Public Choice **102:** 131–149, 2000.

La donna e mobile – or is she? Voter preferences and public support for the performing arts*

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Accepted 26 May 1998

Abstract. This paper investigates a referendum held in 1994 on the public support of the Zürich Opera House. The estimates demonstrate that well over 85% of the variance in the approval rates across ballot districts can be explained with a few variables characterizing the socio-economic composition of the electorate. Since these variables have been shown to influence the level of public support for the arts in representative democracies as well, our result lends support to the view that in democracies public support for the arts is coupled to the stable preferences of the electorate. This insight may, to some extent, mitigate and qualify existing fears that cultural policy is completely at the mercy of changing government ideologies and interest group influences.

1. Introduction

Since the publication of the seminal book by Baumol and Bowen thirty years ago, contemporary cultural economics has developed into a field of research that is recognized and acknowledged by professional economists as well as scholars primarily interested in cultural affairs.[1] Even though in many respects still in its infancy, the emerging field has already achieved one important objective – namely to show that certain aspects of the cultural sphere lend themselves to being portrayed, analyzed, and explained with the help of standard economic theory. In this endeavor, the arguably most fundamental economic relationship, the law of demand, has received a great deal of attention. A large and distinguished body of literature exists which identifies the determinants of individual demand in particular for performing arts services.[2] Taken together, these studies show that demand for artistic live performances is indeed governed by the law of demand, whereby most of the estimated

* This paper was written while the first author was visiting the Department of Economics, Stanford University. The department's and in particular Professor McKinnon's outstanding hospitality is greatly appreciated. We are indebted to Takeshi Amemiya, David Throsby, and an anonymous referee for helpful remarks. Valuable research assistance by Oliver Schneider and financial support by the Deutsche Forschungsgemeinschaft are gratefully acknowledged.

short-run price elasticities range significantly below unity. Other determinants which have been found to be significant are consumer income (the estimated income elasticities usually vary around unity, indicating that culture is a non-inferior good), the prices of close substitutes, and performance quality.

In the market for the performing arts, however, consumer behavior in many instances does not really represent the driving force on the demand side. In many countries, notably in continental Europe, the performing arts are heavily subsidized.[3] In Germany, for example, public funds amount to over 80% of the budget of public theaters and orchestras.[4] Under such circumstances demand for the performing arts is to a large extent expressed via the political process and the focus of positive analysis shifts from consumer behavior to the determinants of public support.[5] In representative democracies the principal-agent relationship between the voters and the respective governing bodies is impaired by transaction costs; control over incumbent representatives is thus limited, and the government, as a result, is relatively free to exercise policy discretion. Given this political discretion, the essential question for the political-economy approach to cultural policy is this: what determines the level of public support for the arts and to what extent do these policy decisions reflect the voters' preferences, paternalistic attitudes on the part of benevolent governments, the policy-makers' ideological or personal preferences, or the influence of special interests which are accommodated in return for political support of some sort or other?

Up to now, only a few empirical studies on public support for the performing arts have adopted the political-economy viewpoint. A straightforward approach is to regress a set of variables which are supposed to capture the median voter's preferences, i.e. some summary statistics characterizing the electorate, and a set of variables portraying the interests of the political decision-makers, the bureaucrats, and the pressure groups on some measure of public support for the arts. If the estimated coefficients have the expected sign and are significantly different from zero, one can conclude that the result is compatible with the median voter and/or the interest group approach to policy determination.[6] The shortcoming of this procedure is that the postulated relationship between the variables describing the electorate's characteristics and the voters' preferences cannot be taken for granted since voter preferences are usually not observable. Positive econometric results therefore need not reflect the reelection motives of selfish politicians; they are just as well consistent with the view that cultural policies are not necessarily coupled to the preferences of the electorate but rather reflect "a sense of appropriateness of a government role in supporting the cultural life of the community."[7]

