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► **To cite this version:**

Kristien Werck, Mona Grinwis Plaat Stultjes, Bruno Heyndels. Budgetary constraints and programmatic choices by Flemish subsidized theatres. *Applied Economics*, 2008, 40 (18), pp.2369-2379. 10.1080/00036840600970153 . hal-00581977

HAL Id: hal-00581977

<https://hal.science/hal-00581977>

Submitted on 1 Apr 2011

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Journal:	<i>Applied Economics</i>
Manuscript ID:	APE-05-0465.R1
Journal Selection:	Applied Economics
JEL Code:	L31 - Nonprofit Institutions < L3 - Nonprofit Organizations and Public Enterprise < L - Industrial Organization
Keywords:	theatre, subsidies, programmatic choices

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Budgetary constraints and programmatic choices by Flemish subsidized theatres

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Abstract. We analyse programmatic choices of Flemish theatres and examine how they are affected by the theatres' budgetary situation. Following Lancaster's characteristics approach, we identify several output characteristics of individual Flemish theatres during the period 1980-2000. A simultaneous equation approach is used to capture the theatre managers', subsidizing government's and consumers' behaviour. We find that changes in the budgetary situation of a theatre are translated into changes of both the 'amount' and the nature of the theatre's output. The budgetary impact on artistic choices has intensified since the introduction of a 4-yearly instead of yearly allocation of subsidies. The decrease in financial risk for the individual theatres leads to an increase in artistic risk-taking.

Key words: programmatic choices, theatre, subsidies

JEL: Z11

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1. Introduction

Like any other firm, a theatre needs money. Artistic productions can be presented to the audience only when sufficient budgetary means are available. Broadly speaking, theatres rely on both the market (through ticket sales, sponsoring, ...) and subsidizing governments to soften this constraint. But popular or corporate support may increase or decrease, subsidies may be augmented or cut back. For the theatre directors this means that the budgetary constraint loosens or tightens and action has to be undertaken. Programmatic choices adjusting the theatrical output are a prime instrument for the theatre management. It can adapt the number of performances or productions to the new budgetary situation or it can change the *nature* of the theatre's output. These types of reactions are the focus of the present analysis. More specifically, we examine how budgetary constraints affect the programmatic choices made by Flemish theatres.

The program of a performing arts organisation can be seen as the result of an economic optimisation process (Frey and Pommerehne, 1990). The decision-maker, making programmatic choices, pursues certain objectives. A discussion on the objectives of managers in the non-profit performing arts is in Section 2. Full realisation of these objectives is confined by budgetary constraints. Section 3 reviews the literature on the impact of budgetary changes on artistic programming. Section 4 uses a panel of Flemish theatres (1980-2000) to analyse how budgetary changes affect programmatic choices. We account explicitly for the heterogeneity of theatre output: programming corresponds to selecting a Lancasterian set of characteristics. A simultaneous equation approach is used also incorporating the behaviour of consumers and of the subsidizing government. A conclusion is in Section 5.

2. Objectives of (non-profit) theatre managers

A theatre manager making programmatic choices will – in most general terms – maximise his/her utility under a set of constraints. Most economic models of non-profit performing arts organisations assume that theatre managers are biased towards the maximization of artistic quality (Krebs and Pommerehne, 1995). The pursuit of quality can take many forms. A theatre director could opt for quality by programming innovative, less popular works that appeal only to the most ‘refined’ tastes. Quality could also be achieved by making the production of any work as impressive as possible, for example by a virtuoso performance, by lavish stage sets or costumes (Hansmann, 1981).

Although the quality objective dominates in the literature, alternatives have been suggested. First, a theatre director could maximise audience size e.g. to spread culture to a broad segment of the population (Caves, 2000). There may be a trade-off: a ‘highbrow’ (high quality) program may decrease audience sizes (Krebs and Pommerehne, 1995). Other alternatives to quality maximization are budget maximization (Hansmann, 1981, 347)¹, acquiring legitimacy of the organisation (DiMaggio, 1987) or maximisation of the theatre manager’s standing among his peers (Krebs and Pommerehne, 1995). The latter objective may reflect the existence of agency problems (Du Bois et al., 2004).

¹ His approach is in line with Niskanen’s description of the budget maximising bureaucracy (Niskanen, 1971). Note that non-profit theatres are a particular example of a bureaucracy according to Niskanen’s definition of bureaus as “non-profit organisations which are financed, at least in part, by a periodic appropriation or grant” (Niskanen, 1971).

3. Decision-making in the performing arts

A theatre manager faces constraints imposed by the ‘artistic technology’ and the budget. The latter is typically composed of three parts: the public’s contribution in the form of ticket sales, corporate sponsoring and public subsidies. Changes in the technology, prices of inputs and/or the budget can be expected to lead to other programmatic choices. The *cultural economics* literature has focused on two issues: the impact of subsidy on output and the effect of increasing costs (input prices) on the performing arts in general.

