

# Analysis of the consumption of artistic-cultural goods and services in Brazil

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**Abstract** This work aims to evaluate the determinants of the consumption of artistic-cultural goods and services in Brazil, conceiving this consumption as an activity with positive effects on the consumer and on the society as a whole. Using the human capital approach, we estimate a model in which the expenditures on artistic-cultural goods and services depend on socio-economic, educational and socio-demographic characteristics of the head of the household, and on variables that indicate the location of the household. The results indicate that artistic-cultural expenditures are strongly determined by income and by the education of the consumer. Furthermore, the expenditure differs regionally, which may occur due to supply variations or historic-cultural distinctions.

**Keywords** Cultural economics · Consumption · Artistic goods · CLAD method

**JEL Classification** Z11 · D12

## 1 Introduction

Cultural-artistic activities in a society bring about implications for its socio-economic development. This is an observation from the economic literature in the field of art and culture and it allows for several discussions on the subject.

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The aim of this paper is to identify the individual and local constraints that interfere in the access to cultural activities. We draw on the microeconomic approach of human capital, according to which the present consumption of such goods is strongly determined by previous exposure to the consumer.

Considering this approach, this work intends to analyze the determinants of the consumption of cultural-artistic goods in Brazil. The household cultural-artistic expenses are determined by the socio-economic, educational and socio-demographic variables of the consumer, as well as geographical variables related to the supply of cultural activities. The nine main metropolitan regions (MR) in Brazil and the Federal District are analyzed, using data from the Family Budget Survey (POF) 2002–2003 and from the Municipal Information Survey (MUNIC) 2006, both carried out by the Brazilian Institute of Geography and Statistics (IBGE).

The main contribution of the paper relates to the individual approach for cultural consumption in Brazil, which has not been fully explored in the literature on this topic. The specificities of the demand for cultural goods in developing countries with strong regional disparities, as in the case of Brazil, may provide important insights for the formulation of policies aiming at social inclusion.

This paper is organized in five sections, including this introduction. In the next section, theoretical aspects of the determinants of the cultural-artistic consumption are exposed. Following, in the third section, the econometric strategy, the data sources and the statistics of the variables used in the model are described. Section 4 presents the results and Sect. 5 concludes the paper.

## 2 Determinants of cultural-artistic consumption

The activity of consumption can be modeled as an individual decision, considering the observable characteristics of the consumers and their past experiences, either individual or collective.

The literature on the determinants of cultural-artistic consumption is based mainly on Becker's (1964) approach of human capital. Recently, the microeconomic approach has incorporated important issues to the study of consumer behavior, recognizing that the choices made by an agent depend in part of past experiences and social forces. While in the traditional version households maximize a utility function composed only of goods and services bought in the market, in the modern vision they maximize a utility function that includes, besides goods and services, assets like time and others that define their human capital (Michael and Becker 1973).

Stigler and Becker (1977) explain the consumption of artistic-cultural goods as a positive addiction, through an approach based on the maximization of utility with stable and endogenous preferences, influenced by the accumulation of specific knowledge and skills. According to their hypothesis, preferences are stable in time and similar among individuals. Stigler and Becker (1977) maintain that the consumption of a cultural good increases not due to a change in preferences, but because its shadow-price is reduced due to past experiences of consumption or past exposure.

From the Stigler and Becker (1977) approach emerged evidence of demand behavior related to past consumption and to socio-cultural issues. There is a consensus in the literature that the demand for cultural-artistic goods and services is determined in part by the previous exposure to the good and by past experiences of consumption. Thus, this class of goods can be understood as being linked to the “rational addiction”, since the marginal utility of its consumption increases with consumption.<sup>1,2</sup>

Education is an important component of human capital, since it contributes to the individual’s ability for processing and acquiring information. The parents’ education, formal or artistic/cultural, is also a relevant factor, because it is a proxy for the exposure to the good in childhood and in adolescence. Besides formal education, training in any artistic or cultural activity also influences consumption. As Ateca-Amestoy (2008) points out, the effect of such education on the consumption of cultural goods is expected to be larger than the impact of formal education, because it indicates a voluntary choice of the individual towards the accumulation of specific human capital.

Other individual characteristics that can influence consumption are: age (consumer’s demand can change over time, due to human capital accumulation and changes in the opportunity cost of consumption), gender (for socio-cultural reasons it can be expected that individuals of a certain gender have been most exposed to the good or have had higher levels of past consumption, which implies greater present consumption; Gray 2003), race/ethnicity and religion (similar to gender effects).

Besides the determinants of personal capital, factors related to social capital should be mentioned. Such variables can be incorporated as determinants of the perception of the quality of the good. In this case, both the effect of the tastes of the peers and the effect of the media, of fashion, matter. An important factor in this perception is the idea of origin or source of the good or service, which reduces the consumer’s risk of buying something that will not please her/him (Lévy-Garboua and Montmarquette 2003). In order to minimize such risk, the agent bases his decision of consumption on the opinion of the critics, of the specialized media and of his peers, besides taking into account information about those involved in the production, advertising and distribution of the service or good and about the previous events’ audience (in case of live shows of performing arts; Tobias 2004).

Regarding the economic aspects of a good, demand for artistic-cultural goods and services depends on the price of the good, on the price of its substitutes, on consumer’s income and on the quality of the good. The price reflects, besides the value of the good itself, the opportunity cost of consumption (Borgonovi 2004). This, in turn, includes the pleasure associated with the consumption of substitute goods and the costs related to the access to the good or service, such as transportation costs, costs related to urban violence, among others.

<sup>1</sup> A formal treatment of “rational addiction” can be found in Becker and Murphy (1988).

