Is theatre efficiency affected by the legal form type? A case study of German public theatres

Descrizione

Introduction

Evaluation of efficiency of the performing arts and identifying the sources of possible inefficiencies is complicated by a number of factors. At the same time such investigation is particularly important due to the fact that most of performing arts firms receive substantial amounts of funding from the state, private donors, or are run by governments. Baumol and Bowen (1965) were the first to explore the economic problems faced by the producers of the performing arts and they argued that there were few possibilities for productivity improvements in this sector. As noted by Marco-Serrano (2006), the live performing arts combine the features of non-repeatability and a high degree of complexity in production. This particular kind of production technology involves high fixed costs as the organisation, directing, rehearsing, scenery and costume costs are independent of audience size and hence the average total costs will also be higher (Luksetich and Lange, 1995). Given that the productivity remains unchanged, most performing arts firms have to rely on other sources of income, since their production costs will inevitably increase over time relative to their revenues. In fact, many governments and private donors have to meet the rising costs of theatres through further increases in subsidies. Given the current economic crisis and the financial constraints being imposed on public institutions, including the examined cultural institutions, the evaluation of efficiency of public theatres becomes even more critical.

In contrast to education or health sector, there were only few studies in the cultural economics literature which examined either the production technology or productive efficiency, with the most influential work including Gapinski (1980, 1984), Throsby (1977) and more recently Marco-Serrano (2006), Last and Wetzel (2010) and Zieba (2011). While these studies have greatly contributed to our understanding of artistic output and the technology underlying the production of performing arts, they have failed, however, to take account of the institutional setting within which performing arts firms operate.

This paper discusses a parametric stochastic frontier approach as a way of measuring the efficiency of cultural institutions. Furthermore, using German public theatres as a case study and drawing on the empirical findings obtained in Zieba and Newman (2013), this paper examines how different organisational structures affect the efficiency of theatres and how their efficiency is affected by two types of shocks. First, we consider what happens to efficiency of theatres when there is a funding shock and second, we consider the effect on efficiency of an increase in competition. The identification of these effects was made possible by the natural experiment of the reunification of East and West Germany in 1990. The empirical results suggest that theatres organised under public law are more efficient than theatres organised under private law. However, when exposed to the exogenous demand shock after reunification in 1990, the theatres organised under private law react positively to this competition shock as measured by their efficiency scores confirming that they better react to the changing market conditions than theatres organised as public legal forms.

German public theatres – institutional setting

German public theatres are owned and directly subordinate to regional government structures which we define, in line with Hoffman (1998), as *licence holders*. These may consist of municipalities, known as *Gemeinden*, federal regions/states, known as *Länder*, and regional (rural) districts known as *Kreise*. Many theatres are also governed by a variety of holdings and unions of several local authorities (consisting mostly of municipalities). The licence holder is responsible for financing public theatres in the form of subsidies and sets the goals of the public theatre and monitors how well the theatre performs in relation to these goals. Public funding accounts for 83 percent of the total budget of publicly funded theatres and any deficits incurred by theatres are covered by licence holders.

The theatre director runs and officially represents the performing arts institution in all respects (both economic and artistic). The director is appointed by licence holder for a period of three to five years, with the possibility of a one-off extension of the contract. According to Hoffman (1998), licence holders will seek to recruit a theatre manager who can run the theatre efficiently but who also has an impressive artistic profile. The theatre director has a full control over the quality of the artistic productions but at the

same time is also required maintain budgetary discipline while in pursuit of artistic goals. The artistic goals of the theatre director may be compromised by requirements to meet box-office targets as set by the licence holder to ensure that their services are reaching a wide and diverse audience. However, since budget deficits are covered (albeit to varying degrees) by the licence holder, in this setting there might be limited incentives for theatre management to curtail expenditure as they may focus solely on artistic goals. As argued by DiMaggio and Powell (1983, p. 157), the director of an opera may “be more concerned with noneconomic values like aesthetic quality or social status than with efficiency per se” (1). Furthermore, once box-office targets are met, they may have an incentive to overspend in order to maximise their budget in subsequent years. In this paper we argue, that the extent to which the theatre director must cooperate with the objectives of the licence holder will depend on the organisational structure of the theatre which we define here in terms of the *legal form* of the theatre.