Several empirical studies examine the effect of government subsidy on one particular aspect of theatrical output, namely the extent to which the repertoire is diverse or innovative. The general assumption is that government support – as opposed to box office revenues or private donations - enhances artistic freedom and the possibility to experiment. Martorella (1975) gives the example of the Metropolitan and Lyric Opera of Chicago. These depend heavily on box office revenues. Their programming turns out to be ‘conservative’. In contrast, the New York City Opera that has been subsidized by the National Council of the Arts and the Ford Foundation, has been able to commission new works and present avant-garde or rarely performed operas. Heilbrun (2001) suggests that the increasing diversity in the Canadian opera repertoire (as compared to decreasing diversity in the U.S.) is explained by the higher levels of public support. Pierce (2000) examines how variations in funding sources affect ‘program conventionality’ of U.S. opera companies. ‘Conventionality’ refers to the extent to which the program of an organisation is similar to the programs of other organisations. Local government funding significantly increases conventionality. A probable reason is that local politicians need to support programs that are popular.

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2 The opposite effect was found for support from the National Endowment for the Arts:
3
4 it decreases the conventionality of opera programming.
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9 Theatre studies largely support the hypothesis that public support increases diversity.
10 Austen-Smith (1980) finds that subsidy encourages the presentation of minority
11 interest plays in English provincial repertory theatres. In their study of American
12 resident theatres, DiMaggio and Stenberg (1985) show how a higher dependence on
13 the market is associated with a greater conformity of repertoire. In a study on English
14 theatres, O'Hagan and Neligan (2005) find a negative relationship between subsidy as
15 a proportion of total income and the conventionality of theatre programs.
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28 Baumol and Baumol (1985b) analyse the effect of ever-increasing costs on the output
29 of performing arts organisations. Their concept of the 'suppressed cost disease' is the
30 less well-known brother of Baumol's cost disease. The intuition behind the latter is
31 simple: (a) the labour intensive performing arts sector does not benefit from
32 technological progress as much as other sectors and (b) the tendency for wages in the
33 arts sector to follow wages elsewhere leads to ever-increasing costs (Baumol and
34 Bowen, 1966). When performing arts organisations make qualitative changes in their
35 output due to cost pressures this is referred to as the suppressed form of the cost
36 disease. As a general rule, we expect increasing labour costs to induce a shift within
37 the artistic sector from highly labour intensive productions to less labour intensive
38 productions. The cost disease leads then to a situation where performing arts
39 institutions "debase the product" (Baumol and Baumol, 1985b, 222). They may cut
40 the number of rehearsals, perform in large capacity playhouses, use simpler sets ... in
41 the economically feasible range of (artistic) options. An obvious strategy is to reduce
42 labour costs, since these typically make up for the largest part of total costs.
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60 Assuming that wages are more or less fixed, this requires reducing labour input. One

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2 way to do this is to produce plays with smaller casts. Still, it might be difficult to
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4 produce a certain play with fewer actors. In the words of Alan Peacock: “Removing
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6 Judge Bouck from the cast of Hedda Gabler would certainly reduce labour input to
7
8 Ibsen’s masterpiece, but it would also destroy the product” (Peacock, 1996, 219).
9
10 But, of course, a change in the *overall* composition of the repertoire does make it
11
12 possible to reduce labour input. Evidence by Baumol and Baumol (1985a; 1985b)
13
14 shows that this is exactly what happened on Broadway: the average cast size of plays
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16 fell from 15,8 to 8,1 between 1946 and 1977. Another cost-saving option that affects
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18 the repertoire mix is to choose fewer modern works for which copyright fees have to
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20 be paid (Throsby, 1996).
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30 **4. Flemish theatres: 1980-2000**

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33 The Flemish professional theatre sector has gone through remarkable changes in the
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35 past decades. As will be shown, the plays that appear on stage today are clearly
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37 different from those that were programmed 20 years ago. Our analysis is restricted to
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39 those companies that have received ‘structural’ subsidies from the Flemish
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41 community. Altogether these represent the (rather) well-established and professional
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43 Flemish theatre sector. In Section 4.1 we describe the output of the Flemish theatres
44
45 in the period 1980-2000.² Section 4.2 gives the evolution of the theatres’ budget.
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47 Section 4.3 discusses several hypotheses concerning programmatic choices and the
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49 impact of budgetary restrictions. The empirical analysis is in Section 4.4.
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59 ² We consider the seasons 1980-1981 until 2000-2001. In the remainder of this study, theatre seasons
60 will be referred to by the first year mentioned (for example, the season 1993-1994 will be referred to by the year 1993).

4.1 The description of Flemish theatre output

To examine the changes in the Flemish theatre output, we describe output at the level of the individual theatres. Rather than focusing on the level of theatre output only, we also account for the heterogeneity of output. Theatre productions differ considerably from one another in many dimensions. Analysing decision-making in the context of the performing arts should explicitly account for such differences (Throsby, 1990). Lancaster's *characteristics approach* then suggests itself as a tool of analysis (Lancaster, 1966). Following this approach, a theatre production consists of a unique set of N characteristics z_i ($i = 1, \dots, N$) like the language of the play, the period in which the play was written, the number of actors on stage, their identity, and so on:

$$Z = Z \{ z_1, z_2, z_3, \dots, z_N \}$$

From the theatre manager's perspective, a programmatic choice on what plays to put on stage corresponds with a choice of specific values for all z_i . More generally, programmatic choices involve not only the choice of a given play to perform but rather the choice of a *set* of plays (sets of characteristics) that are performed during a given season along with a decision on how often each given play will be performed, ...