<sup>2</sup> Another term found in the literature for describing the effect of past consumption on present consumption is “learning by consuming”. According to this approach, the individual does not know its taste, and can only find it out through recurring consumption experiences. Each new experience brings about an increase or decrease in taste.

As in the case of most economic goods, the price of the artistic-cultural good tends to bring about a negative effect on consumption. The price of substitutes, in turn, would have a positive effect on artistic-cultural consumption, since increasing prices would stimulate the consumption of substitutes. Some possible examples of substitutes to artistic-cultural goods are other sources of leisure and entertainment, such as sports and other forms of group recreation not related to the arts.

Income is another determinant factor of consumption. It corresponds to a restriction on consumption, as well as the price of the commodity does. The economic literature, in general, treats artistic-cultural goods as luxury goods, i.e., goods whose demand is highly influenced by the consumer income. However, the empirical evidence regarding the effect of income on cultural consumption is mixed.<sup>3</sup>

The quality of the good or service involves, besides the aforementioned idea of perception, the technical question related to the production, advertising and supply of the good or service.

Finally, we must take into account regional issues related to the cultural-artistic supply. As pointed out by the regional and urban economics literature on the subject, supply differences among regions are expected for the sector, due to divergences in the socio-economic structures of the population and in the cultural infrastructure.

The arts are treated in this literature as a typical case of externalities of agglomeration. These activities would be concentrated in the larger urban centers due to their larger potential market and to the higher possibility of transmission of tacit knowledge from the interaction between people and groups, given by demographic concentration and by the diversity and innovativeness of big cities. Concentration would also allow for greater synergy between different types of artistic activity and between the cultural industries and the artists (Markusen and Schrock 2006; Kelly and O'Hagan 2007; Bille and Schulze 2008; Santagata 2008).

On the other hand, the infrastructure related to the arts, represented by the cultural equipments<sup>4</sup> of the locality, can influence the local supply, as it provides infrastructure for cultural-artistic industries and workers. These places, created to host cultural-artistic activities, play an important role, due to its great capacity of interaction with the audience, with the artists and with the organizations involved in the field (Perloff 1979; Markusen and Gadwa 2009; Masters et al. 2009).

### 3 Data and methods

The observed consumption of an individual is a decision taken according to the characteristics of the consumer and her past experiences. In the theory of human capital, consumption is determined by the prior exposure to the good, seen as the

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<sup>3</sup> In the case of museums and theatre, the consumption depends on the leisure time. Thus, the conventional income-effect can be divided in pure income effect and a leisure-price substitution effect (see Zieba 2009).

<sup>4</sup> We define cultural equipments as the places devoted to the involvement of the public with cultural-artistic activities, such as theaters, music halls, libraries, museums, art galleries, cultural centers, etc.

accumulated capital of consumption of that good or service. The present work tries to check how socio-economic, demographic and regional variables are correlated with this accumulated capital. These are the factors that promote or obstruct the cultural-artistic consumption, or, in other words, these are the individual or social restrictions which affect the consumption choices of the individual.

### 3.1 Description of the model

The socio-economic, educational, demographic and regional characteristics of the consumer can be understood as restrictions to the prior exposure to the commodity, acting, this way, as a restricting consumption factor.

Thus, the following relation can be postulated:

$$y_i = f(x_i) = f(Sd_i, E_i, Se_i, G_i) \quad (1)$$

where  $y_i$  is the per capita household expenditure on cultural-artistic goods and services,  $Sd_i$  are the socio-demographic characteristics of the head of the household (gender, color/race/ethnicity, age, religion),  $E_i$  are the educational characteristics of the head of the household (represented by the years of formal education),  $Se_i$  are the socio-economic characteristics of the household (represented by the per capita household income, squared per capita household income, per capita cultural-artistic indirect expenditure and number of individuals in the household), and  $G_i$  are the geographic variables that capture specific regional effects (cost of living index, dummy for capital stock, and index of cultural equipments).

It should be said that the estimated relation is only partial, as the expenditure is influenced by other factors not included in the regression, like the quality of the good or service, the price of its substitutes, the available time of the consumer, etc. These variables have not been included in the regression due to problems of data availability.

The household is the basic unit of analysis. The aggregation of individual expenditures within the household implies dealing with higher values of expenditure, which makes the estimating easier. Besides, it allows for investigating the effect of the family and household background<sup>5</sup> on consumption. The characteristics of the head of household are taken as representative of the household as a whole, given the influence of the head on the consumption decisions of all residents.

### 3.2 Database

The data referring to the cultural-artistic household expenditure and to the consumer characteristics is from the Survey of Family Budget of IBGE (POF) for the period 2002–2003. POF constitutes a rich source of information on the domestic budget composition, habits of consumption, allocation of expenditure and distribution of

<sup>5</sup> The choice of working with households instead of the unities of consumption (main unity of investigation of POF) was the belief that some practices of cultural-artistic consumption, especially those which take place inside the household, involve all the residents, and not only the unity of consumption the individual belongs to.

the incomes, according to the household and individual (IBGE 2004). POF 2002–2003 took place in the period between July of 2002 and June of 2003.

The sample is composed by households from the Federal District and from nine metropolitan regions, namely: Belém, Recife, Fortaleza, Salvador, Belo Horizonte, Rio de Janeiro, São Paulo, Curitiba and Porto Alegre.

