Politico-Economic Interactions of German Public Performing Arts Institutions*

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Abstract. Our paper analyzes the conduct of German public performing arts institutions in terms of "non-market decision making" or public choice. Apart from consumers of performing arts managers of performing arts institutions and public donors are main agents. A manager of a performing arts institution will not assume that the number of visitors is independent of his institution's programme or the ticket prices. By the same reasoning he will regard the amount of public subsidies not as exogenous, but dependent on his own policy. If future grants depend on present and past success (however defined), this will feed back into managerial decisions, along with expectations about demand. Data for the Federal Republic of Germany serve to empirically support the theoretical argument.

Key words: Performing arts, cultural policy, nonprofit

1. Introduction

In Germany as well as in the United States there is a variety of organizations offering theater and opera performances, ballet, dance, and classical concerts. These organizations may be profit or non-profit in either country. But for sure, the bulk of heavily subsidized performing arts organizations can be found in Germany. Most of the larger organizations are owned by and directly subordinate to municipal (and sometimes state) organs. For these public theaters[1] the share of government subsidies to total income has constantly risen and amounted to 87 percent in 1991/92 (85 percent in 1990/91, when East German public theaters had not yet been included in the statistics). Public subsidies to the performing arts are estimated to be much lower in the United States (around 5 percent in 1983, see Frey and Pommerehne, 1990, p. 22, and the literature cited there). Hence, German theater and opera houses are generally assumed to be much less subject to pressure for commercial success and to have more freedom to realize their ideas of artistic quality – compared to their American counterparts.

Still, German performing arts institutions do not lead a secure life. Their budgets may be cut, and sometimes institutions are closed, which has recently occured in Berlin and Frankfurt. It is therefore worthwhile to look more closely at the subsidization of public theaters. Who decides on the allocation of financial means to different cultural organizations? What are the interests and goals of these public donors? And according to which criteria will they allocate subsidies? But subsidization will not be independent of the behavior of the recipients. What are their goals, and which restrictions do they face? Since public subsidies are just one source of revenue, box office revenues and private donations are others, the performing arts institution will have to anticipate not only likely reactions of donors, but also the demand for their output, i.e. the reaction of the potential audience to changes in prices and quality.

If goals are not similar, it may be supposed that interactions of audience, performing arts institution and public donors will imply certain conflicts of interests. For instance, the bulk of the audience will prefer to see the more popular, entertaining works on stage. This does not necessarily conform to the tastes of those responsible for the theater programme. But a public donor who is not crucially interested in the arts wants the theater to achieve a minimum capacity utilization. And it seems plausible that a performing arts institution will strategically account for these expected reactions of other agents.

This paper will deal with the expected behavior of theater demand, public donors and performing arts institutions in a politico-economic framework. Part 2 contains a theoretical analysis of the three agents in turn, and a number of hypotheses will be derived. Part 3 discusses the equations to be estimated and presents the results for the Federal Republic of Germany for the period of 1961 to 1991. Part 4 contains the concluding remarks.

2. Theater Demand, Public Donor Interests, and the Theater Management's Strategy

2.1. DEMAND FOR LIFE PERFORMANCES

Compared to the analysis of public donors' and theater managements' behavior there exists a large body of literature on the demand for the performing arts. Empirical studies have chiefly been conducted for the Anglo-Saxon countries[2] but with an increasing tendency for other industrialized countries.[3] The studies cited comprise estimations of demand for the services of single institutions and for different categories (theater, opera, dance, concert), as well as analyses with aggregated data. They use cross-section, time-series, and/or pooled time-series – cross-section methods. Studies on the demand for the performing arts are usually based on the standard model of household consumption. They therefore expect the variables shown in Table I to have a significant influence on the decision to see a performance.

TABLE I. Variables expected to have a significant influence on the decision to see a performance

Variable	Expected direction of influence	Range of empirically estimated elasticities	
		Short run	Long run
Own price	Negative	−0.1 to −1.2	−0.3 to −0.4
Price of substitutes	Positive	0.1 to 1.5	n.a.
Income	Positive	0.4 to 1.6	0.4 to 1.3

n.a. means 'not available'.