Which of these two possible interpretations is correct can only be uncovered by directly investigating the voters' preferences. This can be done either with the help of the contingent valuation method (CVM), which uses sample surveys, i.e. questionnaires, to elicit the respondents' willingness to pay for publicly provided goods, or, in the rare instances where public support for the arts is subjected to referenda – as occasionally happens in Switzerland – by observing the electorate's voting behavior. Both routes have been taken: Throsby (1984) and Throsby and Withers (1986) make use of a survey on the willingness to pay for arts support out of taxes in Sydney, Bille Hansen (1997) uses CVM to estimate the willingness to pay for the Royal Theatre in Copenhagen; Schneider and Pommerehne (1983) and Frey and Pommerehne (1989, pp. 169–172), on the other hand, analyze referenda on public support for the local theater and art museum in the canton (state) of Basel-City, Switzerland. Analyzing referenda clearly has distinct advantages over CVM. Firstly, the sample size in referenda is larger than in CVM studies. Due to the greater sample size in referenda, precision problems are far less serious. Secondly, CVM is subject to a severe bias if the study subjects do not want to reveal their true preferences, e.g. because they behave strategically or they attempt to present themselves in a favorable light vis-à-vis the interviewer – or some other person for that matter. This kind of bias does, of course, not occur in anonymous referenda. There is, thirdly, the well-established presumption that CMV is also biased because the study subjects' indicated willingness to pay in a *hypothetical* situation need not reflect their *actual* demand behavior.[8] Since referenda better resemble well-functioning markets than the simulations underlying CVM studies do, the results obtained from referenda are liable to be more accurate than CVM valuations.[9]

In this paper we make explicit the actual preferences of the voters as expressed and made observable at the ballot box; thereby we shed some light on the missing link between observable socio-economic characteristics of the voters and their preferences. This allows us to speculate about the influence of voter preferences on similar decisions in representative democracies where preferences are not directly observable. We analyze the 1994 referendum taken in the canton of Zürich on the transfer of financial responsibility for the distinguished Zürich Opera House from the municipality to the canton. We did this with the intention of confirming the basic results of the earlier studies by Frey, Pommerehne, and Schneider on the referenda taken in Basel by using a better suited data set. Referenda in the canton of Basel-City are not well suited for this kind of analysis mainly for three reasons. Firstly, the sample size is rather small; there exist only 21 districts in this canton which consists of the city and only two additional municipalities. Secondly, the assignment of the voters to the districts is rather problematic since the

voters in the city of Basel are not restricted to vote in the district they live in, and finally, because of the canton's small size, it is hardly possible to analyze voting behavior with respect to geographical stratification.

Our analysis indeed shows that voter behavior and thus voters' preferences are closely tied to the variables usually employed in studies attempting to explain the voters' influence via the re-election constraint on public support for the arts in representative democracies. There is thus reason to believe that cultural policy is not completely at the mercy of politicians making use of their policy discretion; cultural policy rather reflects, at least to some extent, also the electorate's preferences.

2. The institutional setting

The Zürich Opera House is operated privately by a stock corporation. However, as is the case with so many other cultural institutions in continental Europe, it is heavily subsidized. The profit-and-loss account for the season 1993/94 shows that 61% of the revenues consisted of funds provided by the canton, the intra-cantonal tax-revenue sharing scheme, and the municipality. The cantonal funds amounted to almost one half of total subsidies received, which corresponds to the legal maximum according to the cantonal law pertaining to the canton's patronage of culture. Despite these heavy outside contributions, the municipality felt unable to continue providing subsidization at a level requisite for an operation at the artistic standards which made Zürich the home of one of Europe's leading opera houses. Considering that a large majority of the patrons do not live and pay taxes in the city of Zürich (this, for example, was the case for 69% of the season-ticket holders in 1993/94), the cantonal authorities met the municipal government's attitude with understanding. Since a further increase of cantonal subsidies to the municipal cultural institution was not possible, transfer of full financial responsibility to the canton was initiated.[10]

A new law regulating the details of government involvement was required. Although the law passed the cantonal parliament uncontested, it also had to be approved by the population at large.[11] The referendum was carried out on 25 September 1994. Even though no major political party or interest group recommended the law to be voted down, it was by no means obvious that it would survive the referendum. The consequences of an adoption were quite evident: part of the tax burden of the voters living in the city of Zürich would be shifted to the voters living outside, the quality of the provided services remaining constant. The consequences of a defeat of the proposal, on the other hand, were less clear-cut. Nevertheless, it was generally believed that in the case of a defeat of the proposed law the city would have had to scale

down its financial support which eventually would have resulted in the Opera House becoming an establishment of only local attraction. The question thus was whether the median voter, who lives outside the city and will hardly ever go to the opera, would vote primarily his or her pocket-book, or would also consider the alleged indirect gains that were emphasized by the committee supporting the proposal. The voters in the city, on the other hand, could be expected to be in favor of the proposed law since, in the case of a defeat, the tax-payers in the city would probably have had to pay more for a qualitatively worse product than under the proposed regime.