The regional variables come from the Culture Supplement of the Survey of Basic Municipal Information—MUNIC—also from IBGE. This Supplement contains information regarding the management of culture at local level—type and infrastructure of the public organization managing culture in the municipality, its human resources, management instruments used, legislation, existence and functioning of councils, existence and characteristics of Municipal Culture Fund, financial resources, existence of Municipal Foundation of Culture, actions, projects and activities developed—as well as data on the media and on the existence and, in some cases, the quantity of equipments and cultural and artistic activities in the locality (IBGE 2007).

### 3.3 Variables

The dependent variable of the regression model (per capita household expenditure on cultural-artistic goods and services) corresponds to the aggregated value of the expenditures of all the residents on such goods and services, divided by the number of residents in the household.

The dependent variable was taken in its logarithmic form. The choice using this variable, instead of the consumed quantities, was based on two main reasons: the first one is that such strategy allows the aggregation of goods measured in different unities; the second one is that, assuming that variations in the price reflect, partially, variations in the quality of the goods, the use of expenditures allows for the aggregation of goods of different qualities, allowing to control for the heterogeneity of the goods in question.<sup>6</sup>

From the classification of products of POF, we selected those considered to be cultural-artistic. The expenditures to be analyzed in the POF classification are the ones described in Chart 1.

The control variables are described in Chart 2. Except for age and years of education, the variables that characterize the household head entered the regression as dummies which take the value 1 if the individual fulfills the characteristic in question and 0 if it does not.

Per capita household income is used in level and in quadratic form. The quadratic term was included in order to examine if the consumption of cultural goods increases more or less proportionally with income, i.e., whether such goods could be

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<sup>6</sup> Also in this case, we decided to use aggregated expenditures, as opposed to expenditure on groups of artistic-cultural goods and services (e.g. performing arts, visual arts, etc.). We recognize that the decision of the consumer on how much to spend on cinema movies may depend on other factors than the decision on how much to spend on an opera performance or on a CD-record. Income and socio-demographic characteristics of the households may have different effects on different categories of cultural goods. However, the model could only be estimated in aggregate terms, due to the small amount of expenditures, as we will show later.

**Chart 1** Cultural-artistic goods and services—classification

| Group                        | Products  |
|------------------------------|---|
| Home interiors <sup>a</sup>  | Sculptures, graphics, paintings, decorative handcraft |
| Visits to museums            | Museum tickets  |
| Visits to exhibitions        | Exhibitions tickets                                   |
| Visits to theaters           | Theater tickets                                       |
| Visits to dance performances | Dance performance tickets                             |
| Visits to operas             | Opera tickets   |
| Visits to concerts           | Concert tickets                                       |
| Visits to the circus         | Circus tickets  |
| Visits to cinemas            | Cinema tickets  |
| Reading materials            | Non-didactic books                                    |
| Audio materials              | Cassettes, vinyl records and CD's                     |
| Video materials              | Videocassettes and DVD's                              |

*Source:* Author's elaboration using product classification of POF 2002–2003

<sup>a</sup> The name “home interiors” seems to be more appropriate for this group of goods, due to the inclusion, in the classification of POF, of frames of graphics and photo frame along with sculptures and paintings

**Chart 2** Control variables

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*Head of household characteristics*

Gender (man = 1)

Color/race (white = 1)

Age

Schooling (complete years of education)

Religion (protestant = 1/other religions = 0)

*Household income*

log per capita household income

Squared log per capita household income

log per capita indirect expenditure

Number of individuals in the household

*Regional variables*

Cost of living index

Capital (=1)

Index of cultural equipments in the metropolitan area

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considered as luxury goods. This variable refers to the gross income of the individuals, which corresponds, in the POF, to labor earnings, governmental transfers, rents and other sources of income, in addition to non-monetary income. The household total income was calculated as the sum of the gross incomes of all the residents, in annual terms. Next, this value was divided by the number of residents in the household, as a way to control for variations of size across families.

Household size is another variable included in the model, in order to capture effects in consumption related to economies of scale. I.e., this variable addresses the

**Chart 3** Indirect or complementary cultural-artistic goods and services—classification

| Group  | Products  |
|--|---|
| Reading materials                            | Newspapers, magazines, music brochures and subscriptions  |
| Audiovisual materials                        | Video club fees, cassettes and blank cassettes  |
| Musical instruments and accessories          | Musical instruments and accessories (microphones, speakers, etc.)   |
| Classes                                      | Dance, music, drawing, painting and theater classes   |
| Visits to nightclubs and similar             | Nightclub tickets, music cover in bars, concert hall rental fees  |
| Household services                           | Internet and cable TV access  |
| Domestic and personal appliances             | Electrical appliances such as TVs, stereos, dish satellites, VCRs, microcomputers, DVD players, etc.; and electro-portables like radios, car radios, etc. |
| Furniture related to the domestic appliances | Tables for TVs, stereos, computers, etc.  |
| Others                                       | Photographic services (except for family ceremonies), costumes, carnival masks  |

*Source:* Own elaboration from product classification of POF 2002–2003

question of whether per capita expenditures in a small household are higher or lower than the ones in a large household.

Expenditures on the so-called indirect goods and services—the ones which support the consumption of artistic-cultural goods—are included in the model in order to capture the effect of the consumption of complementary goods on the demand for artistic-cultural goods. Chart 3 presents a list of such complementary goods.

The regional variables intend to investigate differences in cultural equipments among the localities, as mentioned before. This group of variables includes a cost of living index (ICV), a dummy for capital, and an index related to the presence of cultural equipments in the region where the family lives. Such an index was constructed using the technique of principal components, as described below.

The ICV for each metropolitan region—calculated by Azzoni et al. (2003)<sup>7</sup>—evaluates if the consumption of artistic-cultural goods is inhibited in regions where prices are higher. This index is used as the proxy variable for the price of the aggregated cultural good.

