

IS A TAX CUT ON CULTURAL GOODS CONSUMPTION ACTUALLY DESIRABLE?: A MICROSIMULATION ANALYSIS

Juan Prieto-Rodríguez^{*}; Desiderio Romero-Jordán^{**} and José Felix Sanz-Sanz^{***}

English Summary

Proposals for tax cuts on cultural goods represent an ongoing debate in cultural policy. The main aim of this paper is to shed some light on this debate using microsimulation tools. First, we have estimated an Almost Ideal Demand System for nineteen different groups of goods, including cultural goods. Expenditure and price elasticities have been obtained from this model. Using this information, three alternatives cuts in the V.A.T. rate on cultural goods have been microsimulated and evaluated in terms of revenue and welfare. These types of fiscal reforms will lead to welfare and efficiency gains that can be described as regressive.

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^{*} *Universidad de Oviedo and Instituto de Estudios Fiscales.* Correspondence author.

Address: Departamento de Economía, Facultad de Económicas.

Avda. del Cristo s/n, 33071-Oviedo. SPAIN.

e-mail: jprietor@uniovi.es

^{**} *Instituto de Estudios Fiscales and Universidad Rey Juan Carlos*

^{***} *Instituto de Estudios Fiscales and Universidad Complutense de Madrid*

I. INTRODUCTION

Traditionally, tax policies that favour cultural goods are justified by their classification as *merit* goods, according to Musgrave's definition (1959). Although this is somewhat controversial, government intervention in the provision and funding of these goods is also based on the potential existence of external economies and information asymmetries. In any case, and despite these normative considerations, government policies for the promotion of culture should be evaluated to ensure that well-informed decisions are taken.

Far from being a purely academic exercise, this is an ongoing issue in debates on cultural policy, as demonstrated by the controversy surrounding the removal of the zero-rate VAT on books in Mexico, the proposal by ministers of the European Union (EU) Audiovisual Policy Unit to harmonise VAT on books and audiovisual media or the petition, signed by European pop artists, for a cut in the value added tax on CDs in order to give music the same tax treatment as books, newspapers or cinema tickets, which are subject to lower tax rates. In this context, the European Commission presented a Directive proposal with a new list of goods and services which would benefit from a reduced rate of VAT. This measure would specifically affect theatre and cinema tickets, as well as books, newspapers and magazines. This tax cut will depend on the arrangements to be made by the economics ministers of the EU in the near future.

Tax cut proposals like those described above are generally made without taking into account all their economic effects. That is to say, they generally lack the support provided by empirical evidence. This justifies their approval. Fortunately, economists have a series of different tools at their disposal which allow the effects of such proposals to be determined. One of these tools is microsimulation, which enables the assessment of fiscal reforms even before they are passed by the Parliament. These techniques are increasingly used in developed countries, though up to now they have scarcely been used in the economics of culture (see Merz, 1991; O'Donoghue, 2001).

The main aim of this paper is to shed some light on this debate using microsimulation tools to analyse the expected demand shifts and their effects on consumers' welfare. This type of analysis will show that there are some caveats which must

be taken into account when implementing these kinds of fiscal reforms. In order to meet this objective, our first step will be to analyse consumers' revealed preferences. Thus, we will assess own-price elasticities, cross-elasticities and expenditure elasticities of nineteen different groups of consumer goods including cultural ones. This will allow us to analyse rarely studied issues in the economics literature such as how consumers' consumption of cultural goods responds to price or income changes, as well as the complementary or substitute nature of the different cultural goods. This kind of empirical analysis is uncommon. Nevertheless, from an economic perspective it is crucial to understand the demand patterns of cultural goods and the effectiveness of public policies which support these goods and services.

With this in mind, three alternatives for reforming the indirect tax on cultural goods will be evaluated. The analysis will be carried out using a microsimulation of these three possible tax reforms and the results will help us identify the most likely effects of a tax cut on cultural goods. Specifically, we will try to quantify the impact on revenue as well as the effects of the suggested reform proposals on social and individual welfare. Moreover, the microsimulation exercises will allow us to determine how the gains (and eventual losses) from these tax cuts will be distributed and who will benefit from them. In other words, this microsimulation exercise will enable us to ascertain whether a tax cut on cultural goods is actually desirable from an economic point of view, based on an assessment of public sector revenue losses and consumer gains.

The econometric basis for these simulations is the estimation of an Almost Ideal Demand System (AIDS) proposed by Deaton and Muelbauer (1980a, 1980b), which lets us control for all cross-effects generated by price or real income changes. The data set used to estimate this model is the Spanish Continuous Survey of Household Expenditure (ECPF)¹.