The referendum resulted in a substantial majority of the electorate meeting the proposed take-over with approval; 73.24% agreed with the new law and voter turnout was 50.4%. Not surprisingly, the highest percentage of agreement, namely almost 90%, was observed in the city of Zürich. Only in one district was the outcome close with 52% of the voters approving. The number of municipalities in which the law did not meet with the approval of the voters was rather limited. The law was thus enacted. The cantonal parliament in the meantime also approved of an outline plan for subsidizing the Opera House to the amount of 316 million Swiss francs for the seasons 1994/95 up to 2000/01 which marks the end of the take-over.[12]

3. Empirical investigation

Our objective is to inquire into the determinants of voting behavior on cultural policy issues by looking at the specific case of the Zürich Opera House referendum. We assume that individuals vote in their self-interest (in a broad sense);[13] that is, they support the bill if and only if the net benefit they derive from maintaining high quality through Canton funding exceeds the net benefit of the alternative (a scaled-down opera financed by the City). Our empirical analysis is confined to the ballot districts *outside* the City of Zürich for two reasons. First, the financial consequences of the bill for the inhabitants of the city are opposite to those in the rest of the canton. If the city was included, this could result in biased estimates: citizens of the city opposing opera subsidization may still support the bill because it reduces *their* contribution to it. Second, while we have socio-economic data for each ballot district outside the city, we have only average values for the entire city, i.e. only one observation. This renders the analysis of voting behavior for this entity impossible. Our approach proceeds in three steps: (i) we derive testable hypotheses on individual voting behavior, (ii) we present our empirical model, (iii) we discuss our empirical findings.

3.1. *Hypotheses on voting behavior*

The literature on cultural economics has identified four reasons why people value the arts: consumption value, option value, existence (or prestige) value and the bequest motive. The higher an individuals' valuations, the more likely he or she is to vote in favor of the bill.

The consumption and option values are determined by the same parameters that determine actual demand.[14] We already mentioned in the Introduction the considerable body of literature examining demand for live performances.[15] To be sure, the income elasticities estimated in these studies need not carry over to the Zürich audience, yet the considerable empirical evidence suffices to study the relationship between income and approval rate. It also makes good intuitive sense to assume that culture is a superior good; as basic needs are increasingly satisfied, their marginal utility diminishes, and additional funds are allocated to "luxury goods" such as opera tickets. In addition, the conspicuous character of arts consumption may play a more important role for high-income groups. Thus we have

> *Hypothesis 1*: The approval rate varies positively with the average income of the voters. As income data are not available, we approximate (average) per capita income by (average) taxable income per capita.

Consumption of cultural goods has been characterized as being "positively addictive" – the more cultural goods are consumed over time, the higher the marginal utility (Throsby 1994: 3).[16] Consumption capital is built up over time which contributes to the understanding of, and the pleasure derived from opera performances. This accumulation process will be more rewarding for highly educated people, partly because they will acquire and process information more easily. This gives us

> *Hypothesis 2*: The approval rate increases with the voters' average level of education as measured by the share of individuals with college or university degrees.[17]

A formal degree, however, may not entirely capture the relevant education level, since it relates to the individual's past. Human capital could have depreciated or conversely been built up over time. In addition, the kind of education that colleges impart may not be precisely the education that makes a person treasure opera performances. It is, therefore, appropriate to include some measure for the interest an individual currently takes in politics, in general, and in cultural affairs, in particular. This interest presumably not only reflects a higher consumption value, but also a higher prestige value, since individuals who want to be informed about public affairs probably also care

more about their political and social environment. We have chosen two proxy variables. First, the subscription rate to the two leading newspapers serves as an indicator for the level of information on current local activities (whether cultural or not) and as a measure of the responsiveness to political issues. Second, the approval rate for a proposed constitutional amendment which would have allowed the federal government to pursue its own cultural policy measures the genuine interest in public involvement in the cultural sphere.[18] We summarize this in the following two hypotheses:

Hypothesis 3: The greater the awareness and responsiveness concerning political issues as measured by the newspaper subscription rate, the higher the approval rate.

Hypothesis 4: The approval rate varies positively with the general support of cultural policy as measured by the approval rate for the proposed constitutional amendment on cultural policy.

The ticket price is not the only cost of enjoying an opera performance. The most important ancillary costs are travel costs, which are typically a function of the distance traveled, both for public and private transportation. This also applies to the opportunity costs of traveling, since travel time varies positively with the distance traveled. Opportunity costs per unit of time, however, may vary across different professions. Typically, self-employed persons have higher opportunity costs of leisure than individuals with fixed working hours. Retirees should have very low opportunity costs. Higher costs of opera visits reduce the net benefit derived from opera visits, implying a lower approval rate. Thus we can formulate the following two hypotheses:

Hypothesis 5: The approval rate declines with increasing distance to the Opera House.