Public theatres in Germany can be run as many different legal forms which we can generally classify as theatres regulated under public law (called also here *public legal form*) and theatres governed under private law (called here *private legal form*), respectively (2). As it can be seen in Table 1, the number of theatres organised as public legal forms decreased over time in contrast to theatres governed under private law.

Table 1 - Number of theatres in West Germany organised by different legal forms

Type of the legal form	1972/73	1980/81	1989/90	2003/04	Total change
Public legal forms	*53*	*53*	*52*	*44*	*-9*
Regiebetrieb	43	43	42	34	-9
Eigenbetrieb	0	0	1	6	6
ÖrA (*Öffentlich-rechtliche Anstalt*)	5	4	4	2	-3
ZV (*Zweckverband*)	5	6	5	2	-3
Private legal forms	*20*	*23*	*26*	*27*	*7*
GmbH (*Gesselschaft mit beschränkter Haftung*)	14	17	20	22	8
E.V. (*Eingetragener Verein*)	5	5	5	4	-1
GbR (*Gesselschaft des bürgerlichen Rechts*)	1	1	1	1	0

Mühlenkamp (2001) highlights the fact that the main purpose of this formal 'privatisation' with regard to the legal form is to increase the economic efficiency of theatres. However, he also argues that public legal forms are generally less autonomous than private legal forms with regard to the operating of the theatre. For example, the *Regiebetrieb*-theatre, the most common type of public legal form, is most dependent on the licence holder. The *Regiebetrieb*-theatres are usually run by one theatre director whose financial decisions are monitored by an administrative director who is a bureaucrat employed by the licence holder. Hence, the decision process of theatres run as *Regiebetrieb* is more integrated into the public administration of the licence holder and the theatre director is controlled by the licence holder to a great extent. Furthermore, the financial dependence of theatres run as *Regiebetrieb* means that their accounting system is "cameral" in form in that all items in the accounts must be separated (Hoffman, 1998). In general, the most important principle of this accounting system is that it should reveal whether the budget has been carried out in line with the original budget plan and it also means that expenditure and income are calculated separately. For example, budgets are allocated for specific purposes and surplus returns on a particular activity may not be used to cover losses in other areas of theatre production but must be returned to the subsidizer. Hence, such accounting procedure allows the theatre directors less flexibility in using the available funds and surpluses from other areas while running their organisations.

In contrast, in the case of private legal forms, the most common of which are *GmbH*-theatres, the theatre is run by an independent theatre director (or board of directors). While, there is also a supervisory board of the licence holder which controls the theatre management, it has much less formal influence on the management of the theatre than in the case of public legal forms. The accounting system is also the standard double bookkeeping as developed for private enterprises which allows the theatres greater flexibility in allocating their budget surpluses or deficits. It also gives the managers more freedom on which areas or activities the resources should be spent.

Empirical analysis

Given the brief description of the institutional setting of German public theatres, we argue that theatres run as private legal forms and specifically as *GmbH*-theatres are more independent from the licence holder than theatres run as public legal forms or *Regiebetrieb*-theatres. A private legal form allows greater flexibility and so the theatre director might be better able to react to different market and economic situations. However, the greater independence of *GmbH*-theatres may not necessarily guarantee that theatres will be more efficiently run: theatre directors have more artistic freedom and may focus solely on the pursuit of artistic goals or other goals and so with non-binding budget constraints might be less cost effective. This leads us to our first testable hypothesis.

Hypothesis 1: Theatres operating as private legal forms will be less efficient than theatres operating as public legal forms.

Definition of efficiency and methodology

To test the differences in efficiency levels between the different legal forms, we establish an efficiency measure for each theatre. We interpret the efficiency of theatres as *technical efficiency* which is a manager's ability to obtain the maximal output from available resources with the existing production technology. Production technology is a process by which inputs (labour and capital) are converted into output. Following Farrell (1957) we measure an output-oriented technical efficiency which is the ratio of the observed output of theatre *i* in period *t*, relative to the maximal potential artistic output, defined by the frontier function. The technical efficiency is then bound by zero and one and a score of less than one means that the theatre is inefficient as it could potentially increase its output level without increasing its inputs.

