumption of a cultural good, in general, depends on its marginal utility, its price, the marginal utility of income and on the subjective valuation of this good. This subjective value can be approximated by individual characteristics such as sex, age, studies or family responsibilities in the static framework.

In this, and in a more general, context, where the individual chooses between consuming ($y_i = 1$) or not consuming ($y_i = 0$), the good i consumption probability can be estimated by a probit model of the form:

$$Pr(y_i = 1) = Prob(u > - \beta x) \qquad [1]$$

where β is the vector of parameters to be estimated, x is a column vector of explanatory variables and u is a random disturbance that follows a normal distribution.

Given our interest in analysing the profiles of people who listen to classical and modern music at least once a week and the relationship among them, that is, whether or not these people define two independent sets or if there is a significant correlation between both groups, the empirical model to be. estimated is a bivariate probit. This model allows us to analyse the determinants of the probability of listening to each of these types of music and the relationship between both probabilities. The bivariate probit is a natural extension of the probit model that includes two equations with correlated disturbances (Greene, 1997, p. 906) whose general specification is:

$$y_1^* = \beta_1' x_1 + u_1 \qquad\qquad [2]$$

$$y_2^* = \beta_2' x_2 + u_2 \qquad\qquad [3]$$

where y_i^* are unobserved preferences and u_1 and u_2 follow a bivariate normal distribution with zero means, variances equal one. If these disturbances are not linearly independent, their correlation coefficient will be denoted by ρ. This parameter allows us to test the correlation between the two types of music audiences. If ρ is equal to zero, these two equations are independent and they could be estimated by two independent probits equations and, then, we can conclude that classical music fans are different from modern music fans.[5]

The dependent variables of the equations [2] and [3] of this bivariate probit model are being fond of modern music and classical music respectively. For music of type i (i = classical, modern) the structure of answers that we can observe in the Survey (y_i), and their relationship with the unobserved preferences (y_i^*), is:

y_i = daily, weekly = 1   if $y*_i > 0$

y_i = never, annually, monthly = 0   if $y*_i \# 0$

The vectors of explanatory variables (x_1 and x_2) are composed of socioeconomic characteristics that could explain the formation of the individual's musical tastes and the availability of time to listen to music that may affect the subjective valuation and the utility function. We can group these variables into the following categories:

- Personal characteristics: includes sex, age, education and marital status.

- Familiar responsibilities: includes number of children under fourteen years and number of weekly hours dedicated to household tasks.

- Geographical variables: city size and region of residence of the interviewee.

- Relationship with economic activity: five fictitious variables that represent being employee, student, housewife unemployed and retired, respectively.

- Occupational variables: with this group of variables we try to approximate the income effect which is also approximated by a group of three fictitious variables that pick up the presence of other kinds of income different from labour income.[6]

Since the effect of age changes with the type of activity, as we have tested in previous versions of this model, equations [2] and [3] include interaction terms between the dummy variables of relationship with the activity and the difference between the age and average age of each group. These terms of interaction were denominated HOWIAGE, EMPAGE, UNEMPAGE, RETAGE and STUDAGE respectively.[7]

This form of defining the interaction terms is not arbitrary since we want the coefficients of the dummy variables of relationship with the activity to be interpreted directly. When defining these interaction terms, if no additional correction is made, the coefficients of the dummy variables will pick up the specific effects of belonging to each group evaluated at the age of reference, which will then be zero years. That is, if STUDAGE is defined as the product of STUDENT for AGE, the coefficient of the variable STUDENT will pick up the effect of being a student and a new-born simultaneously, which has no sense. However, if we subtract the mean age of the students from the variable AGE when we define the interaction term STUDAGE, the coefficient of STUDENT will pick up the effect of being a student, evaluating this effect when they are 21.63 years old, which is the average age of the students of our sample. Hence, we could interpret this coefficient as the specific effect of being an average student. On the other hand, the estimated coefficient for the interaction term STUDAGE will be the same in both cases and will pick up the effect of time on the probability of being a fan of modern music and of classical music when the interviewees are students.

All these variables are precisely defined in the Appendix.

EMPIRICAL RESULTS

The results of the bivariate probit model estimation for classical and modern music audiences are shown in Table II.