Most of the studies lead us to conclude that the short run price elasticity of demand for the performing arts is inelastic (−0.2 to −0.5).[4] The estimated demand relationship for theater and opera performances is usually even less elastic than demand for ballet and concerts.[5] But also the absolute value of the long run price elasticity of demand for performing arts seems to be smaller than one (Houthakker and Taylor, 1970, Abbé-Decarroux, 1990, chap. 7). Cross price elasticities are generally positive, though often not significant. The expected positive impact of income has been confirmed in a number of studies,[6] whereas others could not observe any significant elasticities.[7] Since "consumption of the live arts is highly time-intensive, indicating that the price of leisure time is likely to be more influential in determining demand than the ticket price itself", as Throsby (1994, p. 8) and others before him have pointed out, the positive effect of income could be offset by a negative effect of the opportunity costs of leisure time. Withers (1980) found evidence for such an offsetting effect, but others, including ourselves, failed to get any significant and meaningful empirical results for the demand model with 'full' income.

An extension of this standard model which will be of particular importance in the course of this paper is the inclusion of a quality variable. A performance with 'good quality' will ceteris paribus draw more visitors than one with 'bad quality'. But these popular performances will not necessarily be regarded as 'good quality' by the 'art world', which comprises directors, performing artists, other artistic personnel and professional art critics. The 'art world' may prefer 'highbrow' performing arts, that is, productions difficult to master for the non-expert.[8] How, then, should quality be measured? Throsby (1983) developed various indicators of quality from data for three Australian theaters. Among these were the classification of the repertoire, whether work and author had been known by the audience, and a condensation of press reviews. As this measure is a hotchpotch of audience's and 'art world's' view of quality, Throsby gets the (hardly surprising) result, that none of the single quality indicators has a significant impact on demand. This conclusion has been confirmed by Abbé-Decarroux (1990, chap. 5), who uses a similar approach for theaters in Geneva, Switzerland. Two papers, which account for the different views of quality, get somewhat better results. Jenkins and Austen-Smith (1987) arrive at a negative and statistically significant relation of 'highbrowness' and the demand

for the services of English Provincial theaters, but the quantitative effect seems to be negligible. Felton (1989), who approximates quality by a popularity index of performing arts works, gets similar results for selected theaters in the United States.

Finally, performing arts can be regarded – as suggested by the household production model [9] – to be positively addictive, due to the decreasing implicit (shadow) price of consumption. This price reflects the progressive accumulation of consumption capital, i.e. experience, understanding and other human capital attributes. To account for this effect, dynamic demand functions have been applied. Estimations of partial adjustment models (Withers 1980, Goudriaan and de Kam 1983, Abbé-Decarroux 1990, Oteri and Trimarchi 1990) and of stock adjustment models (Houthakker and Taylor 1970, Abbé-Decarroux 1990) lead us to conclude, that past attendance has a positive and significant effect on present attendance, which reflects the crucial role played by routine and cultural habits in influencing the present pattern of attendance.

The discussion of this subsection can be summarized in Hypothesis 1:

Hypothesis 1: The demand for live performances will – ceteris paribus – depend positively on income, the price of the substitutes, 'lowbrowness' (popularity of productions), and on last period's demand. It will depend negatively on its own price as well as on the price of leisure.

2.2. GOVERNMENT SUPPORT OF THE PERFORMING ARTS

In economic analysis there are two ways to look at public subsidies to the arts. The first of these has resulted in an extensive literature aiming to justify these payments.[10] The second, that is the public choice analysis of cultural subsidies, has been less written about.[11] In public choice the behavior of an agent is usually the result of his striving for self-interested goals while at the same time obeying certain restrictions. Each of the agents that do or may have an influence on government support to the performing arts will now be looked at in turn, and, with respect to the institutional setting in the Federal Republic of Germany, their role in the process of deciding on subsidies will be assessed.

Only in direct democracies *voters/taxpayers* are directly involved in decisions on specific public expenditures. In representative democracies like the Federal Republic of Germany they have almost no say in the allocation of subsidies. To change a specific subsidy in the context of general elections seems impossible. Also a single subsidy is hardly felt and information costs are high.

Compared with that, a number of *interest groups*, including public sector bureaucracies, plays a very active role in the shaping of arts policy. Most public performing arts institutions in Germany are run as 'Regiebetriebe', which implies that they constitute an organizational unit of the executive branch of a government, either state or municipality.[12] We will therefore distinguish the group of cultural bureaucrats

(i.e., those involved in the theater's administration) from other members of the state/local bureaucracy in the following.