The Lancasterian characteristics approach has been incorporated into the empirical literature on performing arts attendance. In a demand study of 3 Australian theatre companies, Throsby (1990) includes a variable for repertoire classification. Using dummy variables, plays are classified into four groups according to the date of composition and the familiarity of the playwright. Abbé-Decarroux (1994) estimates the demand for 64 productions of a Swiss theatre company. He classifies the

1
2 repertoire into classic, modern, contemporary and atypical plays based on the date the
3
4 plays were written and on whether the playwright is a living author or not. Analysing
5
6 demand for French theatres, Urrutiaguer (2002) divides the repertoire into four
7
8 categories according to the date of composition, the date of birth and the mother
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10 tongue of the playwright. Dummy variables express whether the share of
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12 performances programmed by a theatre and belonging to a certain category is 10 %
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14 higher than the overall average or not. Corning and Levy (2002) examine demand for
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16 performances of the Pacific Conservatory of the Performing Arts. They include
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18 indicators for comedies, musicals, and dramas as well as a specific variable for the
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20 musical 'Tommy'.
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28 As these studies show, the choice of relevant characteristics to describe output is not
29
30 straightforward. We identify several characteristics to describe qualitative aspects of
31
32 individual theatre productions. The following 5 characteristics are considered³:
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- 38 • z_1 : the original language of the play
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- 40 • z_2 : the age of the playwright
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- 42 • z_3 : the fact whether the play is an adaptation⁴ or not
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- 44
- 45 • z_4 : the number of actors
- 46
- 47 • z_5 : the fact whether the production is new or a retake
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55 ³ The selection of the characteristics was driven by the literature and the availability of data. Data on
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57 programmatic choices come from the 'Vlaamse Theaterjaarboeken' over the period 1980-1998, the
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59 database of the 'Vlaams Theater Instituut' and the Flemish Ministry of Culture.

60 ⁴ An adaptation is an existing story or play that serves as the source of inspiration for a Flemish author
who transforms it in an innovative way

1
2 As these characteristics describe individual theatre productions, the relevant
3
4 description of the program of a theatre for a *whole* season – a set of productions – can
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6 be seen in terms of an aggregation of these characteristics. To describe programmatic
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8 choices involving the *quantity* of output we look at:
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- 11 • the number of productions
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- 13 • the number of performances per production.
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21 Werck and Heyndels (2005) show how the choice of repertoire by Flemish theatres
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23 changed. Over the period 1980-2000 the share of plays by non-Dutch-speaking
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25 authors fell dramatically (from 79 to 26 % of all plays), there was a tendency towards
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27 more recent plays and more adaptations. A notable evolution concerns the cast size.
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29 Whereas 5,77 actors appeared on stage in the average production in 1980, there are
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31 only 4,38 actors per production in 2000. Finally, more productions are being retaken.
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37 The output of the Flemish theatres has also undergone changes in terms of quantity.
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39 The average number of productions per theatre increased (from 5,22 in 1980 to 8,04
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41 in 2000) while at the same time the number of performances per production fell (from
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43 almost 40 to 20).
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50 4.2 The evolution of the budgetary situation

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53 The budget of the Flemish theatres consists of two main sources: structural subsidies
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55 of the Flemish Community and own (box-office) income.⁵ The former typically cover
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60 ⁵ Local governments - municipalities and provinces - also subsidize theatres. However, due to the large number of missing data, we did not take these subsidies into account.

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between 48 and 52 % of all expenses. Different legislations have regulated the allocation of subsidies. Before 1975, only the large ‘repertoire’ theatres and a few ‘chamber’ theatres received subsidies. The ‘Theaterdecreet’ (Theatre Decree) from 1975 and the ‘Podiumkunstendecreet’ (Performing Arts Decree) from 1993 shaped the currently existing system. A crucial innovation in the latter Decree is the replacement of the yearly allocation of subsidies by a system of ‘structural’ subsidies assigned for 4 year-periods. This institutional change was welcomed by the theatres as it facilitated them to plan activities for a number of years without the (financial) uncertainty that was current practice before 1993 (Brouwers, 1994).

The budgetary means of the Flemish theatres fluctuated over the years. After an initial decline in the early 80s the total available budget (subsidies and box office) for all subsidized theatres increased again to a maximum of 23,6 million in 1999 (in prices of 1996). The average theatre budget fluctuated between 650.000 in the early 80s to almost 946.000 in 1999. Naturally, the evolution in subsidies was largely responsible for these fluctuations: total subsidies fell from over 17,4 million in the early 80s to 13,4 million in 1986, after which they started to rise again. Average theatre subsidies were around 572.000 in 1980 and increased to 650.000 for the period 1997-2000.