In this study, the efficiency of theatres is measured using the parametric methods. For this reason, we need to define a mathematical model of production function $Y_{it}=f(X_{itk})$ which states the maximal amount of output (Y_{it}) of theatre *i* in period *t* obtainable from a given input bundle ($X_{it1},\ldots,X_{itn}$). In order to account for the specific nature of performing arts organisations, a flexible translog (logarithmic transcendental) function is applied. We also consider the standard Cobb-Douglas functional form as an

alternative specification of the production function. The technical efficiency scores are then obtained together with the corresponding production functions using the parametric stochastic frontier approach (SFA) of Greene (2004). The SFA approach is an econometric technique, which in contrast to non-parametric techniques, such as DEA methods (3), recognizes not only the technical inefficiency component of theatres (deviations below the optimal output level) but also the fact that random shocks beyond producers' control may affect the production output. Furthermore, the recent stochastic frontier techniques also control for the fact that the theatres under investigation are very heterogenous. For example, theatres may operate in different regions with various environmental factors and characteristics that are only partially observed. Thus, the recent SFA techniques remove from the estimated inefficiency component also other factors that may be related not to the efficiency but rather to the specific characteristics of the theatres (4).

Data set

To estimate the production function and the corresponding technical efficiency scores of theatres, we need to define data on inputs (XK) and output (Y) of a theatre. The data set refers to panel data on 70 public theatres in West Germany over the period of 32 yearly theatre seasons from 1972 until 2003. This data set comes from the annual Theatre Report (*Theaterstatistik*) published each year by the German Stage Association (*Deutscher Bühnenverein*) since 1965.

In line with Throsby (1977), Gapinski (1980) and Zieba (2011), we measure artistic output using the number of theatre visitors as measured by aggregate ticket sales. This includes visitors attending drama performances, musical theatre (opera, operetta, musicals) and also ballet and classical concerts. In addition, preferential and free tickets issued, and theatre attendances at guest performances at other locations, are also included. Theatre attendance incorporates a quality dimension of artistic output given that each actual theatre visit counts as a "cultural experience". Theatre attendance, however, may be a function of both supply and demand and so we also consider the number of tickets on offer as an alternative output measure (5). Both measures fail, however, to take account of the full dimension of artistic quality. Hence, it should be noted that we are restricting our empirical analysis to an examination of "managerial" efficiency as opposed to "artistic" efficiency.

As with most types of firms, in the performing arts sector we can also broadly classify inputs as labour and capital. To measure labour input, we utilise the information on the personnel expenses data which are transformed into real values using numerous price deflators. Due to the fact that an artistic performance cannot take place without artists, the distinction between artistic and non-artistic labour is important. Thus, two separate labour inputs are constructed: artists which includes expenses on artistic directors, stage managers, solo artists for operetta and opera, solo artists for drama, ballet members, choir members, guest artists and members of theatre orchestras; and *ancillaries* which represents expenses for technicians (technical and artistic-technical staff) and administration and house staff.

In the absence of direct information on capital input flows, proxy capital input variables are constructed using data on expenses, costs and commodity usage. The *primary capital* input is defined as operative expenses which include administration costs, renting and leasing of facilities, décor and costumes, publications, copy-right costs, materials, expenses for guest performances/sight touring, guest performances by foreign ensembles and other operating expenditures. The *secondary capital* input is measured using a proxy variable for the value of capital stock which is taken to be the number of seats in a theatre, times the number of venues valued at the property price per square meter of building land in West Germany.

Table 2 provides the average values for artistic output and the inputs used in its production over the examination period. The data are presented for the full sample of 79 theatres (2,404 observations) and also for the reduced sample of 67 theatres which includes the *GmbH*-theatres and the *Regiebetrieb*-theatres only (1,687 observations).