Cultural bureaucrats, like other bureaucrats and according to the theory of bureaucracy, can be assumed to strive for nonpecuniary goals, e.g., the power and prestige attached to the control over a large budget.[13] But, as public administrators are not without influence on the decision which department to work for, we may expect among them a high share of people who draw utility not just from proximity to the art world, but also from complimentary tickets for live performances. Consequently, cultural bureaucrats will fight the cutting of subsidies and welcome increases in the funding of cultural activities. They are restrained, though, by the competition with other bureaus for limited funds. And, once they have been assigned a cultural budget, it still has to be split between competing cultural activities. In order not to provide competing bureaus with a target, cultural bureaus will stick to conservative measures. They will primarily fund established cultural institutions, and among these public institutions, which can be better controlled. The budget planning will be dominated by incrementalism, due to the government's assurance to cover a public cultural institution's deficit. That is, the proposed subsidy is calculated on the base of previous year's subsidy, the deficit of the foreperiod and expected unavoidable cost increases (e.g. increases in standard wages etc.).

One group that deserves mentioning is the *theater/opera houses personnel* which is likely to press for higher funding of the arts. Whereas technical employees constitute a small share of members of the union for public service and transport, the artists belong to different small unions, that are of minor importance for their parent organizations. The personnel's influence on the public donor is therefore rather small.

The decision on the actual level of subsidization, however, is taken by elected *politicians*. Some of them will be more and some less inclined to support the performing arts depending on their proximity to the art world. Politicians may enjoy direct and indirect benefits from the existence of a public theater in their communities: like bureaucrats they have access to free and scarce tickets, and a (possibly nationwide) well-known performing arts institution also raises the responsible politicians' reputation and popularity. Also, politicians can be expected to have an above average interest in the arts as they are usually better educated than the average citizen.

Nevertheless, they face a re-election constraint, which will induce them to avoid harsh drops in popularity. Especially those involved in the shaping of cultural policy, possibly also the government top officials will try to counteract public criticism of the public cultural institutions. But as the output of a performing arts institution is subject to labor intensive production and thus to the well-known Baumol's disease, the share of subsidies to theater and opera houses in the municipal/state budget could continue to rise. So, non-culturally interested politicians and the re-election constraint will tend to limit the growth of the performing arts institution's deficit. And while the public purse has to cover the deficit,[14] the politicians' means to

contain its growth is to impose certain conditions, e.g., to demand some minimum capacity utilization or minimum own revenue. These conditions can be brought forward in the course of the bargaining process between the city treasurer, who represents the city parliament (in the case of a municipal theater/opera) and the theater manager, who runs and officially represents the performing arts institution in all (i.e. economic and artistic) respects. The latter, as the representative and main decision-maker of the grant-aided institution, will be dealt with in the next section.

The interactions of bureaucrats, who plan the budget, and of politicians, who decide on the level of subsidization, is summarized in

Hypothesis 2: The subsidies to public performing arts institutions are a positive function of last period's subsidies, and of the government's financial resources. They are negatively related to the institution's capacity utilization in the last period.

2.3. THE THEATER MANAGER

The German 'Regiebetrieb'-theaters are headed by a director (theater manager), who has been appointed by the city council or the state parliament. In most cases, he is qualified as an artist, and his interests will presumably be biased towards artistic goals. The financial management, which he is also responsible for, may be regarded as an indispensable burden, because economic success is not an argument (or at least not an important one) in his objective function. A theater manager's peer group is composed of members of the art world, as there are other directors, critics, but also artists in his institution.[15] So, what he will possibly maximize is his standing among this peer group.[16] This feature is specific to the German system of public live performing arts institutions, where no profit maximization is required and the director's income is independent of economic success, rather being positively related to his reputation in the world of arts. This reputation is built up by excellence of performance, that is productions of 'high quality' as judged by the peer group.[17]

Now, which constraints does a theater manager face? And if we assume that he is informed about the reaction functions of his institution's theatergoers as well as of the politicians granting subsidies to his theater, what will be his strategy?

Although directors of German public performing arts institutions are in quite powerful positions, they are not safe from being dismissed by the parliament or the city council. A constraint for the theater manager then is not to provoke politicians in order to safeguard his (income) position. This again requires to avoid excessive scandal-seeking (as politicians dislike negative publicity) and not to constantly fall short of a certain capacity utilization or – alternatively – a certain level of demand and of own revenue (compare the discussion above).