The paper is organized as follows: the second section will describe the indirect taxation on cultural goods in Spain, as well as the simulated reforms; the third one will set out the complete demand model used, the fourth one, the demand system estimated, the fifth one will present the tax reform estimation of the microsimulation results and the last section will summarise the main conclusions.

¹ This survey has a panel structure and it is currently used in international studies (see, for instance, Browning and Collado, 2001).

II. TAXATION OF CULTURAL GOODS IN SPAIN: CURRENT SITUATION AND SIMULATED REFORMS

In Spain, as in other European Union countries, indirect taxation on consumption generally comprises *Value Added Tax* (VAT) and the different excise duties imposed on specific consumer goods such as spirits, beer, hydrocarbons, tobacco, electricity and vehicle registration. Of these, VAT is the only one which affects cultural goods and services (i.e. there are no excise duties to be paid on such goods and services). However, the tax rates levied on these goods differ across product categories. VAT on records, films and audiovisual media is currently set at a minimum of 15% throughout Europe and in some countries is as high as 25%. On the other hand, other cultural goods such as books and newspapers are subject to rates as low as 4%.

Table I summarizes the VAT rate currently imposed on cultural goods and services in Spain within the European Union VAT system. As the table shows, VAT is levied at 7% on cinema, theatre, concerts, ballet, museum tickets, and admission to botanic gardens and sporting events such as football games; at 4% on books, magazines and newspapers (although text books are not included in this item, they are taxed at 4%); and at 16% on records, cassettes, video tapes (blank or film) and audiovisual media. This information provides the initial scenario for this paper. As can be seen, there is a wide range of tax rates, and there is no zero-rate tax or exemption. Three reforms of this regime are simulated. The first reform analyses the application of a uniform tax rate of 4% on all cultural goods and services (reform A); the second reform proposes a broad zero rate (reform B); and the third reform simulates reducing the tax imposed on these goods to the rate immediately below the one in the initial regime (reform C). Reform A could be considered as being equivalent to the European pop artists' proposal to establish a unique fiscal treatment for cultural goods.

Table I
Spanish VAT rates on cultural goods and services

ITEM	INITIAL SCENARIO VAT	SIMULATED REFORMS		
		Reform A	Reform B	Reform C
Cinema, theatre, concert, ballet, museum, botanic garden, etc...	7%	4%	0%	4%
Books, magazines and periodicals	4%	4%	0%	0%
Records, films (blank and originals) and audiovisual media	16%	4%	0%	7%

III. A COMPLETE DEMAND SYSTEM: DATA AND ESTIMATION PROCESS

The database used is the Spanish Continuous Survey of Household Expenditure (ECPF). The ECPF is a panel run by the Spanish National Institute of Statistics (INE). This survey provides quarterly and annual information on household incomes and consumption, including own-consumption, own-supply and payment in kind. The Survey is targeted at 3,200 families chosen by sampling techniques and one eighth of the sample is renewed each quarter. It also includes exhaustive information on household characteristics such as employment status, demographics, and so on.

In accordance with the level of disaggregation permitted by this survey and the availability of consumer price indexes, nineteen expenditure groups were considered, three of which were cultural goods². The first group consists of admission to cinemas, theatres, museums and other cultural events. The second group covers books, magazines and newspapers and the third group includes film and music on magnetic media.

The empirical study is made up of two phases: an estimation phase and a simulation phase. The first phase generates the price elasticity and expenditure elasticity matrix using

² The goods are grouped as follows: 1. Food and non-alcoholic drinks. 2 Alcoholic drinks. 3 Tobacco. 4 Clothing and footwear. 5 Household goods. 6 Furniture and household services. 7 Gas and fuel. 8 Medical and pharmaceutical products and services. 9 Fuels. 10 Private transport services. 11 Public transport. 12 Communications 13 Leisure, entertainment and holidays. 14 Education. 15 Cinema, theatre, museum and other events. 16 Books, magazines and newspapers. 17 Film and music on magnetic media 18 Consumer durables. 19 Other goods.

ECPF data corresponding to the period 1985 (third quarter) to 1995 (fourth quarter). Using these results, the second phase then simulates the effects of a tax reform, taking the 1998 ECPF data as a reference.

The model used in this paper assumes firstly that consumers divide their total income between savings and durable and non-durable goods. Subsequently, income allocated to durable and non-durable goods is divided between different types of goods (e.g. Blundell, 1988). In practice, the model assumes expenditure on these goods is separable within total expenditure. Changes in consumer behaviour are taken into account by restructuring the composition of the household shopping basket, maintaining real consumer expenditure constant in the scenarios considered. That is, we assume that the spending and saving patterns of the economic agents remain constant over time.