Table II

Bivariate Probit Estimation

Independent Variable	Modern Music		Classic Music	
	Estimated β	t-student	Estimated β	t-student
CONSTANT	-0,8027	-4,489	-1,6747	-8,142
WOMAN	0,0374	0,685	0,0451	0,786
PRIMARY	0,3434	4,573	0,4612	4,546
HIGH SCHOOL	0,4463	4,892	0,5749	5,034
UNIVERSITY	0,4444	4,186	0,7383	5,739
TSTUDFA	****	****	0,0142	2,407
TSTUDMA	****	****	0,0251	3,598
SINGLE	-0,0134	-0,095	0,0611	0,396
MARRIED	-0,0333	-0,263	0,1436	1,054
DIVORCED	0,0994	0,487	0,5147	2,279
N14	-0,0869	-3,245	.-0,0780	-2,310
TIMEHOME	0,0037	3,380	0,0017	1,504
CITY SIZE	0,0000	0,034	0,0000	0,706
ANDALUZ	-0,2508	-2,724	-0,2172	-2,176
ARAGON	-0,2421	-1,909	-0,2017	-1,499
ASTUR	-0,1050	-0,692	-0,2729	-1,651
BALEAR	0,3320	2,026	-0,4141	-2,034
CANAR	-0,1656	-1,346	-0,4716	-3,080
CANTA	0,0782	0,382	-0,1043	-0,527
CASTMA	0,2201	1,778	0,1004	0,742
CASTLE	-0,2324	-2,109	-0,3823	-3,030
CATALAN	-0,1196	-1,322	-0,0922	-0,984
VALEN	-0,2512	-2,557	0,0086	0,084
EXTRE	-0,1774	-1,243	-0,8902	-4,096
GALICIA	-0,2726	-2,393	-0,4757	-3,711
MURCIA	0,0310	0,213	-0,0106	-0,071
NAVARRA	-0,2267	-0,741	-0,2897	-0,952
EUSKADI	-0,0774	-0,670	-0,1696	-1,416
RIOJA	-0,4030	-1,825	-0,2954	-1,263
HIWHITEC	-0,0523	-0,604	0,3082	3,325
MWHITEC	-0,0154	-0,148	0,3368	3,202
CLERICAL	0,1105	1,385	0,2896	3,427
SERVWORK	0,0239	0,338	0,1254	1,593
SKILLEDM	-0,0406	-0,677	-0,0193	-0,271
EMPLOYEE	0,5091	7,236	-0,0646	-0,852
UNEMPLOYED	0,8355	8,917	-0,1111	-1,071
RETIRED	-0,4251	-4,196	0,0736	0,703
STUDENT	1,4270	10,943	-0,0656	-0,507
HOWIAGE	-0,0376	-10,699	-0,0089	-2,160
EMPAGE	-0,0506	-18,203	0,0032	1,062
UNEMPAGE	-0,0655	-8,542	-0,0036	-0,503
RETAGE	-0,0288	-2,917	-0,0048	-0,435
STUDAGE	-0,0730	-2,454	0,0644	2,206
RKI	0,0995	0,930	0,3010	2,775
RKM	0,1042	0,934	0,0514	0,480
RSS	0,0266	0,568	0,0715	1,349
ρ	0,4880	19,570		
N	5387			
χ²	6774.98			

The log likelihood ratio endorses the goodness of the estimation. Under the null

hypothesis that all the coefficients of the model are zero, two times the difference between the

log-likelihood unrestricted and restricted values follows a χ^2 distribution. However, its value is 6774.98 in our case, which exceeds the critical point of this distribution with 91 degrees of freedom. Hence, the alternative hypothesis can not be rejected.

Moreover, the coefficient ρ, which shows the correlation between the estimation errors corresponding to each group, is 0.488 and we can reject the hypothesis that ρ equals zero. That it is to say that we can reject the hypothesis that classical music fans and modern music fans belong to independent groups. Controlling for the effect of socioeconomic characteristics of the interviewees (sex, education, familiar responsibilities, relationship with economic activity, etc.), we can conclude that both groups have a common background that we can identify with the presence an "innate" taste for music that allows us to believe that, if you are a music fan, you listen to both classical and modern music. This conclusion gives us more robust – and partially conflicting - evidence than the findings by Kurabayashi and Ito (1992), although they have used a correlation analysis.

We now discuss the particular effect of each socioeconomic variable on each audience group.

We do not notice different **gender** behaviour between classical music or modern music audiences. As could be expected, however, the **educational level** has a positive and increasing effect on both types of music. Moreover, the analysis of the coefficients of the corresponding variables reveals that this effect is higher on classical music. Here we have evidence of the importance of education in the process of acquisition of musical tastes, especially in the case of classical music. This evidence is reinforced when we add the impact of those variables which reflect the educational level of the interviewee's parents (TSTUDFA and TSTUDMA). These variables, which can be interpreted as proxies of cultural environment and heritage, have

positive and statistically significant coefficients in the classical music equation. We conclude therefore that the taste for this type of music is reinforced when the interviewee has grown in a high cultural environment.