Hypothesis 6: The approval rate varies positively with the share of people aged 65–79 and negatively with the share of self-employed persons.

When valuing the utility derived from an object of art, people might also take the bequest motive into account.[19] They want to maintain the cultural heritage for future generations. Most likely this motivation will be stronger for individuals with children. Since we do not have data on the percentage of minors in the total population, we will approximate the number of children by the birth rate. Thus we have our final

Hypothesis 7: The approval rate varies positively with the birth rate.

Before presenting our results, we will briefly discuss our test methodology and the employed data.

3.2. *Test methodology and employed data*

The application of binary choice models to analyzing voting behavior has become standard econometric practice. Therefore, we will only sketch the basic idea behind this approach.[20] Binary choice models relate the probability that an individual will vote "yes" in a referendum to a vector of observable socio-economic variables. The reason for randomizing is that we observe attributes of the individuals such as income, age, etc., but do not know other unobservable characteristics that describe the individuals' valuation for the opera. Hence, we cannot know the threshold values for the observables at which individuals switch their vote from one choice to the other. We use a logit representation which assumes that the probability of voting "yes" can be described by a cumulative logistic probability function of these exogenous variables X_i:

$$P_i = F(\alpha + \beta X_i) = \frac{1}{1 + e^{-(\alpha+\beta X_i)}} \tag{1}$$

Thus, $P_i/(1\text{-}P_i)=e^{\alpha+\beta X_i}$ and taking natural logarithms results in

$$\log\frac{P_i}{1 - P_i} = \alpha + \beta X_i \tag{2}$$

Naturally, we do not have individual data (for which P_i would not be observable), but grouped data for each ballot district. Assuming identical individuals with respect to X_i,[21] we can approximate the probability P_i that a representative voter will vote "yes" by the fraction of voters that actually voted "yes", i.e. $\tilde{P}_i = y_i/v_i$ with y_i denoting the number of voters in ballot district i who actually voted "yes" and v_i denoting the number of voters participating in the referendum in this ballot district.[22] Thus, we replace P_i by $\tilde{P}_i$ to arrive at the regression equation

$$\log\frac{y_i/v_i}{1 - y_i/v_i} = \tilde{\alpha} + \tilde{\beta} X_i + u_i \tag{3}$$

For independent observations (binomially distributed) it can be shown that the error term in Equation (3) is asymptotically normally distributed with zero mean and variance

$$\mathrm{Var}(u_i) = \frac{v_i/y_i}{v_i - y_i} \tag{4}$$

Table 1. Overview of the employed variables

Variable	Description	Tested influence of
APPROVAL	log[approval rate/ (1 – approval rate)]	endogenous variable
AGEMIDDLE	share of population aged 40–64	opportunity cost conspicuous consumption
BIRTHRATE	birth rate	bequest motive
CULTAMEND	approval rate for the proposed constitutional amendment on cultural policy on the federal level	cultural sensitivity
DISTANCE	dummy variable describing the distance to the city center in five groups 0–15/16–30/31–45/46–60/>60km	monetary and opportunity costs
EDUCATION	share of people with college or university degree	education
INCOME	tax revenue per capita as proxy for income per capita	income
PAPER	number of subscriptions to either of the leading two newspapers	political responsiveness
SELFEMPLYD	share of self-employed people	opportunity costs

so that Equation (3) must be divided by $\sqrt{\text{Var}(u_i)}$ in order to make the regression homoscedastic.[23] This gives us our regression equation.

We test the hypotheses derived in the previous section by checking whether the respective variables have the expected sign and are significantly different from zero. Our sample consists of the 170 ballot districts outside the City of Zürich. All data sources are stated in Appendix A, selected data characteristics are given in Appendix B. The variables used in the reported regression equations are summarized in Table 1. Note that these variables have already been transformed according to Equation (4) in order to make the data set homoscedastic. All data refer to the ballot districts (which are identical to the municipalities) and are either absolute values or shares; per capita values are averages.