The model used in the estimation phase is the Almost Ideal Demand System (AIDS) proposed by Deaton and Muellbauer (1980a and 1980b). The main attraction of AIDS is that it allows a first-order approximation to an unknown demand system (Nicol, 1989).

$$w_{iht} = a_{ih} + \sum_{j=1}^{19} \gamma_{ij} \log p_{jt} + \beta_i \log y_{ht} + \varepsilon_{iht} \quad (1)$$

Subscripts i , h and t refer respectively to the type of goods, household and time. The variable w_{iht} defines the share of the total expenditure which good i represents in household h during period t . The variables p and y represent the price and real expenditure respectively, the latter being used as a proxy of real income.

Parameters a , γ , β were estimated by imposing zero-degree homogeneity constraints on prices and income –(expressions (2), (3) and (4)) and symmetry constraints on substitution effects (5):

$$\sum_{i=1}^{19} a_{ih} = 1 \quad (2)$$

$$\sum_{i=1}^{19} \beta_i = 0 \quad (3)$$

$$\sum_{i=1}^{19} \gamma_{ij} = 0 \quad (4)$$

$$\gamma_{ij} = \gamma_{ji} \quad (i, j = 1, \dots, n) \quad (5)$$

The sum of the different relative weightings of the expenditure groups, w_i , must satisfy:

$$\sum_{i=1}^{19} w_{iht} = 1 \quad (6)$$

Parameter a is modelled using a series of dummies which allow households to be categorized by home tenure, alcohol and tobacco consumption, education, size of town of residence, employment status (active or inactive) and employment category. The model is estimated under the assumption that individuals will alter their expenditure decisions as a result of the price changes generated by the simulated reforms. Hence, the share that each good has in the total expenditure, w_i , has to be predicted and adjusted by the prediction error, ε , where $w_i = Y_i \hat{\beta} + \hat{\varepsilon}_i$.

The expenditure on each good depends not only on the price of the good itself but also on the price of other goods, which requires that the complementarity and substitutability relationships between those goods be modelled explicitly. It should be noted that we implicitly assume that the producer prices do not change; it is the price to the consumer that is modified by the tax reforms and variations in the demand quantities do not affect producer prices. Hence, our welfare analysis is focus on the consumer surplus changes assuming that producer surplus does not vary with the VAT rates modifications. Real expenditure is obtained from the expenditure on all goods deflated by the Stone Index, which takes a specific value for each household:

$$\log p_{ht} = \sum_{j=1}^{19} w_{jht} p_{jt} \quad (7)$$

Given that the AIDS is made up of a system of dependent linear equations, $n-1$ equations of the system have been estimated, where we exclude the equation corresponding to consumer durables. The parameter values of the equation that is omitted in the estimation have been obtained using equations (2) to (6).

Infrequent purchases and seasonal variation are among the main econometric problems with this type of data. To avoid the first problem, the model has been estimated following the procedure proposed by Baker, Mckay and Simons (1990), which consists of using instrumental variables in a three-stage least squares estimation procedure. Seasonal variation, on the other hand, is corrected by including a variable which takes account of the trend of the series, and by introducing a dummy variable for each quarter of the series (the variable which corresponds to the fourth quarter is omitted in the estimation).

IV. DEMAND SYSTEM ESTIMATION

The expenditure and price elasticities of this demand system are obtained from the following expressions:

$$e_i = \frac{\beta_i}{w_i} + 1 \quad (8)$$

$$\varepsilon_{ij} = \frac{1}{(1 + \beta_i \ln P_i)} \left[\frac{\gamma_{ij}}{w_i} - \frac{\beta_i}{w_i} \left[w_j + P_j \sum_{k \neq i}^n \ln P_k \frac{\partial w_k}{\partial P_j} \right] \right] - \delta_{ij} \quad (9)$$

where $\delta_{ij} = 1$, if $i = j$ and 0 in all other cases.

The estimated expenditure elasticities and the Marshallian own-price elasticities are presented in Table II and Table III. As may be seen, all goods are observed to have a positive expenditure elasticity that is to say, none of the categories are inferior. This outcome is to be expected, since the items of expenditure considered in the equations are of an aggregated nature and while it may be the case that a specific good is inferior, it is unlikely that this would be the case for an entire category of goods. However, several expenditure groups are defined as necessities since their expenditure elasticity is less than one (including food, as might be expected). Conversely, the three groups of cultural goods considered here conform to the profile of luxuries since their expenditure elasticity is greater than one, particularly so in the case of cinema, theatre and other shows. This means

that the consumption of cultural goods is very sensitive to an income increase and, by extension, to the economic cycle. For instance, in the case of expenditure on cinemas, theatres and other entertainments, the estimated average value of price elasticities shows that a 1% increase (decrease) in households income will generate a 1.75% increase (decrease) in expenditure on these goods.