In order to maximize his objective function, while at the same time fulfilling a constraint with respect to the demand for his institution's output and its own revenue

(other than government subsidies), a director has a number of policy variables at hand:

- *Own revenue* could be raised by making better use of sources other than box office revenue, especially private donations. As long as German public performing arts institutions enjoy being in the 'public interest' and are therefore entitled to public support, they have no incentive to acquire and exhaust other sources of revenue than those presently available.[18]
- A second policy variable at the director's hand is *quality of productions*, that is, the choice of works to be played, the cast, the setting etc. Of course, the director will want to attain a quality that is highbrow. But he knows on the other hand that more low-brow quality will give better results at the box-office.
- A better capacity utilization can also be achieved with *lower prices*. One way of increasing the number of visitors is to lower average ticket prices. Other possibilities are price-discrimination with respect to time, patronage behavior, and seat quality.[19] It must be admitted however, that theaters are not free to change prices in a flexible way. Instead, price changes must be negotiated with and approved by the public donor.

  Also, incentives to increase prices and/or to structure the range of prices to improve box-office revenues are low. Rather there is even a reluctance to adapt prices to general inflation.[20] One reason for low average ticket prices is the following. If a popular production draws a large crowd of visitors and demand is not rationed via prices, there will be excess demand. This in turn could bring a black market for tickets into existence. But blackmarketing of tickets does not only raise the director's prestige because it may be interpreted as a sign of quality, it also increases the implicit price of a complimentary ticket.
- The final policy variable that we want to discuss is only important if a theater manager faces not only a maximum, but also a minimum capacity utilization constraint. This policy instrument is the *theater/opera house's short run capacity*, which can be varied at least to some extent.[21] For instance, in the case of excess demand, a performing arts institution can offer additional performances in temporarily rented auditoria or as matinées. On the contrary, if demand is low, auditoria may not be played and used for rehearsing instead. Also, the number of seats can often be varied, so that the enlargement of the stage floor (due to 'artistic requirements', of course) decreases the number of seats offered to the audience.

Now, if we assume a director who has to account for capacity utilization, then the following (ceteris paribus) reaction functions could apply:

- If the average ticket price is to be raised in the coming season, the director will either substitute more lowbrow for highbrow productions in his programme or reduce short-run capacity.
- If an increase in capacity is planned for the coming season, the director will either increase the share of lowbrow productions or reduce average price.

– If a director plans to have more highbrow productions in his programme, he will either lower prices or reduce short-run capacity.

The theater manager's decision problem, modeled as the simultaneous choice of three instrumental variables, however, is not feasible in the German institutional framework. The only variable which a director can fully control is quality (the programme). Price and capacity cannot be that easily varied, since price changes and certain measures with respect to capacity have to be approved by politicians and cultural bureaucrats.

Apart from the simultaneous choice of decision variables, it is likely that the performing arts institution's last period's (economic) performance (via reactions of politicians and bureaucrats) will have an impact on quality, capacity, and perhaps price. If capacity utilization has been ceteris paribus higher, the theater manager will use the additional leeway to increase the share of highbrow productions (e.g. have more experimental works played). But a ceteris paribus higher capacity utilization could also make him less reluctant towards price increases. And, especially when capacity utilization gets close to 100 per cent, he will try to increase next season's capacity. The discussion of the theater manager's reaction function is now summarized as follows:

Hypothesis 3: Ceteris paribus, a higher capacity utilization in the previous season will increase capacity and prices and will lower the quality (lowbrowness) of the programme. Increases in price or capacity will ceteris paribus increase quality (lowbrow productions).

3. Estimation and Empirical Results

3.1. ESTIMATION EQUATIONS

The estimation equations derived from our three hypotheses should ideally be estimated with data for the individual theater and opera houses and the socio-economic data for the respective region. Since this regionally disaggregate information is not readily available, our data base comprises aggregate annual data for the Federal Republic of Germany (without East Germany), running from 1961/62 to 1991/92.[22]

Hypothesis 1 is empirically tested with the following equation:

$$D_t = \alpha_0 + \alpha_1 Y_t + \alpha_2 P_t + \alpha_3 ST_t + \alpha_4 Q_t + \alpha_5 D_{t-1} + \mu_{1t}. \qquad (1)$$
$$ \overset{(+)}{} \quad \overset{(-)}{} \quad \overset{(+/-)}{} \quad \overset{(+)}{} \quad \overset{(+)}{}$$