3.3. *Results*

The estimation results are summarized in Table 2. We see that income and education together already explain over 70% of the variation in the approval

Table 2. Regression results

(endogenous variable APPROVAL)

Variable	(1)	(2)	(3)	**(4)**
Constant	–0.226	0.178	0.193	**–0.891**
	(–6.32)	(2.46)	(2.70)	**(–6.70)**
INCOME	0.000145**	0.0000686*	0.0000691*	**0.0000638***
	(4.23)	(2.05)	(2.11)	**(2.40)**
EDUCATION	0.0681**	0.079**	0.0850**	**0.0391****
	(6.55)	(8.27)	(8.78)	**(4.53)**
PAPER				**0.000785***
				(2.24)
DISTANCE		–0.162**	–0.125**	**–0.0791****
		(–6.23)	(–4.29)	**(–3.55)**
SELFEMPLYD			–0.0146*	
			(–2.57)	
CULTAMEND				**0.721****
				(3.79)
AGEMIDDLE				**0.0240****
				(4.63)
BIRTHRATE				**0.202****
				(3.77)
R^2	0.72	0.77	0.78	**0.87**
$\overline{R}^2$	0.72	0.77	0.78	**0.86**
F-statistic	214.47	188.25	147.59	**151.87**

Number of observations: 170 in all cases; t-statistics in parentheses. ** indicates 1% significance level; * indicates 5% significance level. For data sources see Appendix A.

rates.[24] This is in line with earlier results and supports our hypotheses of a clear educational profile in the opera audience and that opera performances are superior goods.

The approval rate diminishes *ceteris paribus* with increasing distance to the city center. This is not surprising, because the utility derived from the opera – whether through actual consumption or as an option – decreases with increasing travel costs, both in terms of money spent and in terms of opportunity cost of time. Apart from using a five-step dummy to measure the distance to the city center as the crow flies, we have also used travel-time to the city center by public transport or by car. The estimated coefficients were also negative and highly significant. We refrain from reporting them because they provide no additional insight.

We tried to capture the general awareness of, and responsiveness to political issues by including in the regression the number of subscriptions per 1000 inhabitants to the two leading newspapers (PAPER).[25] The variable indeed turns out to exert a significant positive influence on the approval rate. This can be interpreted in two ways: the interest people take in current (political) issues as expressed by subscribing to a major newspaper is positively correlated with the interest they take in cultural activities and the pleasure they derive therefrom. This variable plays a significant role in addition to the variable measuring education because the latter refers to a formal degree earned in the past, whereas the former describes a revealed preference in the present. Alternatively, one could argue that this variable captures the media's influence on the electorate. These two alternative interpretations are difficult to disentangle empirically, especially since the two newspapers advocated the bill and the variable turns out to have a positive influence on the approval rate.

The approval rate for the constitutional amendment on cultural policy was included in the regression as an indicator for genuine interest in the support of the arts in general. It turns out to be significant, the coefficient assuming quite a high value. This points to a corresponding voting behavior in the two referenda on cultural issues.[26]

The influence of the opportunity costs of time spent to attend an opera performance was measured in two ways. First, we considered in the regression equation the share of self-employed people, since self-employed people typically have higher opportunity costs than salary earners with more or less fixed working hours. This measure turned out to be significant and of expected (negative) sign as in column (3), however lost its significance as more explanatory variables were added (e.g. those in column 4). Second, we considered the share of people aged 65–79 years, as these people are mostly retired but not yet too old to go to the opera. This upper limit is somewhat arbitrary, but was dictated by data availability. It turned out to be insignificant as well. On the other hand, the influence of the share of people aged 40–64 years turned out to be significantly positive. This contradicts our hypothesis 6 since this is the group with the highest opportunity costs; moreover, it stands in contrast to the results derived by Frey and Pommerehne (1989: 169–172). Our result, however, supports the view that the performing arts and the opera in particular have a conspicuous consumption aspect. The average marginal tax rate (for each municipality) as a proxy for the expected additional costs accruing from the proposed transfer of subsidization was insignificant in all regression equations.

In order to test for the influence of the bequest motive (preservation of the cultural heritage as a legacy to future generations), we introduced the birthrate as an additional variable. We would have preferred to use the actual

Table 3. Elasticities of the probability to approve with respect to the exogenous variables, at the joint mean, regression Equation (4).

INCOME	EDUCATION	PAPER	CULTAMEND	AGEMIDDLE	BIRTHRATE
0.04	0.09	0.04	0.10	0.24	0.08

percentage of minors in the total population, but these data were not available. Nonetheless, the birthrate turns out to exert a significant positive, albeit small influence on the approval rate. Notice, however, that the coefficient is likely to underestimate the influence of the bequest motive, since there is an opposing effect of the birthrate on the approval rate: parents with small children have higher opportunity costs in the form of baby-sitting, etc. The results of previous studies that found the bequest motive to be of considerable importance (Schneider and Pommerehne 1983) is thus corroborated.