The own-price elasticities have the expected sign for cinema, theatre and other entertainments (group 15) and books, newspapers and magazines (group 16). The results show that demand for these goods is very sensitive to price changes, particularly in the case of group 16. In both cases, a 1% price decrease will generate a proportionally greater increase in the consumption of such goods of more than 1%. Similar results for the Spanish case have been found by SGAE (2002) and Fernández *et al* (2002). These studies show that price increases discourage attendance at cinema, theatre and other entertainments by non-regular spectators, whereas regular spectators maintain a similar level of expenditure and thus continue to attend these events, although less frequently.

The furniture and household services group and the record and film group are the only two with positive estimated price elasticities. However, it can be seen in Table III that these elasticities are negative for at least the last ten percentiles. Since the value zero is included in any two-tailed confidence interval for the standard confidence levels, it can be argued that the elasticity of such goods is not significantly different from zero. Finally, the goods analysed all had inelastic demands with the exception of private transport, cinema, theatre, other events and books and newspapers. Consequently, we can expect more than proportional changes in the consumption of these cultural goods as a reaction to reductions in VAT rates.

Table II
Expenditure elasticities, by group of goods

Expenditure group	Average value	Percentile 90	Percentile 99
1. Food and non-alcoholic beverages	0.63	0.78	0.85
2. Alcoholic beverages	0.66	0.86	0.95
3. Tobacco	0.81	0.91	0.95
4. Clothing and footwear	1.14	1.07	1.04
5. Housing	0.79	0.88	0.92
6. Furniture and household equipment	0.94	0.97	0.98
7. Gas and fuel	0.69	0.85	0.93
8. Medical and pharmaceutical products and services	1.06	1.03	1.01

9. Fuel	1.25	1.13	1.07
10. Private transport services	1.20	1.09	1.05
11. Public transport	1.01	1.01	1.00
12. Communications	0.86	0.92	0.96
13. Leisure, entertainment and holidays	1.40	1.20	1.13
14. Education	1.30	1.11	1.05
15. Cinema, theatre, museum, etc...	1.75	1.31	1.11
16. Books, periodicals and newspapers	1.37	1.17	1.08
17. Music and film on magnetic media.	1.24	1.09	1.03
18. Consumer durables	1.48	1.17	1.06
19. Other goods not listed above	1.27	1.14	1.04

Note: Elasticities evaluated at population values

Table III
Own-price elasticities, by group of goods

Expenditure group	Average value	Percentile 90	Percentile 99
1. Food and non-alcoholic beverages	-0.24	-0.51	-0.65
2. Alcoholic beverages	-0.19	-0.66	-0.87
3. Tobacco	-0.91	-0.95	-0.97
4. Clothing and footwear	-0.69	-0.85	-0.92
5. Housing	-0.83	-0.88	-0.90
6. Furniture and household equipment	0.45	-0.13	-0.57
7. Gas and fuel	-0.52	-0.76	-0.89
8. Medical and pharmaceutical products and services	-0.78	-0.91	-0.96
9. Fuel	-0.81	-0.91	-0.95
10. Private transport services	-2.05	-1.49	-1.24
11. Public transport	-0.83	-0.93	-0.97
12. Communications	-0.95	-0.97	-0.98
13. Leisure, entertainment and holidays	-0.56	-0.80	-0.89
14. Education	-0.04	-0.64	-0.85
15. Cinema, theatre, museum, etc...	-1.23	-1.10	-1.04
16. Books, magazines and newspapers	-1.65	-1.30	-1.14
17. Music and film on magnetic media.	0.65	-0.36	-0.77
18. Consumer durables	-1.43	-1.18	-1.09
19. Other goods not listed above	6.20	2.58	0.05

Note: Elasticities evaluated at population values

Table IV lists the cross elasticities between the nineteen groups of goods and the cultural goods considered here. For substitute goods, the cross elasticity has to be positive. Complementary goods, on the other hand, have a negative cross elasticity. Apart from the residual category 19, the main complementarity and substitutability relations arise among the cultural goods themselves. In particular, going to the cinema and other shows is complementary to the purchase of books, newspapers and magazines and substitutable to the acquisition of records and films. These relationships, estimated from cross elasticities,

indicate the direction of the expected changes for other non-cultural goods after the reforms analysed here took place.