D is the number of paying visitors per capita of population. The explanatory variables, whose expected direction of influence is indicated in the brackets below the estimation equation, are: real disposable income per capita, Y, and the real average ticket price P, calculated as the ratio of total box office revenue and tickets sold. To account for substitutes, ST, we have tried several alternative proxies. The real ticket price for movie theaters should have a positive effect on attendance at live

performances. The opposite effect is expected for the number of TV-subscribers, which can be interpreted as an indirect measure of the 'subjective' value of time in individual consumption decisions.[23] Another approach has been to directly insert a proxy for the opportunity costs of time in the equation, that is the (marginal) overtime pay rate. In this case, the 'full' income includes the imputed leisure time as a part of income.

The variable most difficult to measure is quality, Q. Certain aspects of 'quality' can be captured in a variable 'performances per stage', which measures the scope of supply. Another possibility is to approximate the productions' average runs by dividing the number of total performances by the number of premieres. One way to measure the popularity of productions with the average theater-visitor is through the share of productions with many performances out of all performances. Whereas the more lowbrow pieces and productions usually run for longer times, 'highbrow' ones more often tend to be taken off the program after only few performances. In our estimation, the ratio of works with more than 75 performances to all works played in a season will measure popularity.[24] The threshold of 75 has been arbitrarily chosen, which is one of the shortcomings of this variable. Another deficiency is that there always exist 'highbrow' productions successful with the lay audience as well as non-successful lowbrow pieces, that is, the taste of the art world and the lay public may sometimes coincide. Finally, the variable is partly endogenous, since live performing arts demand influences the success and therefore the popularity of a work. Still, it is the most acceptable proxy we could get from the available data.

The last variable to be included is the lagged endogenous variable. As mentioned before, past attendance can have a significant positive impact on present attendance, due to the formation of habits. There exists a number of ways to test for habit formation.[25] Here, for each period, we assume a partial adjustment of consumers to a long run equilibrium. The coefficient of the lagged endogenous variable then represents $1 - \kappa$, where κ is the 'adjustment coefficient'. $\kappa = 1$ implies instantaneous adjustment, $\kappa = 0$ no adjustment of consumers to the long run equilibrium.[26]

The estimation equation for the hypothesis on public donors' behavior (Hypothesis 2) is given as:

$$S_t = \beta_0 + \beta_1 R_{t-1} + \beta_2 CU_{t-1} + \beta_3 S_{t-1} + u_{2t} \qquad (2)$$
$$\quad\;\; (+) \qquad\quad (-) \qquad\quad (+)$$

where S denotes real government subsidies (municipal and state) per seat. In deflating subsidies by the consumer price index, we implicitly assume that public donors will at least partly take into account 'unavoidable cost-increases'. As mentioned before, these cost-increases are a component of the subsidy-proposal of the bureaucrats. The resources of the public grantor (R) have been approximated in two ways: either by the real own per capita expenditure of states and municipalities, or by real per capita revenues of these two governments (assuming independence of current subsidies and debts). The variable CU measures the average capacity utilization

in German public performing arts institutions. Finally we have inserted the lagged endogenous variable to account for bureaucratic incrementalism.

As regards the behavior of the theater manager, for each of the instrumental variables an estimation equation where the two other instruments serve as explanatory variables can be derived. But, as has been discussed before, due to the institutional setting in Germany only the quality variable constitutes a real instrument for a theater/opera house's director. Therefore, such an equation is only presented for quality. It also includes last period's capacity utilization and the lagged endogenous variable to cover the institutional rigidities discussed in Section 2.

$$Q_t = \gamma_0 + \gamma_1 P_t + \gamma_2 C_t + \gamma_3 CU_{t-1} + \gamma_4 Q_{t-1} + u_{3t} \tag{3}$$
$$ (+) \qquad (+) \qquad (-) \qquad (+)$$

C is capacity and has been measured as number of performances times number of seats per capita of population.