Besides expenditures on artistic-cultural goods, expenditures on public transportation, meals and so on may increase the cost of consuming cultural goods. The variable “capital” is included since cultural-artistic activities tend to occur in urban areas, which are more densely populated.

<sup>7</sup> The ICV is a price index which allows for comparisons of the cost of living among metropolitan regions in Brazil. It has been calculated between 1981 and 1999, using data from the Family Budget Survey (POF). See Azzoni et al. (2003) for details.



**Table 1** Standard index of the presence of cultural equipments

| Metropolitan region | Standardized index |
|---------------------|--------------------|
| Rio de Janeiro      | 1.00               |
| São Paulo           | 0.84               |
| Federal District    | 0.39               |
| Salvador            | 0.33               |
| Curitiba            | 0.27               |
| Belo Horizonte      | 0.12               |
| Porto Alegre        | 0.07               |
| Fortaleza           | 0.05               |
| Belém               | 0.01               |
| Recife              | 0.00               |

Source: Own elaboration using data from the MUNIC 2006

From the set of variables in the 2006 Supplement of Culture of the MUNIC, the following ones were chosen for the creation of the index<sup>8</sup> referring to the existence of cultural equipments: number of museums, number of theaters or concert halls, number of cultural centers, number of cinemas and number of stadiums.<sup>9</sup>

Using the principal components analysis for the metropolitan regions in study, we identify that the first component explains almost 60% of the total variance of the data. The eigenvector associated to it attributes positive weights to all the variables. The highest weight is given to the variable number of theaters, followed by number of cinemas, number of museums, number of cultural centers, and, finally, number of stadiums. These weights are higher the higher the dispersion of the values between the observations is.

The weights related to the first eigenvector were used in the construction of the index presented in Table 1. The index was standardized so that it varies between zero and one. The most populous metropolitan areas, Rio de Janeiro and São Paulo, are those which present highest index, followed by Federal District, Salvador, Curitiba, Belo Horizonte and Porto Alegre. The lowest values correspond to the metropolitan regions of Belém and Recife.

### 3.4 Estimation methods

The model was estimated by the CLAD (censored least absolute deviations) quantile method.<sup>10</sup>

<sup>8</sup> The municipal data was aggregated for the metropolitan regions, through a weighted average of the population of the municipalities. We applied the Principal Components Analysis to the variables, and the eigenvalues of the main component were used as weights for building the index.

<sup>9</sup> We did not include the number of public libraries as a variable, despite its suitability to the concept of “cultural equipment” adopted. This information was omitted due to the significant number of errors of measure in this variable, a fact checked along the work and proved by experts of the reality of the cities.

<sup>10</sup> Several studies on demand use the AIDS method proposed by Deaton and Muellbauer (1980). In this case, the variable to be explained is the share of the expenditure. Since in Brazil this share is quite low (see Table 2), we opted for the CLAD method with all the restrictions it imposes.

Since expenditure in art/culture is considered to be a luxury or even superfluous in comparison with the consumption of necessity goods, a large number of households declare null expenditure in cultural-artistic goods and services.<sup>11</sup> For this reason, the data referring to this variable can be considered left-censored.<sup>12</sup>

The censoring problem in data requires estimation methods that take into account this characteristic. In case of censoring, ordinary least squares (OLS) produces inconsistent estimates, as one of its basic presuppositions is violated: if  $E[y^*|x] = x'\beta$  in the original model, censoring implies that  $E[y|x]$  is non-linear in  $x$  and  $\beta$ . Since  $y$  does not vary with the regressors  $x$  in the region where censoring takes place, the magnitude of the coefficients of the regression is underestimated, leading to estimates biased toward zero.

The most used method in the case of censoring in linear models is the Tobit, introduced by Tobin (1958). However, it has been replaced by other estimators, since its great fragility is its dependence of strong distributional hypotheses: if the error  $\varepsilon$  is heteroskedastic and/or non-normal, the estimator is inconsistent.

An alternative to the Tobit estimator for the case of non-normal and/or heteroskedastic errors is the CLAD (Censored Least Absolute Deviations) estimator. It was proposed by Powell (1984) as an alternative to the Tobit method and to other parametric methods of estimating models with censored dependent variable. It consists of an application of the median regression (LAD) for  $y_i$  using the non-linear regression function  $\max\{x_i'\beta, 0\}$ . Under the hypothesis that  $\varepsilon|x$  has zero median, the estimator is consistent and asymptotically normally distributed. The estimator CLAD is, thus, robust to the distribution of the residuals, which justifies its use when the distributional hypotheses of the Tobit method are not met.<sup>13</sup>

In this paper, the CLAD estimator is used in its quantile form<sup>14</sup> in order to estimate the model. Only the quantiles 50, 75 and 90 were used, since it is not possible to inform the initial part of the distribution. The CLAD method excludes the observations subject to censoring in order to predict the dependent variable.

## 4 Results

### 4.1 Descriptive statistics

This section presents some descriptive statistics regarding the expenditure on cultural-artistic goods and services in the sample. Table 2 shows, in column 2, the

<sup>11</sup> In the sample analyzed in this work, only 39.3% of the households interviewed declared non-negative expenditures on art and culture.

<sup>12</sup> For more, see Cameron and Trivedi (2005).

<sup>13</sup> For more, see Cameron and Trivedi (2005).

<sup>14</sup> The estimation of quantile regressions provides a better characterization of the data under analysis, since it allows exploring the form of the distribution of the dependent variable conditional to the explanatory variables. For the estimation of income and expenditure determinants, the quantile regression is the best option because it gets hold of the differences in the determinants according to the quantiles, which is not feasible under the OLS estimation. For more, see Koenker and Basset (1978) and Powell (1986).