Table IV
Ordinary cross elasticities

	15. Movie, theatre and shows	16. Books, newspapers and magazines	17. Records and films
1. Food and beverages	-0.003	-0.002	-0.001
2. Alcoholic beverages	0.093	0.631	0.374
3. Tobacco	0.034	-0.006	-0.023
4. Clothing and footwear	-0.098	-0.191	-0.051
5. Housing	-0.004	-0.036	0.017
6. Furniture and household equipment	-0.144	-0.048	-0.148
7. Gas and fuel	-0.012	-0.259	0.133
8. Medical and pharmaceutical products and services	-0.131	0.053	-0.056
9. Fuel	0.078	0.062	-0.048
10. Private transport services	0.260	0.242	-0.040
11. Public transport	-0.168	-0.186	-0.142
12. Communications	-0.136	0.163	-0.018
13. Leisure, entertainment and holidays	-0.053	0.041	-0.055
14. Education	-0.058	0.380	0.155
15. Cinema, theatre and shows	-1.228	-0.718	0.711
16. Books, newspapers and magazines	-0.524	-1.648	-0.331
17. Records and films	1.329	-0.840	0.650
18. Consumer durables	0.329	0.076	-0.171
19. Other goods not listed above	-0.038	0.133	1.180

After the estimation phase had been completed, the proposed tax reforms were simulated. When P_j varies, it can be proved that variations in the shares are approximately equal to

$$\Delta w_i = w_i (e_{ij} + \delta_{ij}) \frac{\Delta P_j}{P_j} \quad (10)$$

where $\frac{\Delta P_j}{P_j}$ is approximately the VAT rate change and $\delta_{ij} = 1$ if $i = j$ and 0

otherwise. It can be observed from equation (10) that an inelastic good will find its share reduced – although its demand will increase - if its price decreases. On the other hand, if own-price elasticity is higher than one (in absolute values) both the share and quantity demanded will increase where there is a price reduction. Furthermore, the shares of total expenditure of complementary goods will increase when prices decrease because of tax cuts, but the shares of substitutes will be reduced.

Table V shows the changes in the shopping basket induced by the simulated reforms, using the consumption behaviour implicit in the AIDS model. Such changes in the shares of each group of goods within total expenditure are a direct consequence of the own and cross effects on expenditure induced by these reforms.

Table V
Breakdown of total expenditure by expenditure groups

Expenditure group	Initial scenario	Reform A	Reform B	Reform C
1. Food and non-alcoholic beverages	0.2016	0.2018	0.2017	0.2017
2. Alcoholic beverages	0.0076	0.0069	0.0071	0.0072
3. Tobacco	0.0197	0.0197	0.0197	0.0197
4. Clothing and footwear	0.0738	0.0755	0.0749	0.0744
5. Housing	0.2347	0.2346	0.2348	0.2343
6. Furniture and household equipment	0.0900	0.0930	0.0916	0.0918
7. Gas and fuel	0.0147	0.0146	0.0147	0.0145
8. Medical and pharmaceutical products and services	0.0279	0.0284	0.0281	0.0282
9. Fuel	0.0359	0.0359	0.0359	0.0360
10. Private transport services	0.0262	0.0256	0.0258	0.0261
11. Public transport	0.0088	0.0094	0.0092	0.0091
12. Communications	0.0211	0.0212	0.0211	0.0212
13. Leisure, entertainment and holidays	0.1266	0.1279	0.1271	0.1275
14. Education	0.0162	0.0157	0.0158	0.0160
15. Cinema, theatre, museum, etc...	0.0030	0.0029	0.0030	0.0028
16. Books, magazines and newspapers	0.0064	0.0075	0.0071	0.0069
17. Music and film on magnetic media.	0.0018	0.0014	0.0016	0.0015
18. Consumer durables	0.0652	0.0651	0.0652	0.0659
19. Other goods not listed above	0.0190	0.0158	0.0171	0.0166

Since books and newspapers have an elastic demand and are complementary with respect to cinema tickets and music and film recordings, these proposed reforms must lead unambiguously to an increment in their share, as shown in Table V. Furthermore, given our estimates, we may expect reductions in cinema, theatre and museum tickets and music and film on magnetic media shares since their demands are less elastic and they present two cross effects with different signs.

V. MICROSIMULATED DISTRIBUTIVE AND WELFARE RESULTS

Having microsimulated the proposed reforms, in this section we analyse the distributive and welfare outcomes. First, it should be pointed out that the overall decline in tax revenue implied by these reforms is not very large: 0.02% for A, 0.54% for B and

0.41% for C. Obviously, B is the most radical reform since it implies abolishing VAT for cultural goods. A and C, however, are partial reforms, with C being more important as book and newspapers have the highest budget shares among cultural goods and this reform involves a reduction in its VAT rate whereas under A it remains unchanged. This small revenue impact is closely linked to the low weighting of cultural goods in household budgets (1.12%) and the cross effects that will shift the demand for other goods. As shown in Table VI, even though the consumption of cultural goods is not subject to any excise duty, excise revenue is altered slightly as a result of the reassignments induced by the reforms in the household shopping basket.