Table 2 – Summary statistics of output and input variables*

	Panel A			*Panel B*		
	All theatres	*Public* legal forms	*Private* legal forms	All theatres	*Regiebetrieb*-theatres	*GmbH*-theatres
Number of visitors (Y)	216,545	224,519	199,062	234,329	242,646	215,026
Artists (X_1)	8,097	8,810	6,532	9,043	9,686	7,549
Ancillaries (X_2)	6,093	6,329	5,575	6,803	6,960	6,439
Primary capital (X_3)	2,999	3,045	2,898	3,303	3,286	3,340
Secondary capital (X_4)	141	149	123	148	156	129
No. theatres/No. observations	79/2,404	48/1,653	31/753	67/1,868	43/1,306	24/562

*Average values for the period 1972-2003. The data on theatre inputs are presented in '000s of euro as for the year 2000.

For the examined period of time, German public theatres received on average 216,545 visitors per year for the whole sample and 234,329 visitors for the reduced sample. As expected, the expenses for artists are considerably higher than the personnel expenses for ancillaries (administrators and technicians). The data are also split by the different legal forms. The number of visitors is much greater for public legal forms or *Regiebetrieb*-theatres whereas the level of inputs differs only slightly between the different legal forms. This gives us an indication that theatres organised as private legal forms or *GmbH*-theatres might be less efficient than the public legal forms or *Regiebetrieb*-theatres. Table 2 also reports the number of theatres and observations for the different groups of theatres. Private legal forms account for 31 out of 79 theatres; within this the number of *GmbH*-theatres is 24.

Comparison of efficiency scores

The mean comparison tests of the estimated technical efficiency scores of theatres and organised under different legal forms are presented in Table 3. The average efficiency scores in each sample of theatres are between 83 and 86 per cent indicating that on average theatres could increase artistic output (theatre attendance) by 17 to 14 per cent without increasing inputs levels. The results also indicate that the efficiency of theatres organised as private legal forms is lower than that of theatres organised as public legal forms. The difference is statistically significant in all cases. The magnitude of the difference between *GmbH*-theatres and *Regiebetrieb*-theatres is even greater than that of the full sample, as expected given the stricter delineation of these two organisational structures. The percentage differences in efficiency estimates between different legal forms are rather small (i.e. around 2 per cent). However, it should be noted that the applied stochastic frontier efficiency measures

are only relative measures (i.e. based on theatre rankings) and as such the exact magnitude of the efficiency effects cannot be obtained. Nevertheless, these results provide an evidence to support our hypothesis that theatres organised as public legal forms, where management teams are subject to strict monitoring and reporting requirements, are more efficient than those organised as private legal forms where monitoring and reporting is less stringent.

Table 3 - The estimated efficiency scores of theatres grouped by legal form

Average efficiency score	*Public legal* forms	*Private legal* forms	*t-ratio*	*Regiebetrieb* theatre	*GmbH* - theatres	*t-ratio*
Translog production function	0.85	0.84	1.86*	0.86	0.83	4.43***
Cobb-Douglas production function	0.85	0.83	2.26**	0.85	0.83	4.69***

*** statistically significant difference at the 1 percent level,** significant at the 5 per cent level and * significant different at the 10 per cent level.

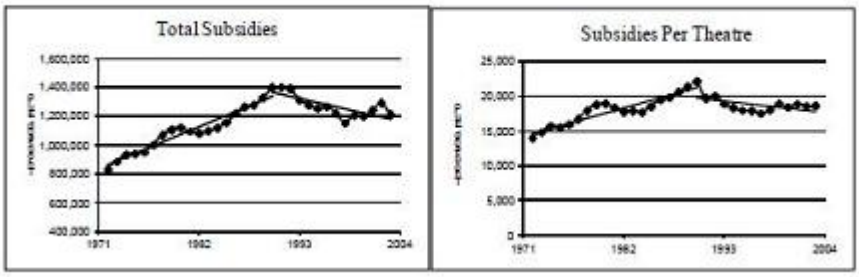
In following, we examine how the efficiency of theatres run under different organisational structures is affected by the reunification funding and competition shocks connected with the German-reunification in 1990. We use the difference-in-difference regression methods (details of each are discussed at length in Zieba and Newman (2013)) and we estimate the impact of the various treatment variables on the technical efficiency scores obtained in the first step. The treatment variables are indicator variables which are related to the legal form of theatre, and to the reunification funding and competition shocks, respectively.