In general terms, we cannot find a significant influence of **marital status** on music consumption. However, other variables that reflect **familiar responsibilities** have a valuable influence. On one hand the coefficient of the variable N14 has a negative sign, so the presence of children under 14 discourages listening to both types of music. On the other hand, the variable TIMEHOME, which represents time spent in household tasks, has a positive influence, though in the case of classical music it is only significant at a confidence level of 87%. These phenomena could be explained by considering that listening to music and doing household tasks are not incompatible; it is more probable that the former accompanies the latter, especially in the case of modern music whose listening requires less attention or concentration.

Geographic variables show that there is a group of regions with a lower music liking than Madrid, which is the reference region. Some less-developed regions, like Andalucia, Castilla y León and Galicia, have a negative and statistically significant coefficient for both types of music. In the case of classical music, Extremadura is in the same situation. The importance of all these geographic variables has been verified applying a joint significance test, rejecting the null hypothesis of all coefficients on these variables being zero.[8] Therefore, we should conclude that there are important regional differences that can not be neglected.

As we have pointed out earlier, **relationship with the economic activity** has been placed in interaction with **age** because we have detected that behaviour is very sensitive to age but that the age effect is not homogeneous between groups.[9] We have included four dummy

variables representing four different situations: employee, unemployed, retired and student. The category of reference is being a housewife. We have also included five interaction terms defined by the variables HOWIAGE, EMPAGE, UNEMPAGE, RETAGE and STUDAGE.[10]

In the case of modern music, all the categories, except retired, show positive and statistically significant coefficients. This implies that, when evaluated at the average age of each group, all the categories listen to more modern music than housewives do, except retired. Moreover, age a negative and significant effect has for all the categories. However, the strength of this effect is not homogeneous, being higher for students, the unemployed and employees. Nevertheless, we can conclude that young people listen more to modern music, whatever their relationship with economic activity.

The outcomes corresponding to classical music are less uniform. First, all dummy variables are not statistically significant so we cannot immediately identify significantly different behaviour among these categories and the housewives, evaluated at the average age of each group. However, when we incorporate the age interaction terms, some important changes occur. The housewife variable (HOWIAGE) has a negative and statistically significant coefficient, while the one corresponding to the student variable (STUDAGE) is also significant, but with a positive sign. These results show us that housewives listen to more classical music when they are young (the younger they are the more classical music they listen to). Among students, we have the opposite result: the older they are the more classical music they listen to. In the other categories, we cannot find significant changes.

In our model we also include dummy variables that try to capture the **occupational level**. These variables are defined taking into account the present occupation of people who are occupied or the highest level attained by those that have been occupied previously. These

variables could be reflecting various effects. On the one hand, they could measure a certain kind of income or social class effect, because is quite common to assume that people with a highly qualified labour status probably belong to the upper class and earn high incomes (Towse, 1994). On the other hand, these variables could be considered as proxies of the process of acquisition of taste a process that is also approximated by educational level of the interviewee and/or his (her) parents.

The occupation variables have a different influence with respect to both types of music.[11] In the case of modern music these variables are not statistically significant, so occupation does not influence on modern music audiences. Hence we cannot observe the presence of an income effect (or a social class effect). The situation is quite different in classical music. Here, the coefficients of the most qualified labour categories are positive and significant: people who belong to these are more interested in this music and, consequently, we are able to detect a positive income (or social class) effect. If we add the results corresponding to variables representing the educational level of the interviewee and his (her) parents, we conclude that cultural environment and heritage and the acquisition of taste have a positive and significant influence on classical music listening. We do not find the same result in the case of modern music.

The presence of an income effect could be reinforced by the presence of variables that include **non-labour earnings**. In general terms, these variables do not add any information, because they are not statistically significant, except one case in classical music where we observe that people with earnings coming from landed property are more interested in classical music. Hence, it is not strange that the likelihood ratio test shows that these variables are jointly significant only at a 10% level.[12]

CONCLUSIONS

In this paper we analyse the differences between the consumption of two types of music, modern and classic music, in Spain and we quantify the influence exercised by diverse socioeconomic features on the demands of these goods. In this way, we will describe the average profile of their consumers. Our theoretical framework is a model where individual consumption of both types of music depends on socioeconomic characteristics.

To carry out this task we have used the information contained in the Survey of Structure, Conscience and Biography of Class (ECBC-91). This survey offers individual data on the audition of classical and modern music, which are the activities under investigation.

We analyse the relationship between these two types of music listeners, using a bivariate probit model. We have tested the presence of a positive and statistically significant correlation between classical music and modern music listeners. So we can identify the presence of a common background between both groups that can be associated with the presence of an "innate" taste for music.