**Table 2** Expenditure on cultural-artistic goods and services according to the location of the household

| Location of the household | Consuming households (%) | Proportion of expenditure in the total household income (average)—among the consuming households |
|---------------------------|--------------------------|--|
| Rural                     | 9.49                     | 1.08   |
| Urban                     | 29.74                    | 1.37   |
| Metropolitan regions      | 39.32                    | 1.34   |
| Capitals                  | 40.43                    | 1.38   |
| Brazil                    | 26.64                    | 1.36   |

Source: Authors' calculation using data from POF 2002–2003

percentage of households that informed some expenditure on cultural-artistic goods and services during the periods of reference of POF. The third column, in turn, presents the average participation of this expenditure in the total household income, for the ones that declared themselves to be consumers, according to the location of the household.<sup>15</sup>

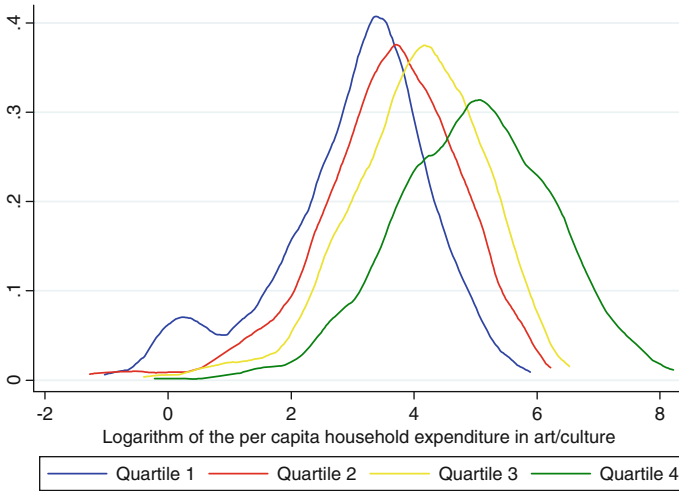
The data indicate a very low participation of cultural-artistic goods and services in the budget of Brazilian households. They also show that this expenditure is larger in the urban areas, particularly in state capitals. The proportion of the expenditure in total income is associated with the percentage of consumer households, being especially small in rural areas. This configuration indicates a tendency of concentration of the expenditure in urban and wealthier areas.

Figure 1 shows the distribution of the logarithm of the expenditure according to the quartiles of per capita household income. This distribution was estimated by a Kernel function for the household expenditures of the metropolitan regions considered by POF, only for the households where this expenditure is bigger than zero. The graph shows that the distribution moves to the right as income increases, indicating that the value of the expenditure increases with income. The distance between the estimated curves is notable for the third and fourth quartiles of the income, which suggests that, for the households with higher income, expenditure increases more than proportionately as income rises.

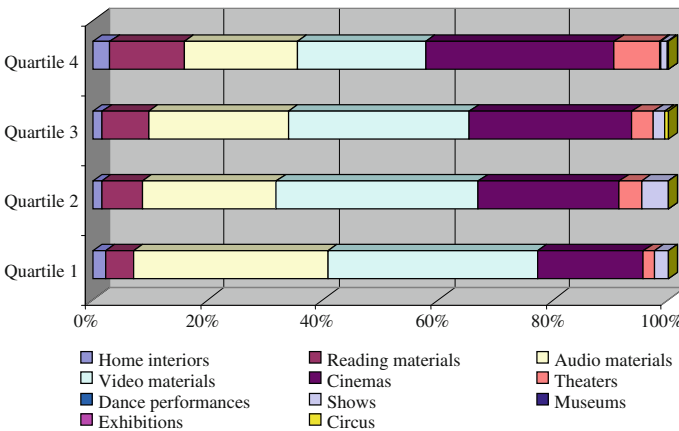
The data also indicate that households with higher per capita income not only spend more, but also have more diverse expenditures. The composition of the expenditure seems to vary across the quartiles of income, as displayed in Fig. 2. Although the expenditures with music (CD's) and video (DVD's) prevail in all the quartiles, their importance in relation to the total expenditure decreases as the income increases, opening up space for the expenditures with reading, cinemas and theaters (expenditures that, besides being more expensive, do not provide the possibility of continuous reproduction as with those of music and of video).

In regard to the regional distribution of expenditure, we can see great differences among the metropolitan regions. Table 3 presents, for each region, the proportion of households that declared the consumption of some kind of cultural-artistic good or

<sup>15</sup> The classification of the areas as urban or rural followed the definitions of POF 2002–2003.



**Fig. 1** Distribution of the expenditure on art/culture (goods and services)—according to quartiles of per capita household income—metropolitan regions. *Source:* Authors’ calculation using data from POF 2002–2003



**Fig. 2** Composition of the expenditure on art/culture (goods and services) according to quartiles of household per capita income—metropolitan regions. *Source:* Authors’ calculation using data from POF 2002–2003

service, and the average proportion of the expenditure in the household total income, among the consumer households.

The highest percentages of consumer households occur in the metropolitan regions of Salvador and Porto Alegre, followed by Recife, São Paulo and Curitiba. The smallest proportions appear in the MRs of Belém, Fortaleza and Rio de Janeiro. The results also show a very high percentage of consumers in the Federal District, way above the other MRs, which can be explained by the fact that this city has the highest per capita income in Brazil.