To gain more insight into how the exogenous variables influence the probability of support of the bill, we calculate the respective elasticities at the mean of all the exogenous variables $\overline{X}$:

$$\varepsilon_{P,x_k}(\overline{X}) := \frac{\partial P}{\partial x_k}\frac{\overline{x}_k}{P}\Bigg|_{X=\overline{X}} = f(\overline{X}'\beta)\beta_k\frac{\overline{x}_k}{F(\overline{X}'\beta)} = [1 - F(\overline{X}'\beta)]\beta_k\,\overline{x}_k \quad (5)$$

with $\overline{X}$ being the vector of the means of all explanatory variables and $\overline{x}_k$ the k-th element thereof. f denotes the derivative of the logistic function F.[27] Equation (5) also shows that the regression parameter β_k cannot be interpreted as the marginal effect of a change in the explanatory variable on the expected probability of a "yes" vote. Since we have applied a logit representation, the marginal effect varies with the probability and is the product of β_k and f at this particular point. In Table 3 we provide the elasticities for the six explanatory variables applied in regression Equation (4) of Table 2 at their joint mean, as this regression has the highest explanatory power.[28]

A 10% increase in income will, for example, increase the approval rate by 0.4% given that the other variables stay at their mean values. At first sight, these values might seem relatively small; yet, since there is a large variation across ballot districts (cf. Table 4) the variables do influence the approval rate very significantly despite moderate elasticities at the mean. Moreover, in logit models (like in normit models) the exogenous variables have their highest marginal impact at P = 0.5; the probability at the vector of means ($F(\overline{X}'\beta)$), however, is 0.68.[29] At a high level of approval the incremental

effect of increased income is relatively small (i.e. the logistic function is flat), but it is quite substantial if the election is "close".

4. Conclusions

Why is it that governments all over the world support the arts by way of public funding, regulatory measures, and the provision of information and education? Empirical studies on public funding of the arts come to the conclusion that some of the observed variance in the levels of public support can be explained by the lobbying activities of organized special interests, the ideological orientation of the incumbent government, and a few summary statistics characterizing the socio-economic composition of the population at large.[30]

Whereas it is clear – at least in principle – how interest groups and government ideology influence cultural policy, there are two ways of interpreting the influence working through the characteristics of the population. The characteristics of the population are usually interpreted as representing the information politicians employ to arrive at appropriate policy decisions. In this view these characteristics reflect the needs of the population as seen by the paternalistic policy-maker, i.e. simply another aspect of government ideology. A political economist, on the other hand, would rather expect that public support for the arts is to some extent coupled to the voters' preferences, the reason being that the electorate possesses at least some information about the government's conduct of cultural policy and will accordingly call the government to account at the next election. According to the political-economy view, the population characteristics identified in the empirical studies are thus interpreted to reflect the electorate's preferences which influence cultural policy via the reelection constraint.

Which interpretation is the correct one? Is public support for the arts mainly determined by government ideology, or do the voters' preferences constrain the government's policy discretion? If cultural policy were ideology-driven, public support for the arts would be rather uncertain and might exhibit a great deal of volatility since government ideologies, of course, depend on the party affiliation of the incumbent and are formed in a complex and potentially unstable process within the political parties. If, on the other hand, cultural policy were closely related to the preferences of the electorate, one would expect to observe much more stability in the conduct of cultural policy since individual voter preferences are usually assumed to be fairly stable over time and the composition of the electorate does not undergo any dramatic changes in the short run under normal circumstances.

The referendum which we investigated provides an outstandingly rich data set which is quite incomparable to what cultural economists had to be content with so far. Our investigation indicates that voter preferences with respect to the public support of the arts as revealed by the referendum depend to a substantial degree on a few observable characteristics of the voters. Moreover, the identified determinants of the preferences turn out to coincide with those population characteristics which are usually employed to explain cultural policy decisions in representative democracies. We therefore propose the following conclusion: the stabilizing influence of the voters' preferences on cultural policy is not only felt in direct but also in representative democracies. The political economy of cultural policy should therefore not leave out of consideration the politicians' reelection constraint.