The reunification funding shock

After the German-Reunification in October 1990 all theatres in West Germany were exposed to a funding shock connected with the assimilation of the eastern regions and East Berlin into the budget of the Federal Republic of Germany. As a result, the regions and municipalities in West Germany experienced significant budget cutbacks

and their expenditures on culture also decreased. Burns and van der Will (2003) also note that the erosion of cultural budgets since 1990, particularly at the municipal level, was mainly due to the immense costs of unification. As we can see from Figure 1, the real level of public funding for West German theatres increased from 1971 until 1989 but it began to decrease from 1990 to 2003. The decline appears small but the financial pressure was felt by many theatres and some theatres were even forced to close or to merge with other theatres.

Figure 1 - The real level of public funding for public theatres in West Germany (excluding East Germany) between 1965 and 2004.*



A decline in public funding for theatres implies that their budget constraint becomes more binding. In the first scenario (i.e. theatres organised as public legal forms), given that directors are already operating efficiently, the efficiency of these theatres should not be affected by the shock to the level of funding. In the second scenario (i.e. theatres organised as private legal forms), the decline in funding will lead to a decline in any slack in the production process and an increase in efficiency. As such we might expect efficiency to improve for these theatres. We refer to this shock as the 'reunification funding shock'. The specific hypothesis we wish to test is:

Hypothesis 2: The reunification funding shock will lead to increased efficiency levels in theatres operating as private legal forms and unchanged efficiency levels in theatres operating as public legal forms.

The empirical results (see Zieba and Newman (2013), pp. 521-524) are consistent with *Hypothesis 1* above, indicating that the efficiency levels of theatres organised as private legal forms are significantly less than their public counterparts. Furthermore, the results indicate that the reunification shock itself does not have a statistically significant effect, a result that we might expect due to the fact that the actual decline in public funding was rather small (see Figure 1). The results are, however, in contrast to *Hypothesis 2*, as they suggest that the funding shock resulting from the reunification did not affect the efficiency of privately and publicly organised theatres differently. However, when the sub-sample of *GmbH*– and *Regiebetrieb*-theatres are considered in isolation (*Panel B*) the funding shock has a negative and significant effect on efficiency for *GmbH*-theatres but had no significant effect on efficiency for *Regiebetrieb*-theatres. This result indicates that in the face of a funding shock, the efficiency levels of the *GmbH*-theatres fall even further. Hence, even when funding resources become scarce, within the GmbH organisational structure the lack of control and monitoring allows such inefficiencies to emerge.

The reunification competition shock

The reunification of Germany also meant that the theatres which were located at the border with Eastern Germany and theatres located in West Berlin (thus neighbouring with the East part of Berlin) were exposed to an exogenous demand shock connected with opening the borders with the Ex-GDR regions of Germany in 1990 and the inclusion of about 90 theatres from East Germany (6). The reunification brought both opportunities but also challenges for the theatres located at the border. Firstly, after the reunification the potential audience of theatres located at the border expanded as visitors from neighbouring areas (from the new eastern federal regions or from East Berlin) could easily travel to visit the theatres located in the bordering western regions. However, conversely, visitors from West Germany could easily attend the performances in neighbouring theatres from Eastern Germany and East Berlin. Furthermore, the theatres located at the border could also easily travel to, and stage guest performances at the neighbouring theatres in East or West Germany.

We could expect the increase in competition to affect public and privately organised performing arts firms differently. In particular, theatres organised as private legal forms have the flexibility necessary to react to these market changes and increase

efficiency while theatres organised as public legal forms may be more restricted in terms of their ability to react appropriately to the opportunities presented by the opening up of the market. The effect, however, should only affect theatres located at the border. The specific hypothesis we wish to test is:

Hypothesis 3: In the face of a shock exposing theatres to greater competition, theatres operating at the border and organised as private legal forms will increase their efficiency levels while those theatres operating at the border organised as public legal forms will experience a fall in efficiency levels.