**Table 3** Expenditure on cultural-artistic goods and services in the metropolitan regions

| Metropolitan regions | Consuming households (%) | Proportion of expense in the household total income (average)—among the consuming households |
|----------------------|--------------------------|--|
| Belém                | 31.88                    | 1.51   |
| Fortaleza            | 32.92                    | 1.82   |
| Recife               | 41.95                    | 1.64   |
| Salvador             | 50.00                    | 1.47   |
| Belo Horizonte       | 39.91                    | 1.10   |
| Rio de Janeiro       | 33.48                    | 1.39   |
| São Paulo            | 40.42                    | 1.26   |
| Curitiba             | 37.66                    | 1.43   |
| Porto Alegre         | 47.65                    | 1.17   |
| Federal District     | 75.86                    | 1.46   |

Source: Authors' calculation using data from POF 2002–2003

In relation to the proportion of expenditure in household expenditure, it should be mentioned that the highest proportions (among the consumer households) take place in the MRs of Fortaleza and Recife, followed by the MRs of Belém, Salvador and the Federal District. The smallest values refer to the MRs of Belo Horizonte and Porto Alegre.

Figure 3 presents the expenditure composition in each of the metropolitan regions and in the Federal District.

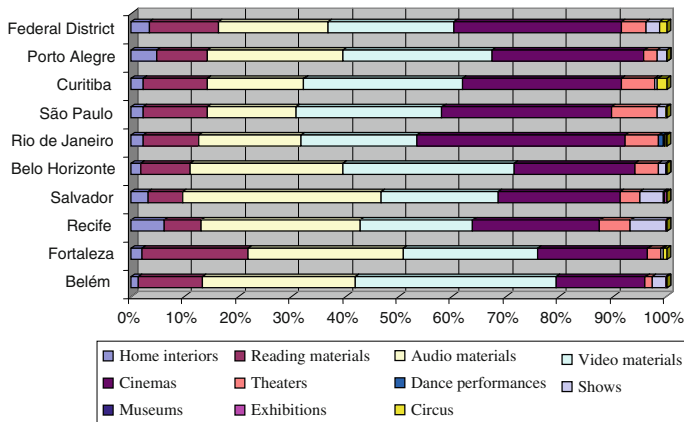
In the metropolitan areas of the Northern and Northeastern states, audio materials appear as the main category of spending, referring basically to the acquisition of CDs. In the MRs of Belo Horizonte and Curitiba, the largest expenditure refers to the acquisition and rental of DVDs, while in the MR's of Rio de Janeiro, Sao Paulo, Porto Alegre, and in the Federal District, the largest share correspond to expenditures with cinema.

In regard to the peculiarities of the expenditure in each MR, we can highlight the relative share above average of home interiors, in Recife and Porto Alegre; reading, in Fortaleza; theaters, in Sao Paulo, Rio de Janeiro and Curitiba; dance, in Rio de Janeiro; shows, in Recife and Salvador; circus, in Curitiba and in Federal District.

## 4.2 Econometric results

The model was estimated by OLS and Tobit. However, we decided not to present these estimation results. First, because OLS is not able to deal with the problem of censoring in data. In the case of Tobit, since it requires normal and homoskedastic errors for consistency, specific tests were made<sup>16</sup> and the null hypothesis was rejected, indicating non-normal and heteroskedastic residuals.

<sup>16</sup> The tests were calculated from generalized residuals, as suggested by Newey (1985) and Pagan and Vella (1989).



**Fig. 3** Composition of the cultural-artistic expenditure (goods and services) in the metropolitan regions. *Source:* Authors' calculation using data from POF 2002–2003

Thus, the CLAD method of estimation was chosen. Table 4 presents the results of the estimation carried out by the CLAD method in its quantilic form, from which the model is interpreted. First of all, the differences are notable between the estimates when different parts of the cultural-artistic expenditure distribution are considered. This indicates that the determinants of the expenditure vary according to its distribution, which justifies the quantilic estimation.

The main explanatory variables in the estimation of artistic-cultural expenditure are gender, age and years of education of the head of the household, household per capita income, squared household per capita income, expenditure on indirect goods and services, household size, capital and index of cultural equipment.

According to Ateca-Amestoy (2008), female household heads tend to consume more artistic-cultural goods and services than male heads, since cultural events tend to be a space of social interaction for women. In this work, such result does not depend on the position in the distribution of expenditures.

The smaller expenditure in households with older heads suggests that the consumption is (relatively) more costly for these agents. The cost may be associated with difficulties of access, related to transportation, in case of the activities which take place out of the house, or with accessibility issues in the cultural equipment itself. It may also indicate variations in the importance given by the consumer to other goods in his consumption basket, as age increases. This result is also found in Ateca-Amestoy (2008).

Consumption also increases with years of education. This result is expected, since schooling is a component of human capital and this, according to Stigler and Becker (1977), contributes to the “positive vice”. The estimated coefficients reinforce this hypothesis, by showing that an additional year of formal education has a stronger impact on the median and the 75th percentile, than it does on the top 10% of the distribution.