Notes

1. The publication of David Throsby's insightful treatise in the *Journal of Economic Literature* (1994) documents this breakthrough in the economics profession at large.
2. Summaries of these studies are to be found, for example, in Throsby (1994, pp. 7–9), and in Krebs and Pommerehne (1995, Section 2.1).
3. See, for example, Throsby (1994, pp. 20–22) or Heilbrun and Gray (1993, pp. 230–232).
4. See Frey and Pommerehne (1989, p. 42) and Schulze and Rose (1998), respectively.
5. The normative question as to whether the arts should be subsidized at all, and if so, to what extent, is the subject of a related strand of literature. An outline of this approach is to be found in Throsby (1994, pp. 22–26).
6. The median voter theorem underlies the study by Withers (1979). The influence of interest groups is analyzed in Krebs and Pommerehne (1995) and Schulze and Rose (1998). Bernholz (1974) is a classic paper analyzing the influence of interest groups on policy formation in general.
7. Throsby (1994), p. 22.
8. See, for example, Diamond and Hausmann (1994, p. 54) or Bishop and Heberlein (1986, p. 134).
9. This cannot/should not be construed as a statement saying that analyzing referenda is inherently superior to CVM studies. Even though CVM is rather controversial (the symposium on contigent valuation published in the *Journal of Economic Perspectives* in Fall 1994 gives a taste of this controversy), a case against the referendum method and in favor of CVM can, in principle, be made. Mitchell and Carson (1989 pp. 296–7), for example, argue that CVM study subjects may well be better informed than voters and that, owing to systematic abstention, referenda data may not be representative. These claims, however, have not been corroborated by comparative studies so far.
10. There existed an understanding that in return for the Opera House take-over the municipality would assume full financial responsibility for the other three main cultural institutions located in the city of Zürich (the theater, the symphony orchestra, and the museum of fine arts), which were also subsidized by the canton. The municipality's net benefit of the whole package, however, was still substantial. It was estimated to amount to approximately 25 million Swiss francs per year (see Neue Zürcher Zeitung, 30.8.1994, p. 47) indicating that the lion's share of public support for the arts goes to the Opera House.

11. On the level of the municipality, of course, the deal also had to be approved by the legislative body.
12. See Neue Zürcher Zeitung, 26.4.1995, p. 54.
13. The view of self-interested voting behavior has not gone unchallenged, but empirical evidence suggests that it is a good approximation in particular for single-issue referenda. See Holcombe (1989) for a discussion, and Pommerehne (1978) and Weck-Hannemann (1990) for empirical evidence for Switzerland. More importantly, the empirical analysis itself will show to what extent voter behavior can be explained by the political economy paradigm.
14. Those variables that induce an individual to *actually* attend the opera will also induce individuals to value the option to *potentially* attend the opera in the future.
15. A survey on demand for opera performances is to be found in van Gemerden (1989).
16. Alfred Marshall was the first to address this point in his *Principles of Economics*, see Stigler and Becker (1977) and Becker (1996) for a discussion.
17. We use the percentage share of people with a university degree or a degree by a college that presupposes a high-school degree (i.e. "Maturitätsschule" and college for primary school teachers). We exclude those (less advanced) colleges that do not require high-school degrees (such as schools for social workers, HWV, HTL). There is ample empirical evidence that well-educated people are overrepresented in arts performances. See O'Hagan (1996) for a recent study.
18. The federal referendum was held on 12 June 1994. The bill was not approved by the voters.
19. The bequest motive applies to stocks (like a collection of paintings) that should be preserved rather than to flows which cannot be stored (like a live performance). The opera house is a hybrid phenomenon: it produces non-storable services, but given the strong persistence of subsidy levels (in real terms), a budget cut means a long-lasting reduction in size and quality of the opera. Personnel must be laid off or replaced by less qualified people, resulting in a reduction of the productive capital stock.
20. One original reference is McFadden (1973); a good textbook reference is Pindyck and Rubinfeld (1991, ch. 10).
21. Although largely ignored by the voting literature, McFadden and Reid (1975) show that for heterogeneous groups the use of averages may lead to an underestimation of individual elasticities. There is no way of avoiding this problem without the knowledge of the covariance matrix of X for each group. Since such data are not available, our results focus on the average behavior of the group and constitute a lower limit for individual behavior.
22. This approximation is sensible because y_i is binomially distributed with frequency y_i/v_i.
23. See Amemiya (1985: 275–277) or Maddala (1983: 28–30) for a derivation.
24. Income and education alone perform equally well, in part because they are closely correlated; the partial correlation coefficient amounts to 0.75. We checked our data for multicollinearity which is typical for data sets like ours; it turns out not to be a problem. As expected, EDUCATION and PAPER are correlated; the partial correlation coefficient $R^2_{E,P} = 0.55$ shows, however, that PAPER exerts an independent influence beyond the formal education. In addition, INCOME and AGEMIDDLE are correlated ($R^2_{I,A} = 0.5$), which reflects the life-cycle earning pattern, and consequently AGEMIDDLE and EDUCATION, and INCOME and PAPER are correlated as well. All other partial correlation coefficients are below 0.25. All insignificant variables are only very weakly correlated with any other variable and the more substantially correlated variables are all highly significant. Thus, there is no multicollinearity problem in selecting and interpreting the

influence of the explaining variables; due to the high correlation between income and education there remains some uncertainty concerning the point estimates of the parameters, but not concerning their significance or sign.