Table VI
Percentage change in tax revenue with respect to the initial scenario

	Reform A	Reform B	Reform C
VAT	-0.154	-0.770	-0.592
Excise duties	0.258	-0.074	-0.040
Total	-0.020	-0.544	-0.413

Note: Population values

Given that the revenue effects of the three reforms are very small, at first sight this would appear to be argument in favour of their application. However, the tax reforms studied here cannot be justified on the sole basis of this condition.

Together with revenue aspects, a through assessment of such reforms requires consideration of three other crucial issues. Firstly, it is necessary to calculate to what extent reforms affect the distribution of expenditure. Secondly, the effect on individual well-being and social welfare must be assessed. Finally, it is appropriate to identify the characteristics of the households benefiting most from these measures. This set of results enables a cost-benefit analysis of the reforms to be made.

As regards the first issue mentioned above, the decrease in indirect tax revenue is not equally distributed. In fact, the reforms considered here slightly increase inequality, as shown in the Gini indices in Table VII. This increase in the Gini index, though small, is greatest when all cultural goods are zero-rated (Reform B).

Table VII
Distribution, progressiveness and redistribution indices

	Pre-reform	Reform A	Reform B	Reform C
Gini indices				
Gross expenditure	0.3178291	--	--	--
Net expenditure	0.3135603	0.3136195	0.3136896	0.3136451
Reynolds-Smolensky redistribution index				
Net expenditure	0.0042689	0.0042096	0.0041395	0.041840
Average rate				
Average rate	11.52936%	11.52705%	11.46715%	11.48386%
Kakwani progressiveness index				
Net expenditure	0.0375026	0.0370591	0.0367393	0.0370179

Note: Population values

In addition, the reforms considered here impair the redistributive capacity of indirect taxation, as evidenced by the Reynolds-Smolensky index in Table VII. This is due to the loss of revenue arising from such measures and the loss of progressiveness of indirect taxation (computed via the Kakwani index). The low revenue impact observed in Table VI is corroborated by the narrow changes in the average rates shown in Table VII. Nevertheless, the reforms considered here barely change the distribution of effective average rates, as shown in Figure I.

(FIGURE 1)

The positive slope of this figure is related to the fact that luxury goods usually have higher VAT rates, and therefore the higher the income the higher the effective average tax rate.

In short, the simulated reforms scarcely have any distributive impact, although they do produce a very slight increase in the inequality of the expenditure distribution and they reduce the redistributive capacity and progressiveness of the indirect taxes. Overall, a reduction in the taxation on the consumption of cultural goods and services benefits the population that spends most on those goods. This result is closely linked to the high

concentration of consumption on this type of good in the uppermost deciles of expenditure (cf. Figure 2).

(FIGURE 2)

The effects of the reforms on individual well-being may be studied using two approaches. The first of these is to assess the reform just after its introduction (static monetary variation). Here it is assumed that, in the short term, households do not modify their behaviour in response to fiscal parameter changes. In the second approach, individual well-being is assessed using Hick's Equivalent Variation (1939) and King Equivalent Expenditure, which assume that households reallocate expenditure where relative prices change.

The results in Table VIII show that, on average, the reforms considered produce welfare gains in the short and the long term. Three aspects must be stressed. On the one hand, welfare gains are substantially greater if we take household behaviour into account. On the other hand, and as may be expected, the highest gains arise when the cultural goods are zero-rated (Reform B), whereas the reform which generates the least gain in welfare is the reduction to a uniform 4% VAT rate (Reform A). Finally, average welfare gains are not significant in absolute terms, and represent a small percentage of the average household's spending. In relative terms, the gains are limited but not insignificant, particularly in the long term. For instance, the price of a cinema ticket was about 5 euros in Spain in 1998, so in comparative terms Reform A would generate a welfare gain equivalent to attendance at eight additional films a year or to the purchase of two or three CDs. If VAT were eliminated on cultural goods (Reform B), welfare gains would be as high as the purchase of fifteen extra cinema tickets or four additional CDs. However, these gains would be distributed among all goods categories, as shown in Table V, and the demand for cultural good would barely change.

Table VIII
Mean variation in household welfare and efficiency
(Euros / year)

	Reform A	Reform B	Reform C
Expenditure		17,639.83	
Initial equivalent expenditure	17,603.1	17,565.0	17,591.5
Final equivalent expenditure	17,676.6	17,715.0	17,688.2
Static monetary variation	6.2	14.7	9.9
Equivalent variation	36.8	75.2	48.4

Note: Population values

Nevertheless, these results show that on average, the reforms would increase households' well-being. However, the differences observed in Figure 2 in the consumption of cultural goods make it appropriate to study how gains are distributed in terms of economic and social-economic variables. As a starting point, Table IX contains the distribution of such gains by expenditure deciles using the equivalent variation. The results clearly indicate that welfare gains rise with expenditure, that is, whatever tax reform is implemented, a decrease in VAT on cultural goods benefits high-income households more. Even more, the welfare gains of the households from the uppermost decile are 10 times greater than those from the first decile.