4.3 Budgetary changes and Flemish theatre output

When making programmatic choices, the theatre manager has to take into account the constraints imposed by the public, by the subsidizing bodies and by its own technology. Depending on the objective(s) of the organisation, different hypotheses on the effect of budgetary changes can be made. A quality-maximising manager could be biased towards a theatre program that is artistically diverse (e.g. with a

1
2 maximum number of different productions). Audience-maximising managers may
3
4 prefer larger numbers of performances. They may be biased towards more ‘popular’
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6 plays.⁶ Depending on which objective dominates, there exists a trade-off between the
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8 number of productions and the number of performances per production.
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14 By retaking old productions, certain fixed production costs (such as scenery and
15
16 costumes) can be avoided, and the number of rehearsals can possibly be limited.
17
18 However, it is a programmatic choice that quality-maximising theatre managers might
19
20 be reluctant to make, as it does not enhance artistic diversity (Grinwis, 2002).
21
22 Therefore, we expect such theatre managers to decrease the number of retakes when
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24 more budgetary means are available.
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30 It is not straightforward to make a priori assumptions on the evolution of output
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32 characteristics under changing budgetary restrictions. The choice of repertoire – and
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34 the actors performing it – is one of the most important decisions to be made.
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36 Reducing cast size seems an obvious way to reduce labour costs. Hence, a theatre
37
38 manager may decrease (increase) cast size when confronted with a tightening
39
40 (expanding) budget. Of course, when a quality-maximising manager regards large
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42 productions to be important, he will be reluctant to reduce average cast size.
43
44 Similarly, an audience-maximising manager will have a preference for large
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46 productions if they attract more theatregoers.
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⁶ An audience-maximising manager is indifferent between programming n different plays with each
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59 one performance, or performing 1 production n times. Still, as programming a new production has
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sizeable fixed costs he will perform as few plays as possible (the constraint being that the play has to be
popular enough to fill the theatre).

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The choice of a play that is contemporary, an adaptation of a classic play or of a play that is written by a Dutch-speaking playwright has less clear-cut budgetary implications. Still, cost-saving measures are possible, e.g. by programming fewer modern works for which copyright fees have to be paid (Throsby, 1996; Baumol and Baumol, 1985b). Again, a quality-maximising theatre manager who regards innovation as indispensable will be less willing to take such a measure.

It is clear that programmatic choices are taken simultaneously. Moreover, decision-making is intrinsically interdependent if only because subsidizing bodies take into account (past) programmatic choices as well (Jenkins and Austen-Smith, 1987; Luksetich and Lange, 1995). Politicians who decide on the level of subsidization face a re-election constraint. Therefore they may want to try and avoid drops in popular support. Theatre managers take this into account and will be careful not to provoke politicians, for example by falling short of box office income or by attracting negative publicity (Krebs and Pommerehne, 1995). Demand will also be affected by programmatic choices. Werck and Heyndels (2005) found that Flemish theatre attendance is positively affected by large cast sizes and plays written by Dutch-speaking playwrights. Expectations about consumers' reactions are likely to feed back into the programmatic decision-making, as attendance has a budgetary impact through the box-office.

4.4 Empirical analysis

Responses to budgetary changes are examined using data on all theatres that were subsidized during the period 1980-2000. Our data set consists of an unbalanced panel of 59 theatres. The set of theatres varies over time as some theatres cease to exist,

1
2 others continue to exist but no longer receive structural subsidies, and new theatres
3
4 are created and subsidized.⁷
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9 To model all aspects of theatre behaviour and to incorporate the simultaneity of
10 decision-making, we estimate a system of simultaneous equations. Quantitative
11 output measures, output characteristics, subsidies, attendance and ticket price are
12 determined simultaneously. Quantitative output measures for theatre i in year t are the
13 number of productions ($PROD_{i,t}$) and the number of performances per productions
14 ($RUN_{i,t}$). Five output characteristics are taken as dependent variables. $CAST_{i,t}$ stands
15 for the average cast size of all productions of theatre i in year t . $INNO_{i,t}$ is a measure
16 for artistic innovation. It corresponds with the proportion of new productions to total
17 productions. $ADAPT_{i,t}$ gives the share of adaptations relative to the number of
18 productions of the company. The dependent variable $AGE_{i,t}$, is a proxy for the age of
19 the plays. It corresponds with the difference between t and the average birth year of
20 the playwrights of all productions of the company. Finally, $DUTCH_{i,t}$ gives the
21 proportion of plays (originally) written in Dutch. These main choice variables of the
22 individual theatres are determined taking into account possible effects on subsidies
23 ($SUB_{i,t}$), attendance ($Q_{i,t}$) and on the average ticket price charged ($P_{i,t}$). Table 1 gives
24 a summary of the system of simultaneous equations.
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56 The explanatory variables comprise theatre-specific and market specific determinants.
57 For the latter, a distinction is made between touring and non-touring theatres through
58 a dummy variable, $PLAYH_{i,t}$, which equals 1 when a company is residing in its own
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⁷ The number of subsidized theatres in any given year varies between 24 and 35.