This hypothesis has been confirmed by the empirical results provided in Zieba and Newman (2013). Namely, the reunification competition shock has a positive effect on the efficiency of privately organised theatres which are located at the border. This result holds regardless of whether we consider the full sample of all theatres or the reduced sample of *GmbH*-theatres and *Regiebetrieb*-theatres only. In the latter case, we also find a negative and significant effect on efficiency of *Regiebetrieb*-theatres which are located at the border. This finding suggests that in the face of competition, the restrictions placed on the managers of *Regiebetrieb*-theatres prevents them from being able to exploit new opportunities presented by increased exposure to competition. Furthermore, the estimation results again indicate that: 1) theatres organised as private legal forms are less efficient in general than those organised as public legal forms which is consistent with *Hypothesis 1*; and 2) theatres organised as private legal forms experienced a fall in efficiency as a result of the reunification funding shock while the efficiency levels of theatres organised as public legal forms were unaffected.

Summing up, we find that, as hypothesised, the reunification competition shock has a positive and significant effect on theatres organised as private legal forms located at the border while the effect on those organised as public legal forms and located at the border is insignificant or negative.

Conclusions

The paper demonstrates two important points. First, the econometric techniques which are widely applied for other sectors such as health or education, can prove as important public policy instruments to examine the efficiency of theatres provided that detailed data on output and inputs are available. Public authorities could, for example, predict an interval of the expected artistic output, measured as the number of visitors or tickets on offer by the given level of inputs and also by accounting for both unobserved and observed characteristics of theatres. The theatres would be then required to justify any shortage in the predicted output levels by the given level of public funding. Thus, the efficiency of the performing arts organizations could be compared not only with regard to their costs but also with regard to their non-financial artistic goals. The theatre managers may benefit themselves from this procedure by gaining a relative measure of how efficiently they are running their theatres. The cultural policy makers and the licence holders could also draw on these useful tools to allocate appropriately the resources among their theatres.

Second, the empirical findings discussed in the paper confirm the hypothesis that the legal form of a theatre which defines the way in which a theatre company is organised, financed and controlled, will affect the economic performance of theatres. The empirical findings suggest that whereas public legal forms are better instruments to control the theatre managers, the private legal forms allow the theatre managers more flexibility which may proof very useful with regard to increased market competition. On the whole, we can conclude for Germany there are pros and cons associated with each type of organisational structure. Our findings suggest that a myriad between the two may be appropriate: tighter controls on the budgets of theatre directors while affording greater flexibility in the production decisions of artistic directors, particularly as the market for artistic performances becomes increasingly competitive. Moreover, our results support the argument that the recent transformation of theatres from public into private legal forms does not necessarily lead to increased efficiency levels of these theatres. In fact, our findings could be explored in the context of “institutional isomorphism” introduced by DiMaggio and Powell (1983). We may argue that theatres governed under private law follow proven recipes and make approaches borrowed from the publicly organised theatres their own. Exploring these issues will contribute further to our understanding of the link between organisational structure and efficiency for publicly funded performing arts organisations.

Endnotes

(1) It should be noted, however, that pursuing artistic freedom does not inevitably make theatre directors less efficient by spending on costly performances. It may also be the case that technology enables qualitative art production on lower costs.

(2) The legal form does not affect the ownership structure of the theatre which means that in all cases the only owner of the theatre is the state, i.e. federal region, municipality, district or the holding or cooperation of municipalities.

(3) For the alternative DEA (Data Envelopment Analysis) approach see Marco-Serrano (2006).

(4) A full exposition of the SFA method applied in the empirical analysis is presented at length in Zieba and Newman (2013).

(5) An alternative measure of output in a theatre, not presented here, is the number of tickets on offer which is calculated by multiplying the number of performances with the number of seats in a theatre. The empirical results using this alternative measure confirm the earlier findings.

(6) It should be noted that not all theatres were maintained in post-reunification East Germany as many of them were directly privatised, closed or merged with other theatres.

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