3.2. ESTIMATION RESULTS

The demand equation has been specified as a linear relationship[27] and been estimated with ordinary least squares:[28]

$$D_t = 0.003 + 3.257 \times 10^{-6} Y_t - 0.006 P_t + 0.160 Q_t + 0.939 Q_{t-1} \tag{1A}$$
$$ [0.084] \quad [1.371] \qquad\qquad [-2.277]^{**} \quad [1.594] \qquad [10.385]^{***}$$

$R^2 = 0.980$; F-Value $= 373.90$; $MSE = 0.004$; $L_{max} = 126.35$; Durbin $h = 0.00$

The model performs well: the adjusted coefficient of determination and other crucial statistics are high, and there is no sign of auto-correlation. Hypothesis 1 is supported in many respects. Like in other studies, the computed short run price elasticity is low (-0.16). The long run price elasticity is much higher (-2.6), due to the stronger impact of the lagged endogenous variable. Personal income failed to reach significance and its elasticity, though it has the expected sign, is very low (0.1). This result is plausible, if the opportunity cost of time is accounted for, as it has been tried here. But the variable inserted for that purpose, the number of TV-subscribers, never had the correct sign, nor did it come close to significance.[29] It has therefore been dropped.

All variables considered as proxies for prices of substitutes to live performing arts, i.e. the price for movie theater, as well as a price index for leisure goods, had no significant influence on theater demand and/or the wrong sign and have been dropped.

Of the quality proxies two were insignificant, though they had the theoretically expected sign: the performances per stage and performances per premiere. But the variable trying to measure 'popularity' of works performed quite well. It has the expected positive influence on demand, and it is close to statistical significance.[30] The calculated elasticity of demand with respect to quality (popularity) of works

is around 0.1, i.e., an increase of the share of 'lowbrow' works by ten percent will increase paying visitors per capita of population by one percent.

Finally, the highly significant value of the lagged endogenous variable's coefficient suggests, that habits play a major role in the explanation of the demand for live performing arts.

$$\Delta S_t = 2.198 + 2.493\Delta R_t + 0.819 R_{t-1} - 0.459 S_{t-1} - 0.028\,CU_{t-1} \quad (2A)$$
$$[1.292] \quad [4.932]^{***} \quad [3.055]^{***} \quad [-3.085]^{***} \quad [-1.229]$$

$R^2 = 0.46$; F-Value $= 7.18$; $MSE = 0.214$; $L_{max} = 6.45$; DW $= 2.49$

Equation (2A) contains the results for the subsidy granting function with government expenditure as an explanatory variable.[31] Instead of explaining the development of subsidies per seat over time, we have chosen to estimate with first differences (Δ), i.e., to explain the changes in subsidies per seat over time, since a check on stationarity had revealed an integration of order one of the time series. This implies, of course, a lower value for the adjusted coefficient of determination. In general, our theoretically developed expectations have been confirmed. Not unsurprisingly, increases in subsidies depend on the budgetary situation of the public grantors. The level of last year's government expenditure and its growth exhibits the expected positive sign and is statistically highly significant. The model suggests that a (ceteris paribus) one thousand DM higher public expenditure per capita in the previous period would have raised subsidies by 0.80 to 1.00 DM per seat in the following season; analogously, if the per capita expenditure had increased by one thousand DM more than they actually did, subsidies per seat would have been even 2,50 DM higher than before.

Another variable with relevance for the rise in subsidies is last period's subsidies. A negative and significant coefficient implies that a ceteris paribus higher level of subsidies in $t - 1$ will result in a reduced growth of the grants for this period. Further, it is suggested, that about one half of this period's subsidies is determined by those of last period.[32]

Capacity utilization has the expected negative impact on subsidies but fails to reach statistical significance in this specification. However, it has been statistically significant on a 95 percent level in other specifications, e.g. in the model with government revenues instead of expenditures as an explanatory variable.[33]

The empirical results for equation 3 are presented in Equation 3A:[34]

$$\Delta Q_t = 0.263 - 0.00042\Delta P_t + 0.0012\Delta C_t - 0.0021\,CU_{t-1} - 0.696 Q_{t-1} \quad (3A)$$
$$[4.079]^{***}\ [-0.064] \quad [2.678]^{**} \quad [-2.939]^{***} \quad [-4.992]^{***}$$

$R^2 = 0.480$; F-value $= 7.62$; $MSE = 0.0083$; $L_{max} = 104.06$; $DW = 2.31$.