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2 playhouse and 0 when it is a touring company with no fixed location. The difference
3
4 between the two types is important since they serve different types of markets. In
5
6 principle, touring companies can perform in the whole Flemish and Brussels Region.
7
8 Their ‘relevant market’ therefore corresponds with the complete set of (308) Flemish
9
10 and (19) Brussels municipalities. Non-touring companies perform in a playhouse in a
11
12 particular municipality. Hence, their ‘relevant market’ is more limited in size. This
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14 difference between the two types is accounted for in the definitions of market specific
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16 explanatory variables: population size, consumer income and the prices of substitutes:
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18 cinema and other theatres’ productions.
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26 Population size ($POP_{i,t}$) is used as a proxy for the size of the ‘relevant market’ of
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28 theatre company i . For touring companies this corresponds with the total population
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30 in all Flemish and Brussels municipalities. For non-touring companies the market is
31
32 geographically limited. It is natural to consider the municipality in which the
33
34 playhouse resides as part of its ‘relevant market’. Still, it is most likely that the
35
36 market extends beyond the borders of this municipality. Just how far this market
37
38 extends is an empirical issue. Werck and Heyndels (2005), analyzing demand for
39
40 Flemish theatres, compare a number of possibilities. They define a 327×327 spatial
41
42 weighting matrix W (Revelli, 2001, 2003). Elements of the matrix, w_{jk} , equal 1 if
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44 municipality k is part of the ‘relevant market’ for theatre i (located in j) and 0
45
46 otherwise. They find a preferred specification in which $w_{jk}=1$ in the municipality
47
48 where the theatre is located ($j=k$) as well as in its border sharing municipalities. We
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50 use this result for our own analysis. In practical terms, this means that $POP_{i,t}$ for a
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52 non-touring theatre i corresponds to the sum of the population in the municipality
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54 where i is located and in its neighbouring municipalities.
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2 Consumer income ($Y_{i,t}$) and the prices of substitutes - cinema ticket price
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4 ($PCINEMA_{i,t}$) and the ticket price of other theatre companies ($PSUBTHEA_{i,t}$) - are
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6 also defined in terms of the 'relevant market'. For touring companies this means that
7
8 $Y_{i,t}$, $PCINEMA_{i,t}$ and $PSUBTHEA_{i,t}$ correspond to the average per capita income
9
10 (weighted by population), the average movie ticket price and the average ticket price
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12 of all other theatres in the Flemish and Brussels Region. For non-touring companies,
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14 the averages are again calculated for the theatre's own and neighbouring
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16 municipalities.^{8,9}

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23 Equations (1) to (7) are of central interest. The first two equations have the
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25 quantitative output variables as dependent variables. Equations (3) to (7) treat the
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27 output characteristics. Each output variable is estimated as a function of its own lag
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29 and the theatre's budget ($BUDGET_{i,t}$).¹⁰ The budget consists of own (box-office)
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31 income and government subsidy. As mentioned, two regimes can be distinguished.
32
33 Until 1992 subsidies were allocated on a yearly basis. Since then, a 4-year allocation
34
35 is in use. Responses to budgetary pressures may have changed. To take this into
36
37 account we interact $BUDGET_{i,t}$ with a dummy DS_t that identifies the subsidy regime.
38
39 $DS_t=1$ in the years from 1993 onwards (4-year allocation regime) and 0 in the
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41 preceding period.¹¹

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48 ⁸ The relevant market's income is an average weighted by population.

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⁹ In practice, movie theatres are only located in (relatively) large municipalities and not in their
neighbouring municipalities. Hence, using or not using the spatial weighting matrix makes no
difference. Formally, however, the 'relevant market' spreads over to neighbouring municipalities even
if in these municipalities no substitute (cinema) is present.

¹⁰ A specification with the lagged value of the budget was estimated as well. The results were similar
to those presented in the main text.

¹¹ Following the current practice in empirical work on political budget cycles, we experimented with
alternatives for DS . We defined a variable TUS_t which gives the 'time until the following subsidy

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4 Ticket price, subsidy and theatre attendance are determined simultaneously with the
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6 programmatic decision variables. Price, $P_{i,t}$, is estimated as a function of attendance
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8 in the previous season, $Q_{i,t-1}$, as well as the output variables and consumer income $Y_{i,t}$
9
10 (equation 8). Equation 9 examines whether subsidy, $SUB_{i,t}$, is dependent on a
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12 theatre's achievements in the previous season. Finally, equation 10 estimates the
13
14 demand for theatre as a function of ticket price, consumer income, population, the
15
16 price of cinema and the average price charged by other theatre companies as well as
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18 the output characteristics (see Werck and Heyndels, 2005).
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26 The equation system summarized in Table 1 is an over-identified system of
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28 simultaneous equations. We use 3-stage least squares as the simultaneous equation
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30 method, which yields more efficient results than single equation estimations when the
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32 disturbances are correlated across equations.¹²
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[Insert Table 2

about here]

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50 round'. So $TUS_t = 0$ in all years before 1993 as well as in 1996 and 2000 (in the latter years decisions
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52 are taken on the subsidies for the following 4 years); $TUS_t = 1$ in 1995 and 1999, 2 in 1994 and 1998
53
54 and 3 in 1993 and 1997. We could not find evidence of a 'budget cycle'.