**Table 4** Estimation results—quantile CLAD method

|  | Distribution quantiles  |                       |                       |
|--|-------------------------|-----------------------|-----------------------|
|  | 0.50                    | 0.75                  | 0.90                  |
| <i>Head of household characteristic</i>        |                         |                       |                       |
| Gender (man = 1)                               | −0.757**<br>(0.302)     | −0.584***<br>(0.196)  | −0.249***<br>(0.083)  |
| Color/race (white = 1)                         | −0.137<br>(0.285)       | −0.104<br>(0.220)     | 0.087<br>(0.078)      |
| Age (completed)                                | −0.042***<br>(0.013)    | −0.044***<br>(0.008)  | −0.013***<br>(0.004)  |
| Schooling (completed years of education)       | 0.305***<br>(0.057)     | 0.139***<br>(0.027)   | 0.064***<br>(0.012)   |
| <i>Religion</i>                                |                         |                       |                       |
| Protestant (=1)                                | −0.348<br>(0.461)       | 0.055<br>(0.233)      | 0.071<br>(0.106)      |
| Other religions (=1)                           | 0.561**<br>(0.277)      | 0.383<br>(0.238)      | 0.178<br>(0.112)      |
| <i>Household income</i>                        |                         |                       |                       |
| log (per capita household income)              | 19.915***<br>(2.673)    | 13.132***<br>(1.135)  | 2.758***<br>(0.672)   |
| log <sup>2</sup> (per capita household income) | −0.914***<br>(0.131)    | −0.613***<br>(0.059)  | −0.106***<br>(0.035)  |
| log (per capita indirect expenditures)         | 0.512***<br>(0.078)     | 0.399***<br>(0.041)   | 0.114***<br>(0.016)   |
| Number of individuals in the household         | 0.977***<br>(0.093)     | 0.664***<br>(0.054)   | 0.036<br>(0.031)      |
| <i>Regional variables</i>                      |                         |                       |                       |
| Cost of living index                           | −2.539<br>(2.832)       | 3.160<br>(2.065)      | 0.471<br>(0.769)      |
| Capital (=1)                                   | 0.470<br>(0.334)        | 0.041<br>(0.232)      | 0.179**<br>(0.080)    |
| Index of cultural equipments in the MR         | 0.130<br>(0.886)        | −2.002***<br>(0.599)  | −0.468**<br>(0.234)   |
| Constant                                       | −107.203***<br>(13.223) | −68.885***<br>(5.648) | −11.756***<br>(3.330) |
| Observations                                   | 3,008                   | 5,596                 | 5,920                 |

Dependent variable: logarithm of direct per capita household expenditure

Standard-deviation in brackets

\* Significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

The sign of the coefficient on per capita income is positive for all the quantiles, indicating that demand for artistic-cultural goods increases with income.<sup>17</sup> However, the coefficient is larger for the households in the median. The coefficients of the quadratic term suggest that the goods cannot be considered as luxury goods, given that the negative sign implies that the consumption of cultural goods increases less than proportionally with income. This result is most likely caused by the weight of CDs and DVDs in the basket of cultural goods and services. Were we emphasizing only expenditures on artwork, theatre, and concerts, the sign of the coefficient would be positive, confirming the idea that these would be luxury goods.

Also in all the quantiles, the consumption of direct artistic-cultural goods is positively related to the expenditures on indirect goods and services. Here, the coefficient is higher for the median. Therefore, the indirect goods and services behave like complementary goods (and not substitute) in relation to the direct artistic-cultural goods. This result diverges from part of the literature (Moore 1996; Ringstad and Løyland 2006), but it coincides with the results found by Gapinski (1986) and by Werck and Heyndels (2007). It should be noticed that these studies consider the price of the substitute goods, and not the amount of expenditures on such goods.

There are not scale effects for the households with lower expenditure, since the larger the household (number of individuals), the higher is the per capita expenditure on artistic-cultural goods and services, although such effect is smaller for households with higher expenditures.

The variable “capital” is significant for the households with higher expenditures on culture, suggesting once again that this is a typically urban consumption pattern, since the individuals with higher expenditures live in large urban areas.

The parameter referring to the index of cultural equipment was negative, indicating smaller expenditure in the places where this offer is more abundant. This result is contrary to what we expected, i.e., that the existence of cultural equipments would increase the cultural-artistic expenditure, for facilitating the access to this type of goods and services, besides stimulating the incidence of the artistic activity.

It is a possibility, however, that in towns where the cultural equipments are more present, the government is more active in terms of cultural-artistic policies, which might imply larger subsidies to cultural activities, leading to lower prices for these activities, or even the offer of free events. Besides, the places with higher incidence of cultural equipments tend to be the most urbanized. That might indicate higher costs of accessibility to the cultural equipment in these towns, due to urban problems of transport and even of violence, among others. However, this hypothesis was not confirmed when the cost of living index is included, given that its coefficient was not significant.

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<sup>17</sup> The same result is found by Ringstad and Løyland (2006) and Werck and Heyndels (2007), who analyze demand for books and theatre, respectively.



## 5 Final remarks

The present work intends to assess the determinants of the cultural-artistic expenditure in Brazil, based on a sample of households situated in the main metropolitan regions of the country and in the Federal District.

For the group of goods and services analyzed here, that is, those purchased in private markets, the results corroborate the hypothesis that the cultural-artistic consumption is unequally distributed among the population, being determined mainly by education and income. These variables indicate the social position of the individuals, and the ones with higher education and income tend to present higher prior exposure to cultural-artistic goods, due to individual and/or familiar practices; therefore, these social groups have better access to cultural-artistic goods and a more diversified consumption basket.

In this sense, education and income may be considered as the main restrictions to consumption, since these are the main determinants of prior exposure to the cultural goods and, thus, of the accumulated cultural capital.

Some characteristics of the household head also seem to influence expenditure, such as age and the gender.

In turn, the regional divergences seem to affect more intensely expenditure among the households that spend more. Among these, results suggest that the geographical variables influence consumption more than the consumer's individual characteristics, which highlights the importance of the cultural-historic background and of supply among those that consume more.

Another result was that the presence of cultural equipment in a city influences negatively the household expenditure. If the cities where there are more cultural equipments are also those where the role of the public sector in the cultural sector is more active, it is possible to think that there is, in these places, a larger component of cultural consumption not related to the private market.