In confirmation of our third hypothesis, a director of a public performing arts institution will increase the share of popular works in his programme, if last period's capacity utilization has been ceteris paribus lower. If it has been higher, he will use

the additional leeway to increase the share of more highbrow, e.g. experimental or avantgarde, works. He will further raise the share of popular works, if capacity is due to be increased in this period. By doing so, he is less likely to fall short of a certain capacity utilization constraint. The price variable has the wrong sign and is of no significance. This tells us that price increases are not necessarily accompanied by (popularity) changes in the programme. But, since price increases in a theater will normally only take place when the theater does not operate at the lower bound of a capacity utilization constraint, the constraint may then not be binding. Also, as we know from the empirical results for theater demand, in the short run consumer reactions to price changes are of small magnitude. Finally, the lagged endogenous variable has a negative and significant impact on the share of lowbrow works. Its coefficient's value suggests that about one third (1–0.696) of the programme is predetermined by last period's programme.

4. Concluding Remarks

Overall, our theoretical and empirical analysis shows that there exist politico-economic interactions between demand for live performing arts, grantors of public funds and the theater manager. In the institutional framework of the Federal Republic of Germany, however, typical instrumental variables like the price are not very important to these interactions. This is indicated by the empirical results for theater demand and the director's policy on 'quality'. These (institutionally caused) rigidities are to some extent welcomed by the 'arts world', which rejects commercialization and the price system. They permit taking refuge in the realm of the non-measurable, that is 'artistic quality', where the theater manager has the monopoly on interpretation.

But, theoretical reasoning and the empirical results suggest that even with respect to quality decisions the theater manager may be constrained. Public donors, who cannot interfere with quality decisions, will define conditions in terms of capacity utilization, a variable they can easily observe. Since capacity utilization depends on demand, and demand depends on the quality of the programme, a director sometimes will have to allow for more lowbrowness – contrary to his preference.

Certainly, the concept of 'quality' is full of different ideas and meanings and difficult to operationalize. Accordingly, our attempt to do so can be criticized in a number of respects that are noted. Still, in order to study politico-economic interactions in the world of the performing arts, the consideration of quality decisions as an essential policy parameter seems to be inevitable.

Notes

** Werner W. Pommerehne suddenly and unexpectedly deceased in October 1994, only a few weeks after this paper had been submitted to the *Journal of Cultural Economics*.

1. In our paper the word 'theater' comprises theaters, opera houses and institutions that offer different categories of performing arts.

2. Moore (1966), Globerman and Book (1977), Throsby and Withers (1979), Kelejian and Lawrence (1980), Withers (1980), Touchstone (1980), Lange and Luksetich (1984), Gapinski (1986), Jenkins and Austen-Smith (1987), Greckel and Felton (1987), Carson and Mobilia (1989), Oteri and Trimarchi (1990), Throsby (1990), Felton (1989, 1992). Further studies deal with theater demand in a broader context, so e.g. Houthakker and Taylor (1979) and Gapinski (1984, 1988). A survey of studies on demand for opera performances is found in van Gemerden (1989).

3. Goudriaan and de Kam (1983), Pommerehne and Kirchgässner (1987), Abbé-Decarroux (1990), Bonato, Gagliardi and Gorelli (1990), Abbé-Decarroux and Grin (1992).

4. Withers (1980) found a price-elasticy greater than one (in absolute values) for some subperiod of his sample. This elasticity, however, is not significantly different from -0.85. Abbé-Decarroux (1994) found an elastic demand for reduced price seats, which doesn't differ significantly from minus one at the 95% level of confidence. Felton (1992) demonstrated that elasticities can vary widely among performing arts companies, and that there are some with elastic demand.

5. See Touchstone (1980), Goudriaan and de Kam (1983), Gapinski (1986).

6. See among others Moore (1966), Houthakker and Taylor (1970), Withers (1980), Bonato, Gagliardi and Gorelli (1990).

7. Pommerehne and Kirchgässner (1987), Felton (1989), Oteri and Trimarchi (1990), Abbé-Decarroux (1990, chap. 7).

8. Evidence for the existence of 'two taste subcultures', that is, tastes of professional theater critics and the lay public, has been provided by Levy (1988).

9. Stigler and Becker (1977), West and McKee (1983), Stevens (1985), Becker and Murphy (1988).

10. See, for instance, Farchy and Sagot-Duvaroux (1994), Pommerehne and Frey (1990), and for earlier collections of arguments the *Journal of Cultural Economics* 4(2), 1980.