55
56 ¹² A Hausman specification test examines the correct system specification, and determines whether
57
58 2SLS or 3SLS is the appropriate estimation technique. The results show that a simultaneous equations
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60 model is a better estimation technique (2SLS or 3SLS) than a single equation system (OLS), and that
the full-information method (3SLS) provides better estimates than a limited-information method
(2SLS).

1
2 Table 2 summarises the results. Before turning to the coefficients of central interest
3
4 (those on BUDGET variables) we briefly discuss the other findings. We restrict
5
6 ourselves to the results in columns (1) to (7) as these are the main focus of our article.
7
8 A first observation is that, overall, the lagged variables of the output variables are
9
10 highly significant, demonstrating that programmatic choices are strongly ‘determined’
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12 by choices from the past. This reflects that individual theatres have their own specific
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14 ‘identity’ as a result of which artistic choices show stability over time.
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20 A second general finding is the apparent distinction between touring and non-touring
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22 (resident) companies. The latter program larger numbers of different productions.
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24 This reflects the larger ‘relevant’ market of the touring companies. Since most
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26 theatregoers are not likely to attend the same production more than once, non-touring
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28 theatre companies are obliged to offer a ‘diverse’ program in order to attract potential
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30 theatregoers coming from within a certain distance from the playhouse.¹³ As equation
31
32 4 shows, the playhouse dummy has a significant and positive effect on innovation:
33
34 non-touring theatre companies on average program more new productions. This
35
36 might be explained by their more limited potential audience (smaller ‘relevant
37
38 market’). The proportion of ‘Dutch’ plays in the program is significantly lower for
39
40 resident companies. A possible explanation is – again – that they are ‘obliged’ to
41
42 present a more diverse program (as their ‘relevant market’ is smaller) in combination
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44 with the fact that the Dutch-language repertoire is limited relative to the overall
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46 theatre repertoire.
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57 ¹³ This result seems to be in line with the finding by DiMaggio and Stenberg (1985) for U.S. resident
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59 theatres. They find that resident theatres with a larger market have a less ‘conformist’ repertoire. Of
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course, diversity as measured by the number of different productions is not the same as
‘nonconformity’ as measured by DiMaggio and Stenberg’s Conformity Index.

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Turning to the impact of budgetary changes which are the focus of the current analysis two main conclusions can be drawn. First, we find clear evidence that the theatre's budget has an immediate impact on both the quantity and the nature of the output. Second, the introduction of the 4-year subsidy regime in 1993 has dramatically changed this relationship.

In the pre-1993 period (when subsidies were allocated on a yearly basis) budgetary changes translate into changes in the number of productions and the cast size (equations (1) and (3) respectively). Higher budgets are associated with more artistic diversity as reflected by the increased number of different productions. On the other hand, there is a negative but insignificant relationship between the budget and the average number of performances per production (equation 2). These results suggest that – given sufficient means – theatre managers prefer programming different productions rather than extending the average run of a production. As there is an obvious cost difference between staging a new production and programming an extra performance of an existing production, this result may reflect that Flemish theatre managers maximise quality (defined in terms of programmatic diversity) rather than quantity. Only when forced by the budgetary pressure, the number of productions will be lowered. Negative changes in the budget lead the theatre to lower the number of productions while keeping the average run constant.

Before 1993 the theatre's budgetary situation not only affects the artistic diversity in terms of the quantity of plays. Budgets also have systematic effects on the nature of these plays. Column (3) reveals a highly significant and positive relationship between a theatre's budget and the average cast size of the productions in a given season. Increased budgets are used to expand cast sizes, probably by staging larger

1
2 productions.¹⁴ As such the evolution on Flemish theatre scenes towards plays with
3
4 smaller cast sizes (as sketched in section 4.1) can be attributed – at least in part – to
5
6 budgetary pressures. This structural decline in average cast size in Flemish
7
8 subsidized theatres is to our knowledge the first confirmation of Baumol and
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10 Baumol’s (1985a; 1985b) findings on the so-called suppressed cost disease.
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16 Under the yearly subsidy regime though, we find no significant budgetary influence
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18 on the proportion of new productions, the choice for contemporary plays, adaptations
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20 or plays written by a Dutch-speaking playwright.
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25 After 1993, this situation changes dramatically with the introduction of the 4-yearly
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27 subsidies. While the responsiveness of the number of productions to budgetary
28
29 changes is not significantly affected – also in the post 1993 period higher budgets lead
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31 to higher numbers of productions - for *all* other output variables we find a significant
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33 difference with the pre-1993 period. Indeed, the coefficient on the interaction term is
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35 significant in equations (2) to (7). First, BUDGET*DS has a negatively significant
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37 effect on the number of performances per production (RUN). During the 4-year
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39 regime higher budgets translate into less performances per production and (as in the
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41 pre-1993 period) into larger numbers of productions. This change in behavior is
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43 consistent with the observation that theatre managers work in a financially less risky
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45 environment. As they are assured of a sizeable part of their budgets they can ‘afford’
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47 to take the more costly and (in terms of ticket sales) risky decision to choose for new
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49 productions instead of longer runs.
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60 ¹⁴ Alternatively cast size expansions can reflect the situation where individual actors do no longer play multiple roles within one and the same play. While such a situation is not inexistent in Flemish theatres, it can by no means explain the empirical effect found in table 2.