The results obtained in this paper indicate great inequality in the cultural-artistic consumption of goods and services in urban Brazil. If such consumption is thought of as an activity with positive effects on the consumers, we conclude that these effects are distributed unequally among the citizens, which contributes to the maintenance of the social scenario already established in the Brazilian society.

## References

- Ateca-Amestoy, V. (2008). Determining heterogeneous behavior for theater attendance. *Journal of Cultural Economics*, 32, 127–151.
- Azzoni, C. R., Carmo, H., & Menezes, T. A. (2003). Comparações da Paridade do Poder de Compra entre cidades: aspectos metodológicos e aplicação ao caso brasileiro. *Pesquisa e Planejamento Econômico*, 33(1), 91–126.
- Becker, G. S. (1964). *Human capital: A theoretical and empirical analysis with special reference to education*. New York: National Bureau of Economic Research.
- Becker, G. S., & Murphy, K. M. (1988). A theory of rational addiction. *Journal of Political Economy*, 96(4), 675–700.

- Bille, T., & Schulze, G. G. (2008). Culture in urban and regional development. In V. A. Ginsburgh & D. Throsby (Eds.), *Handbook of the economics of art and culture* (pp. 1051–1099). Oxford: North-Holland Elsevier.
- Borgonovi, F. (2004). Performing arts attendance: An economic approach. *Applied Economics*, 36, 1817–1885.
- Cameron, C. A., & Trivedi, P. K. (2005). *Microeconometrics: Methods and applications*. New York: Cambridge University.
- Deaton, A., & Muellbauer, J. (1980). An almost ideal demand system. *The American Economic Review*, 70(3), 312–326.
- Gapinski, J. H. (1986). The lively arts as substitutes for the lively arts. *The American Economic Review*, 76(2), 20–25.
- Gray, C. M. (2003). Participation (chapter 46). In R. Towse (Ed.), *A handbook of cultural economics* (pp. 356–365). Cleltenham: Edward Elgar.
- Instituto Brasileiro de Geografia e Estatística (IBGE). (2004). *Pesquisa de Orçamentos Familiares 2002–2006: primeiros resultados*. Rio de Janeiro: IBGE.
- Instituto Brasileiro de Geografia e Estatística (IBGE). (2007). *Perfil dos municípios brasileiros—Pesquisa de Informações Básicas Municipais: Cultura*. Rio de Janeiro: IBGE.
- Kelly, E., & O’hagan, J. W. (2007). Geographic clustering of economic activity: The case of prominent western visual artists. *Journal of Cultural Economics*, 31(2), 109–128.
- Koenker, R., & Basset, G. (1978). Regression quantiles. *Econometrica*, 46(1), 33–50.
- Lévy-Garboua, L., & Montmarquette, C. (2003). Demand. In R. Towse (Ed.), *A handbook of cultural economics* (pp. 201–213). Cleltenham: Edward Elgar.
- Markusen, A., & Gadwa, A. (2009). *Arts and culture in urban/regional planning: A review and research agenda*. Working paper 271. Minneapolis: University of Minnesota.
- Markusen, A., & Schrock, G. (2006). The artistic dividend: Urban artistic specialization and economic development implications. *Urban Studies*, 43(10), 1661–1686.
- Masters, T., Russell, R., & Brooks R. (2009). The demand for creative arts in regional Victoria, Australia. *Applied Economics*, 41, 1466–4283.
- Michael, R. T., & Becker, G. S. (1973). On the new theory of consumer behaviour. *Swedish Journal of Economics*, 75(4), 378–396.
- Moore, T. G. (1996). The demand for Broadway theatre tickets. *The Review of Economics and Statistics*, 48(1), 79–87.
- Newey, W. K. (1985). Maximum likelihood specification testing and conditional moment tests. *Econometrica*, 53(5), 1047–1070.
- Pagan, A., & Vella, F. (1989). Diagnostic tests for models based on individual data: A special survey. *Journal of Applied Econometrics*, 4, 229–259.
- Perloff, H. (1979). Using the arts to improve life in the city. *Journal of Cultural Economics*, 3(2), 1–21.
- Powell, J. L. (1984). Least absolute deviations estimation for the censored regression model. *Journal of Econometrics*, 25(3), 303–325.
- Powell, J. L. (1986). Censored regression quantiles. *Journal of Econometrics*, 32(1), 143–155.
- Ringstad, V., & Løyland, K. (2006). The demand for books estimated by means of consumer survey data. *Journal of Cultural Economics*, 30(2), 141–155.
- Santagata, W. (2008). Cultural districts and their role in developed and developing countries. In V. A. Ginsburgh & D. Throsby (Eds.), *Handbook of the economics of art and culture* (pp. 1101–1122). Oxford: North-Holland Elsevier.
- Stigler, G. J., & Becker, G. S. (1977). De gustibus non est disputandum. *American Economic Review*, 67(2), 76–90.
- Tobias, S. (2004). Quality in the performing arts: Aggregating and rationalizing expert opinion. *Journal of Cultural Economics*, 28(2), 109–124.
- Tobin, J. (1958). Estimation of relationships for limited dependent variables. *Econometrica*, 26(1), 24–36.
- Werck, K., & Heyndels, B. (2007). Programmatic choices and the demand for theatre: The case of Flemish theatres. *Journal of Cultural Economics*, 31(1), 25–41.
- Zieba, M. (2009). Full-income and price elasticities of demand for German public theatre. *Journal of Cultural Economics*, 33(2), 85–108.