Table IX
Distributive analysis of welfare
Equivalent Variation

Decile	Reform A	Reform B	Reform C
1	9.9	19.3	12.7
2	16.8	33.5	21.9
3	22.2	44.5	29.0
4	27.4	55.2	35.9
5	32.6	66.0	42.7
6	38.4	78.0	50.4
7	45.2	92.2	59.5
8	54.5	11.6	71.8
9	69.1	142.3	91.2
10	110.0	228.9	145.9
Average	36.8	75.2	48.4

Note: Population values

An analysis of the distribution of equivalent variation has also been carried out taking different socio-economic variables into account. The results are shown in Table X. Firstly, it can be seen that welfare gains are closely associated with the level of studies and

the economic situation of the head of the family. In particular, where university studies have been taken, welfare gains are twice as high as those where studies are at a primary school level. This result corroborates those reported in the CIMEC (1999) study, where there is a very high correlation between attendance at theatres, cinemas and other stage arts and the educational level and standard of living of the audience. Secondly, welfare gains depend, as expected, on the economic situation of households. The households most benefitting from a tax reduction on cultural goods are those where the principal earner is working, and their gains are far greater than those where the principal earner is unemployed or retired. Thirdly, reforms are more favourable for households made up of couples rather than one individual, especially when the individual in question is older than 65. This result will partly depend on scale economies in two-earner couples. Thus, the ability to pay again plays a central role in the distribution of welfare gains. Finally, the results show that the greatest welfare gains arise where individuals live in big cities where cultural availability (supply) is concentrated.

Tabla X
Breakdown of the equivalent variation by social-economic variables

	Households	Reform A	Reform B	Reform C
	%			
1. Educational Level				
Tertiary Education	16.3	57.5	118.6	76.0
Secondary Education	12.8	45.4	93.0	59.8
Primary Education	70.9	30.5	61.9	40.0
2. Economic Situation				
On Work	59.6	43.7	89.6	57.6
Unemployed	3.8	27.9	56.5	36.6
Retired	29.4	27.6	56.0	36.2
Unfit for Work/not Working	7.1	21.6	43.6	28.3
Student or on Military Service	0.0	17.6	35.2	23.0
3. Households Composition				
Couple with three or more children under 16	11.3	41.3	84.5	54.4
Father/mother or couple with at least a son/daughter older than 16	2.2	40.4	82.8	53.3
Couples with two children under 16	8.9	38.0	77.5	49.9
Couples with one child under 16	7.0	34.0	69.3	44.7
Couples without children, with a member older than 65	1.7	27.9	56.5	36.5
Couples without children, with a member under 65	9.9	22.6	45.6	29.6
An individual, between 30 and 64 of age	3.7	21.6	43.6	28.3
An individual, under 30	0.3	21.6	43.5	28.2
An individual, 65 years old or more	6.2	13.7	27.3	17.8
Other households with all their members related to the family	35.2	44.3	90.9	58.4
Other households with one or more members not related	13.3	40.1	82.0	52.8

to the family				
Other households	0.3	36.2	73.8	47.6
4. Size of the residence town				
Town, capital of a province	35.3	42.3	86.7	55.7
Town not a capital with more than 100000 inhabitants.	8.6	36.9	75.3	48.5
Town not a capital with a population between 50000 and 100000 inhabitants.	7.3	37.4	76.4	49.2
Town not a capital with a population between 20000 and 50000 inhabitants.	12.3	36.4	74.3	47.9
Town not a capital with a population between 10000 and 20000 inhabitants.	10.4	33.7	68.7	44.3
Town with less than 10000 inhabitants	26.0	30.5	62.2	40.1

Supplementary to the analysis of individual well-being, we also study the effects of these three reforms on *social* welfare. Table XI shows the results for the Atkinson indices and King's lambda for different values of the inequality aversion parameter. These results show gains – albeit small – in social welfare. The reform that produces the greatest gains (though modest) is that which applies a zero rate tax to the consumption of cultural goods.