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Second, a similar change towards more risky programmatic choices may be reflected in the fact that, after 1993, looser budgetary constraints lead theatres to stage more recent plays (equation (6)) and more adaptations (equation (5)). Tighter budgets on the other hand induce (less risky) choices for older and well-established plays that are then performed in their ‘original’ version.

However, the tendency towards using the budget in order to present an artistically more risky program since the introduction of the 4-yearly subsidy regime is possibly contradicted by the observation in column (4). There we find that larger budgets in the post-1992 period lead to *less* innovation defined in terms of the share of new productions to retakes.¹⁵

Finally, column (3) reveals a striking shift in theatres’ responses to budgetary changes. Whereas, as discussed, in the pre-1993 period higher budgets translate readily into larger casts, this relation is no longer apparent since the introduction of the four-year regime. While there remains a positive effect (the sum of the coefficients on BUDGET and BUDGET*DS is still significantly positive), it is now much lower. Larger (lower) budgets no longer lead to strong increases (decreases) in the average cast size. A possible explanation is that theatres use additional budgetary means to conform their programmatic choices to the subsidizer’s preferences. Before 1993 theatre managers enjoyed relatively less freedom. The subsidizing government made explicit reference to the priority that should be given to (artistic) employment.

¹⁵ We have no straightforward explanation for this unless, maybe, that the main incentive to choose for new productions is to convince the subsidizing government to grant (more) subsidies. Indeed, as can be seen from column (9) theatres that are very innovative in these terms systematically receive higher subsidies. This incentive (to convince the subsidizing body) is likely to be smaller under the 4-year subsidy regime.

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2 Theatres received subsidies to spend on wages and general operations. They were
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4 obliged to spend minimally 90 % of their personnel expenses on actors and directors
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6 that were binded to the theatre by contract. Since 1993 this obligation is no longer
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8 present and, given that subsidies are allocated for 4-year periods, this seems to have
9
10 changed the nature of the theatres' dependence on government subsidies.
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13 14 15 16 **5. Conclusions** 17

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19 Programmatic choices by theatre managers are not taken in isolation. Decisions on
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21 which plays to perform, what actors to attract, how often to perform a given play, ...
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23 reflect the objectives pursued by theatre managers and the constraints they face. We
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25 analyse how programmatic choices by Flemish subsidized theatres depend on their
26
27 budgetary constraints. As these (non-profit) theatres depend heavily on government
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29 grants, the budgetary constraint not only reflects a dependency on the market but also
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31 on the government. Empirically analysing programmatic choices is therefore only
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33 possible through estimation of a simultaneous equation system that accounts for this
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35 interdependency between theatre managers, the public and the government. We
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37 estimate such a model on an (unbalanced) panel of theatres that have received
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39 structural subsidies from the Flemish Regional government (over the period 1980-
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41 2000).
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51 We find that theatres' budgets have an impact not only on the number of plays they
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53 perform but also on their nature. While indirect, our results offer to our knowledge
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55 the first systematic empirical evidence of Baumol's suppressed cost disease. This
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57 notion refers to a qualitative change in the artistic output in the performing arts due to
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59 relative price changes.
60

1
2 A crucial observation is that the budgetary impact on programmatic choices depends
3 on the subsidy regime. In the period under consideration, the Flemish government
4 changed the institutional context: until 1992 subsidies were assigned on a yearly basis,
5 since 1993 a 4-yearly subsidy regime came in place. Interestingly, this change in
6 subsidy regime is reflected in the way that theatres respond to budgetary changes.
7 Under the yearly regime changes in a theatre's budget only affect the number of
8 productions (artistic diversity) and the average cast size. Under the 4-yearly regime,
9 budgetary changes have a much more 'general' impact on the nature of the theatrical
10 output: theatres still respond to positive budgetary changes by increasing the number
11 of productions and by increasing cast size (though much less than in the pre-1993
12 period). At the same time, however, they choose for shorter runs, less innovation,
13 more adaptations and more recent plays and plays written in Dutch. All but the
14 responses in terms of innovation (the share of new productions relative to retakes is
15 actually lowered when theatres are given more budgetary leeway) reflect how theatres
16 in a 4-yearly subsidy regime use additional revenue to make artistically more risky
17 choices. Artistic risk – a choice variable of the individual theatres – substitutes the
18 financial risk which was imposed by the yearly subsidy regime.
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For Peer Review

Table 1: Simultaneous equations model

Quantity of output supplied

(1) Productions	$PROD_{i,t}$	$= f(PROD_{i,t-1}, BUDGET_{i,t}, BUDGET_{i,t} * DS_t, PLAYH_{i,t})$
(2) Performances per production	$RUN_{i,t}$	$= f(RUN_{i,t-1}, BUDGET_{i,t}, BUDGET_{i,t} * DS_t, PLAYH_{i,t})$