25. The two newspapers are the conservative *Neue Zürcher Zeitung*, one of the most highly regarded newspapers in the German-speaking countries, and the *Tagesanzeiger*, the largest non-tabloid newspaper in Switzerland. The Tagesanzeiger usually takes a social-democratic stance.
26. This interpretation is reinforced by the fact that our endogenous variable and the approval-rate of the constitutional amendment are significantly correlated. The partial correlation coefficient is 0.40.
27. f is the density function of the hyperbolic-secant-square distribution $e^Z/(1+e^Z)^2$.
28. Since the explanatory variable DISTANCE is a dummy variable, we do not report the respective elasticity.
29. Note that the probability at the vector of means of X (0.68) is larger than the mean probability (0.62) since the logistic function is concave for probabilities exceeding 0.5.
30. See, for example, Throsby (1994, pp. 20–22), or Heilbrun and Gray (1993, chapter 13).

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Appendix A: Data sources

All data employed refer to the 170 municipalities in the Canton of Zürich except the City of Zürich itself. The municipalities are identical with the ballot districts. We took the following data from the*Statistical Yearbook of the Canton of Zürich 1994/95*, part B, municipality data ("Gemeindestatistik"), pp. 327–499: average taxable income as a proxy of total personal income, ("Steuerkraft" per capita), and the number of the subscribers per 1000 residents to the canton's leading two newspapers, the *Neue Zürcher Zeitung* and the *Tagesanzeiger*. The birth rate, data on the age structure, and various measures for distances are also taken from the statistical yearbook. The birth rate is defined as the percentage share of live births per total residents. To portray the age structure we have used the share of people aged 20–39, 40–64, 65–79, and over 80 years, respectively. DISTANCE is a dummy variable for the distance between the community and Zürich main station that takes on the value 1 for a range of 0–15 km, 2 for 16–30 km, 3 for 31–45 km, 4 for 46–60 km, and 5 for any distance exceeding 60 km. The percentage of residents with college education that presupposes a high-school degree ("Maturitätsschule" and college for primary school teachers) and with university degrees are taken from the 1990 census (*Eidgenössische Volkszählung 1990)*, Table 6.002–00.01, pp. 218–222. These two percentage shares are added up to obtain the variable EDUCATION. The 1990 census also provides the percentage of various professions of total employment in each municipality: top management, self-employed, professions that require a university degree, unskilled workers, agricultural sector (Table 6.003–00.01, pp.328–337). The results of the referendum analyzed are given in the official gazette of the canton (*Amtsblatt des Kanton Zürich 1994*, p. 1656–1668). The results of the federal referendum held on 12 June 1994 on a constitutional mandate of the federation to support cultural institutions ("Kulturförderungsartikel") is also given by the official gazette on pp. 878–890.

Appendix B: Data description

In Table 4 we present some descriptive statistics characterizing our data set. All values refer to the original data, i.e. uncorrected for heteroscedasticity as described in Equation (3). The data cover the 170 cantonal municipalities (ballot districts) outside the City of Zürich.

Table 4. Descriptive statistics of the employed data

Variable	Unit	Mean	Median	Maximum	Minimum	Std. dev.
APPROVAL	log (odds ratio)	0.495	0.498	1.92	–0.521	0.485
AGEMIDDLE	%	31.9	32.0	40.0	22.0	3.7
BIRTHRATE	%	1.19	1.17	2.64	0.40	0.33
CULTAMEND	share	0.43	0.44	0.81	0.14	0.09
DISTANCE	dummy variable	2.8	3.0	5	1	0.98
EDUCATION	%	7.47	6.67	20.73	1.79	3.44
INCOME	SFr/month	2006.3	1755.5	8157.0	18.1	1038.8
PAPER	number per 1000 residents	169.2	164.5	369.0	1.4	79.8
SELFEMPLYD	%	11.47	10.54	27.08	2.88	4.47
Number of votes in ballot district		1694.69	916	27102	113	2600.47
Percentage of approving votes	%	61.46	62.19	87.26	37.27	10.70