Table XI
Atkinson index & King's lambda

Inequality aversion (ϵ)	Pre-reform	Reform A		Reform B		Reform C	
	Atkinson index	Atkinson index	King's lambda	Atkinson index	King's lambda	Atkinson index	King's lambda
0	0.000	0.000	1.009	0.000	1.012	0.000	1.006
0.5	0.081	0.081	1.009	0.081	1.011	0.081	1.006
1	0.159	0.159	1.008	0.160	1.011	0.160	1.005
1.5	0.235	0.235	1.008	0.235	1.011	0.235	1.005
2	0.308	0.343	1.008	0.307	1.011	0.308	1.005
2.5	0.378	0.378	1.008	0.377	1.011	0.378	1.005
3	0.444	0.444	1.008	0.444	1.011	0.444	1.005

Note: Population values

Finally, Table XII shows that the tax reforms simulated here produce gains in efficiency. On average, reform B is the one which results in the greatest efficiency gains, with an improvement of 0.0225 euros per euro of additional revenue.

Table XII
Efficiency analysis

Decile	Equivalent deadweight loss			Relative change in efficiency		
	Reform A	Reform B	Reform C	Reform A	Reform B	Reform C
		(Ed_E)			Ed_E / R_1	
1	-10.32	-17.74	-11.45	-0.01900	-0.03400	-0.02200
2	-16.49	-28.53	-18.25	-0.01500	-0.02700	-0.01700
3	-20.67	-35.75	-22.61	-0.01300	-0.02300	-0.01500
4	-24.17	-41.54	-26.27	-0.01200	-0.02100	-0.01300
5	-28.04	-48.69	-30.52	-0.01200	-0.02100	-0.01300
6	-33.35	-57.87	-36.01	-0.01200	-0.02100	-0.01300
7	-38.00	-66.65	-41.73	-0.01100	-0.01900	-0.01200
8	-44.76	-78.79	-49.16	-0.01100	-0.01900	-0.01200
9	-57.01	-101.28	-62.61	-0.01100	-0.02000	-0.01200
10	-90.86	-165.65	-102.51	-0.01100	-0.02000	-0.01200
Mean	-30.53	-52.71	-32.96	-0.0127	-0.0225	-0.01410

Note: Population values

VI. FINAL CONCLUSIONS

This paper used the Spanish Continuous Survey of Household Expenditure (ECPF) to estimate an AIDS model with a total of nineteen expenditure groups. These groups include three types of cultural goods: (i) cinemas, theatres, museums, etc, (ii) books, magazines and newspapers, and (iii) music and films on magnetic media. The relevance of this exercise lies in the fact that it is one of the first attempts to estimate a complete demand system explicitly taking into account cultural goods demand.

From this demand model, the effects of three tax reforms were simulated, where each reform involved a reduction in the indirect taxation on cultural goods. Reform A consisted of applying a low VAT rate (4%) to the consumption of all cultural goods and services. Reform B consisted of zero-rating cultural goods, i.e. the total elimination of indirect taxation on culture. Reform C reduced the tax to the rate immediately below the one originally in force.

Econometric estimation of the AIDS model provided the price and expenditure elasticities of the various categories of goods. It is noteworthy that cultural goods and services are all luxury goods since their expenditure elasticities are greater than one in all

cases. Moreover, the demand for cinemas, theatres and other events has the largest average expenditure elasticity: 1.721. Cinemas, theatres and other events and books and newspapers also respond more than proportionally to price changes, since their own-price elasticities are greater than one, in absolute terms. Moreover, the most important complementarity and substitutability relations are observed among cultural goods. In particular, admissions to the cinema and other shows are complements of books, newspapers and magazines and substitutes of records and films.

With regard to distributive and revenue effects on welfare, the proposed reforms produce small declines in tax revenue: 0.020% for Reform A, 0.53% for Reform B and 0.39% for Reform C. The simulated changes most affect all expenditure groups because of the cross effects.

As for the distributive effects, the reforms considered here slightly increase expenditure distribution inequality. Moreover, they also reduce the redistributive capacity and the progressiveness of indirect taxes (although the difference is practically negligible) because the consumption of this type of good is directly related to the households purchasing power.

Since all the reforms involve tax cuts, the reforms studied bring about welfare gains. However, these welfare gains are positively related to the ability to pay, the economic situation and the educational level of a household. This result allows us to qualify the distributive aspects of this type of reform in that people with a lower cultural level, and who should thus be the primary target of cultural policies, are the least benefitted group when such policies are exclusively of a fiscal type. In addition, the reforms studied produce efficiency gains. Finally, and as expected, these reforms bring social welfare and efficiency gains which increase with the magnitude of the tax cut.

Summing up, this research shows that tax cuts on cultural goods and services will lead to welfare and efficiency increases but that these gains are not equally distributed. Moreover, this policy can be described as regressive, since these goods have income elasticities greater than one. Consequently, the richer a household is, the larger the welfare gains are. In conclusion, policy-makers should take this trade-off into account when debating whether to introduce such a tax cut.

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