Output characteristics

(3) Average cast size	$CAST_{i,t}$	$= f(CAST_{i,t-1}, BUDGET_{i,t}, BUDGET_{i,t} * DS_t, PLAYH_{i,t})$
(4) Innovation (proportion of new productions)	$INNO_{i,t}$	$= f(INNO_{i,t-1}, BUDGET_{i,t}, BUDGET_{i,t} * DS_t, PLAYH_{i,t})$
(5) Proportion of adaptations	$ADAPT_{i,t}$	$= f(ADAPT_{i,t-1}, BUDGET_{i,t}, BUDGET_{i,t} * DS_t, PLAYH_{i,t})$
(6) Average age of the playwrights	$AGE_{i,t}$	$= f(AGE_{i,t-1}, BUDGET_{i,t}, BUDGET_{i,t} * DS_t, PLAYH_{i,t})$
(7) Proportion of Dutch language plays	$DUTCH_{i,t}$	$= f(DUTCH_{i,t-1}, BUDGET_{i,t}, BUDGET_{i,t} * DS_t, PLAYH_{i,t})$

Price

(8) Price	$P_{i,t}$	$= f(Q_{i,t-1}, PROD_{i,t}, RUN_{i,t}, CAST_{i,t}, INNO_{i,t}, ADAPT_{i,t}, AGE_{i,t}, DUTCH_{i,t}, Y_{i,t}, PLAYH_{i,t})$
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Government subsidy

(9) Subsidy	$SUB_{i,t}$	$= f(Q_{i,t-1}, PROD_{i,t-1}, RUN_{i,t-1}, CAST_{i,t-1}, INNO_{i,t-1}, ADAPT_{i,t-1}, AGE_{i,t-1}, DUTCH_{i,t-1}, PLAYH_{i,t})$
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Consumer demand

(10) Demand	$Q_{i,t}$	$= f(P_{i,t}, Y_{i,t}, POP_{i,t}, PSUBTHEA_{i,t}, PCINEMA_{i,t}, CAST_{i,t}, INNO_{i,t}, ADAPT_{i,t}, AGE_{i,t}, DUTCH_{i,t}, PLAYH_{i,t})$
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Table 2: 3SLS estimation results

Independent variables	Dependent variables									
	Prod (1)	Run (2)	Cast (3)	Inno (4)	Adapt (5)	Age (6)	Dutch (7)	P (8)	Sub (9)	Q (10)
Constant	1,38*** (6,24)	17,64*** (10,95)	1,71*** (9,05)	0,46*** (13,44)	0,06*** (3,99)	78,98*** (7,83)	0,24*** (7,60)	0,63 (0,13)	-0,06 (-0,78)	78,09 (0,58)
Prod₋₁	0,65*** (18,46)								0,01** (2,46)	
Run₋₁		0,44*** (12,25)							-4,01E-03*** (-4,05)	
Cast₋₁			0,46*** (10,43)						0,04*** (8,45)	
Inno₋₁				0,31*** (7,02)					0,23*** (4,64)	
Adapt₋₁					0,33*** (7,62)				0,07 (1,07)	
Age₋₁						0,11*** (2,70)			1,85E-04* (1,91)	
Dutch₋₁							0,54*** (14,47)		-3,47E-03 (-0,09)	
Budget	0,68** (2,32)	-0,17 (-0,11)	1,80*** (5,93)	1,55E-03 (0,06)	-2,44E-03 (-0,12)	20,62 (1,50)	-0,03 (-0,81)			
Budget * DS	0,20 (0,81)	-3,53** (-2,43)	-1,01*** (-4,64)	-0,07*** (-2,60)	0,06*** (2,87)	-45,15*** (-3,58)	0,16*** (5,05)			
Playh	0,68** (2,44)	0,05 (0,03)	0,07 (0,31)	0,10*** (3,48)	-0,01 (-0,53)	17,25 (1,24)	-0,12*** (-3,45)	0,28 (0,31)	0,25*** (8,36)	-141,95 (-1,16)
Q₋₁								-0,12*** (-8,39)	5,25E-03*** (9,04)	
Prod								0,22 (1,52)		
Run								0,09** (2,05)		
Cast								1,20*** (5,06)		7,50*** (3,59)
Inno								-11,28*** (-2,93)		-56,87 (-1,43)
Adapt								8,32* (1,92)		50,73 (1,06)
Age								-2,07E-03 (-0,12)		0,07 (0,38)
Dutch								-1,09 (-0,45)		-14,85 (-0,55)
P										-12,30*** (-5,52)
Y								9,66E-04*** (3,05)		0,02*** (4,25)
Pop										-0,02 (-1,09)
Pcinema										10,08 (1,44)
Psubthea										-1,13 (-0,40)
R²	0,60	0,19	0,60	0,15	0,11	0,05	0,41	0,08	0,73	0,18
No. of observations = 447										

Notes: t-values in parentheses, *** significant at 1 %, ** at 5 %, * at 10 %; Q, Q-1 and Pop in (.000); Sub and Budget in (.000 000).