11. Existing studies are confined to examining certain aspects for a given institutional frame, i.e. a single country. See e.g. Solf (1993) for Germany, Khakee (1988) for Sweden, Austen-Smith (1984) and Austen-Smith and Jenkins (1985, 1987) for Britain, Withers (1979) for Australia, Pommerehne (1982) for Switzerland and Seaman (1980) for the United States.

12. 73% of the public performing arts institutions in 1991/92 were 'Regiebetriebe', the remaining have some economic and/or juridical independence and are therefore controlled with more difficulty. About 18% are owned by states, the remaining belong to one or more municipalities. The ownership structure has hardly changed during the last 30 years.

13. Goals can at the same time be pecuniary, as higher income often couples with more powerful positions.

14. The only way to escape these obligations is to close down the institution.

15. There are other artists in leading positions employed in a German theater/opera house, e.g. a director of the orchestra, choir etc. These artists are formally subordinate to the theater manager, their competence in their field, however, may surpass his. So, a theater manager's policy could de facto be the result of interactions between himself and influential artistic personnel. But in order not to further complicate our reasoning, we will in the following just look at the theater manager's behavior.

16. As Throsby (1994, p. 14) has pointed out, this objective is "not necessarily inconsistent with long-run wealth maximization, since prestigious awards given by artists to artists ... are often treated by consumers as indicators of the quality of the product."

17. Alternative models of the director's decision problem have been provided by Le Pen (1982) and Dupuis (1983, 1985). Their models differ from ours with respect to their definition of quality, the inclusion of own revenues as a positive argument in the director's objective function and the assumption of asymetric information.

18. Also, for a number of reasons, theater managers will rule out this alternative right from the outset, e.g., the fear of interference in artistic decisions or a rejection of the commercialization implied by the allocation of private donations. See also Frey and Pommerehne (1990, p. 126).

19. Most public performing arts institutions in Germany offer tickets over a range of prices for different seat blocs and reductions for subscribers, for patron organizations and for students. Other forms of price-discrimination are less in use.

20. Evidence for the United States and Britain has been provided in various contributions in Baumol and Baumol (1984) and in Peacock, Shoesmith and Millner (1983).

21. We do not talk about long run capacity, e.g. the construction of new theater and opera houses, or of additional stages. Decisions on construction projects are not taken in the context of bargaining about current subsidies, but form part of a municipality's (state's) investment planning.

22. The total number of public performing arts institutions as well as the ratio of 'Regiebetriebe' to other legal forms has hardly changed in these years, so that structural effects did not play a role before reunification.

23. The pros and cons of this variable as a measure for the opportunity costs of time are discussed in Cameron (1986), or Pommerehne and Kirchgässner (1987).

24. Performances per production are not available. Also the shares which make up time-series Q could only be calculated for German-language theaters including those in Switzerland and Austria. There is, however, no evidence that in these countries the pattern of success of low- vs. highbrow pieces is significantly different to that in Germany. Further, Swiss and Austrian theaters make up only a minor part of all German-language theaters.

25. See Green, Pope and Phipps (1981) for a comparison of three alternative specifications, that is a model with time trend, a stock adjustment model à la Houthakker and Taylor (1970) and the partial adjustment model.

26. Compare e.g. Phlips (1974, p. 154) for a presentation of the partial adjustment model.

27. A linear specification has been chosen, since an estimation with a more general function form (Box-Cox-transformation) suggested this to be preferable to a log-log specification.

28. The value of t-statistics appears in parentheses below the coefficient estimate. One asterisk indicates statistical significance at the 90%-, two (three) asteriks indicate statistical significance at the 95%-(99%-) level.

29. Alternatively we tried to directly account for the opportunity cost of time, analogous to Withers (1980). The equation, however, performed very badly.

30. When income as an explanatory variable is omitted, the results do not change substantially. However, the significance of 'popularity' increases to over 90%.

31. See note 27.

32. The effect of S_{t-1} on S_t can be calculated from $\Delta S_t = S_t - S_{t-1} = -b_3 S_{t-1}$. So for equation (2A) $S_t = 0.54 S_{t-1}$.

33. The results for this model are not reported here. Although the overall performance of this estimation has been worse, it supports our hypothesis. That is, all coefficients have the correct sign and are significant on a level of at least 95%.

34. Like before, the equations have again been estimated in terms of first differences to account for the non-stationarity of the time series. See also note 27.

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