Our empirical work also allows us to reveal out the most important characteristics of both types of audiences. We cannot detect gender and marital status influences on classical or modern music listeners' behaviour. However, as could be expected, educational status has a positive and increasing effect and we also see that cultural environment and heritage and the acquisition of taste have a positive and significant effect on classical music listening, but not in modern music one.

Finally, we study the influence of the relationship with economic activity. First, we test whether this influence is conditioned by the age variable. Retired and housewives are less interested in modern music than students, employees and unemployed. However, within every economic category; young people are more interested in modern music than other people are.

In the case of classical music we find that age has a decreasing effect among housewives and an increasing one among students but age has no effect for the rest of categories. Moreover, these are no differences among the average members of these groups in their probabilities of listening to classical music.

APENDIX

In this Appendix we define the variables used in this paper and then present the results of the estimation of the multinomial ordered probit models.

Dependent variables

MODERN: Dummy variable; it takes value one when the interviewee listens to modern music daily or weekly, and zero otherwise.

CLASSIC: Dummy variable; it takes value one when the interviewee listens to classic music daily or weekly, and zero otherwise.

Independent variables

WOMAN: Dummy variable; it takes value one when the interviewee is a woman, and zero otherwise

Studies
PRIMARY: Dummy variable; it takes value one when the interviewee has elementary studies and zero otherwise.

HIGH SCHOOL: Dummy variable; it takes value one when the interviewee has intermediate studies and zero otherwise.

UNIVERSITY: Dummy variable; it takes value one when the interviewee has university studies and zero otherwise.

TSTUDFA: Father's years of formal studies.

TSTUDMA: Mother's years of formal studies.

Marital status
SINGLE: Dummy variable; it takes value one when the interviewee is single and zero otherwise.

MARRIED: Dummy variable; it takes value one when the interviewee is married and zero otherwise.

DIVORCED: Dummy variable; it takes value one when the interviewee is separated or divorced and zero otherwise.

N14: Number of children under fourteen years.

TIMEHOME: Number of weekly hours dedicated to household tasks.

CITY SIZE: Number of inhabitants of the city of residence, in thousands.

Occupational level

HIWHITEC: Dummy variable; it takes value one when the interviewee is a white collar worker or a professional with four or more years of university studies and zero otherwise.

MWHITEC: Dummy variable; it takes value one when the interviewee is a white collar worker or a professional with less than four years of university studies and zero otherwise.

CLERICAL: Dummy variable; it takes value one when the interviewee has a clerical occupation and zero otherwise.

SERVWORK: Dummy variable; it takes value one when the interviewee is a services worker and zero otherwise.

SKILLEDM: Dummy variable; it takes value one when the interviewee is a skilled manual worker and zero otherwise.

Relationship with the economic activity

HOUSEWIFE: Dummy variable; it takes value one when the interviewee is a housewife and zero otherwise.

EMPLOYEE: Dummy variable; it takes value one when the interviewee is employee and zero otherwise.

UNEMPLOYED: Dummy variable; it takes value one when the interviewee is unemployed and zero otherwise.

RETIRED: Dummy variable; it takes value one when the interviewee is retired and zero otherwise.

STUDENT: Dummy variable; it takes value one when the interviewee is a student and zero otherwise.

HOWIAGE: Interaction term; it takes value (age-46.57) when the interviewee is a housewife and zero otherwise.

EMPAGE: Interaction term; it takes value (age-38.12) when the interviewee is employee and zero otherwise.

UNEMPAGE: Interaction term; it takes value (age-33.11) when the interviewee is unemployed and zero otherwise.

RETAGE: Interaction term; it takes value (age-62.82) when the interviewee is retired and zero otherwise.

STUDAGE: Interaction term; it takes value (age-21.63) when the interviewee is a student and zero otherwise.

AGE: Age of the interviewee.

Other incomes

RKI: Dummy variable; it takes value one when the interviewee has rents from properties and zero otherwise.

RKM: Dummy variable; it takes value one when the interviewee has yields from bonds and shares and zero otherwise.

RSS: Dummy variable; it takes value one when the interviewee has social security benefits and zero otherwise.

Table III displays the descriptive statisitics of this variables

Table III

Descriptive Statistics

Variable	Mean	Std. Dev.	Minimum	Maximum
WOMAN	0.49	0.50	0.00	1.00
PRIMARY	0.49	0.50	0.00	1.00
HIGH SCHOOL	0.24	0.43	0.00	1.00
UNIVERSITY	0.15	0.36	0.00	1.00
TSTUDFA	4.33	4.81	0.00	25.0
TSTUDMA	3.14	3.87	0.00	51.0
SINGLE	0.30	0.46	0.00	1.00
MARRIED	0.66	0.47	0.00	1.00
DIVORCED	0.01	0.11	0.00	1.00
N14	0.55	0.90	0.00	5.00
TIMEHOME	24.49	26.42	0.00	98.0
CITY SIZE	321.34	763.17	0.00	3214
ANDALUZ	0.18	0.38	0.00	1.00
ARAGON	0.04	0.19	0.00	1.00
ASTUR	0.03	0.16	0.00	1.00
BALEAR	0.02	0.14	0.00	1.00
CANAR	0.04	0.19	0.00	1.00
CANTA	0.01	0.11	0.00	1.00
CASTMA	0.04	0.21	0.00	1.00
CASTLE	0.06	0.25	0.00	1.00
CATALAN	0.16	0.37	0.00	1.00
VALEN	0.11	0.31	0.00	1.00
EXTRE	0.03	0.17	0.00	1.00
GALICIA	0.07	0.26	0.00	1.00
MURCIA	0.03	0.16	0.00	1.00
NAVARRA	0.00	0.07	0.00	1.00
EUSKADI	0.06	0.24	0.00	1.00
RIOJA	0.01	0.10	0.00	1.00
HIWHITEC	0.11	0.31	0.00	1.00
MWHITEC	0.05	0.23	0.00	1.00
CLERICAL	0.10	0.30	0.00	1.00
SERVWORK	0.13	0.34	0.00	1.00
SKILLEDM	0.31	0.46	0.00	1.00
HOUSEWIFE	0.24	0.34	0.00	1.00
EMPLOYEE	0.53	0.50	0.00	1.00
UNEMPLOYED	0.08	0.28	0.00	1.00
RETIRED	0.09	0.29	0.00	1.00
STUDENT	0.06	0.23	0.00	1.00
RKI	0.03	0.18	0.00	1.00
RKM	0.03	0.18	0.00	1.00
RSS	0.35	0.48	0.00	1.00
AGE by Groups:				
Global	41.11	14.76	18.0	74.0
HOUSEWIFE	46.57	6.17	19.0	70.0
EMPLOYEE	38.12	8.86	18.0	69.0
UNEMPLOYED	33.11	3.62	19.0	66.0
RETIRED	62.82	2.02	26.0	74.0
STUDENT	21.63	0.68	18.0	38.0

NOTES.

1. Baumol and Bowen analyse United Kingdom audience too and, although they do not offer as detailed information as in the USA case, they state that "the similarity of the British and American results is remarkable (...) the results once again are very consistent from survey to survey and from art to art" (Baumol and Bowen, 1966, pp. 89 - 90).

2. The author considers that educational level is the best indicator of income level in the absence of such data (O'Hagan, 1996, p. 273).

3. Studies have a weak impact on the "Trad" category. We can only see a significant effect when we pass from grade school to some high school level; in the rest of the cases we cannot find significant behaviour differences. If we focus our attention on TV audience, education has a negative influence: the higher the educational level, the lower the TV audience.

4. Other cultural goods or activities covered by this survey are reading books and newspapers and cinema, museums and sport events attendance.

5. Therefore, if we want to estimate a bivariate probit we should carry out a test on the independence of the disturbances of these equations. The null hypothesis (Ho: $\rho \neq 0$) could be tested applying a simple t test, which is equivalent to the Wald test.

6. The level of response to the questions on the amount perceived by these types of rent is very low in the survey reducing the sample size in a 60%. For this reason we have preferred to use the fictitious variables.

7. For instance, HOWIAGE is defined as the product of the variable HOUSEWIFE times the difference between the interviewed age and the average age of the housewives (46.57):

$$HOWIAGE = HOUSEWIFE*(AGE - AVERAGE AGE OF THE HOUSEWIVES)$$

8. The likelihood ratio test value for these variables is 120.54 and the critical value of the corresponding χ^2, with 32 degrees of freedom, is 52.67.

9. Recall that these interaction terms are evaluated subtracting the average age of each category.

10. For the null hypothesis that there are no differences among these groups and that age has a homogeneous behaviour the likelihood ratio tests value was 60.23 and the critical value of a χ^2 with 17 degrees of freedom is 33.41. Hence, we can not reject the alternative hypothesis that such a kind of differences exists.

11. The likelihood ratio test value for the occupational variables is 32.59 and the critical value of the corresponding χ^2, with ten degrees of freedom, is 23.21.

12. The likelihood ratio test value is 12.16 and the critical value of the corresponding χ^2 with six degrees of

freedom at the 10% level of confidence, is 10.64.

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