Yield Management for Public Theaters?

1. Introduction

The “problem of inflexible ticket prices” in the performing arts (Heilbrun & Gray, 2001, pp. 70-73) revolves around static pricing, that is fixed prices that are held constant for a specified period of time, such as a theater season. Public theaters in Switzerland base their pricing strategy mainly on static schemes, with an emphasis on price differentiation. While the latter enables them to serve a broad customer base, static pricing does not allow for short-term adjustments in reaction to temporal market fluctuations. Short-term price adjustments can better capture customers’ willingness to pay. This is, in rough terms, what is understood by the broad concept of dynamic pricing (Troelsen, 2003, p. 83). One widely-used dynamic scheme is Yield Management (YM), which is applied to perishable services with limited capacity (Netessine & Shumsky, 2002, p. 2). Originally developed for the airline industry in the 1980s, YM soon spread to other service sectors, including lodging, hospitals, utilities, and recently to the live entertainment industry in the US (Business Wire, 2011).

Theaters as providers of (performing arts) services also face the problem of perishability (i.e. an unfilled seat is revenue that is lost forever) and capacity constraints (i.e. the number of seats per venue is limited). Yet, relatively little attention has been given to these pricing developments in the (subsidized) performing arts. This is particularly surprising considering that (Swiss) public theaters, despite being heavy subsidized, still rely on self-earned income. YM could enable them to better match supply and demand, thus increasing their levels of attendance and their box-office returns. Most studies so far have investigated the nature of the demand for the performing arts, aiming at estimating the influence of explanatory variables such as own price, price of substitutes, income, and sociodemographic characteristics (for a full review of the literature, see Seaman, 2005). Further, much of the scholarly discussion on pricing has focused on the entrance fees of museums (see, for example, Steiner, 1997; Baily & Falconer, 1998; Kirchberg, 1998; Anderson, 1998; Prieto-Rodriguez & Fernandez-Blanco, 2006; Frey & Steiner, 2010).

Public theaters in Switzerland

The Union of Swiss Theatres² (2011) is an umbrella organization that encompasses the most important professional theaters in Switzerland. In view of the subsidies they receive for staging “serious” live performing arts, they are regarded as public; not because they are necessarily a direct part of public administration but because they have a public mandate (Fischer, 2004, p. 164). Indeed, most of them operate as a private legal entity, which gives them a certain degree of autonomy, while the scope of their activities is defined by their subsidy contract (Betzler & Brägger, 2010). Direct subsidies, amounting to an average of 70% of total costs, mostly come from municipalities and cantons (BFS, 2010). The remaining income is self-earned revenue, of which ticket sales make up a substantial part.

Aim and research questions

Goals and/or targets imposed by the funding bodies of Swiss public theaters, usually through a subsidy contract, may limit the successful implementation of YM. Against this background, the aim of this study is to investigate whether and how YM could be adapted and applied to the context of Swiss public theaters. In order to do that, the following research questions were

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¹“Willingness to pay” or “reservation price” refers to the highest price a buyer is willing to pay for a product or service (Allen et al, 2009, p. 85).
²Official translation of Schweizerischer Bühnenverband SBV. “Union” should be here understood as association.
formulated: How free are Swiss public theaters to set ticket prices and have their own pricing strategy? Which of the organizational goals and targets set out in the subsidy contract influence theaters’ pricing strategies? And which overriding objective must a price mechanism follow? Subsequent research questions include whether the underlying assumptions (nature of theatergoers’ arrivals) and key conditions (e.g., advance booking) for successful YM implementation can be satisfied in the environment of Swiss public theaters. Given the shortage of existing literature on the subject, this study is an investigation of an explorative nature, which combines both deductive and inductive approaches.

2. Background from Literature

**Economic structure of performing arts organizations**

Public support for the performing arts and, related to this, the non-profit objectives of (subsidized) performing arts organizations strongly influence both the quality and quantity of their output as well as their ticket prices (Frey & Pommerehne, 1990). Their motivation is to maximize attendance over a period of time, while presenting performances of a high standard and ensuring that revenues reach a certain level (Throsby & Withers, 1993). Cultural economics looks at organizations that produce (performing arts) services as if they were private-sector firms and uses the number of tickets available for sale over a certain period (e.g., a performance or a season) to measure quantitative output because it brings both the demand and the supply side into the analysis (Heilbrun & Gray, 2001, pp. 108-109). A long-run situation (e.g., one season) may be regarded as a period over which the number of productions can be varied while in a short-run situation (e.g., a single performance), the levels of use of production factors are fixed (ibid., pp. 110-112). Hence, the marginal cost of the first ticket sold equals the aggregated cost that would have been avoided if that particular performance had not taken place. Assuming there are no congestion costs, up to the capacity limits of the venue (i.e. a sold-out performance), the marginal cost of serving one more theatergoer is almost zero.

**Key theoretical underpinnings of yield management**

YM is a pricing technique based on a variety of analytical tools used to allocate limited and perishable resources among a variety of customers with different reservation prices (Netessine & Schumsky, 2002). Given a small marginal cost for serving an additional customer, YM adjusts price over time to fill capacity by partitioning time into booking periods. YM charges discount prices in early periods, but at the same time it restricts sales to reserve capacity to be sold later on at higher prices (Desiraju & Shugan, 1999). The underlying premise is that price-sensitive (PS) customers are served only to fill the capacity that cannot be filled with price-insensitive (PI) ones. Among scholars, there is an ongoing terminological discussion. Some authors (see, e.g., Desiraju & Shugan, 1999; Netessine & Shumsky, 2002; Schwind 2007) argue that YM can also be referred to as “revenue management” (RM), since both terms refer to strategies that are used for maximizing revenue. Shy (2008) and other academics, on the other hand, claim that YM is about profit maximization. On account of this, the terms cannot be used interchangeably, given the difference between profit maximization and revenue maximization. When marginal cost is zero, profit equals revenue, and YM will here be considered in relation to organizations operating with zero marginal cost. Thus, in the context of this paper, the term YM will be understood to mean a revenue-maximizing pricing mechanism. Nonetheless, it will not be used interchangeably with RM because the latter is currently considered as a much broader concept, which is applied to “new” business with supply flexibility in the short run (Yeoman & McMahon-Beattie, 2009). YM is traditionally modeled under the assumption that early arrivals have a lower willingness to pay. The milestone study of Desiraju & Shugan (1999) investigated whether YM can be
successfully applied when this assumption is dropped by addressing the related fundamental strategic considerations of customers’ willingness to pay and the nature of their arrivals. Based on a two-segment model, in which the PI segment has a higher willingness to pay than the PS segment, a two-period model with three classes of services (A, B, and C) was defined according to the nature of the arrivals of each segment. In class A services, found for instance in the travel industry, the PI customers arrive late (e.g., business travelers). In class B services, such as technical or designer novelties, the nature of arrivals is reversed: The PI customers arrive early since they are more concerned about having the best selection. Lastly, arrivals for class C services are uncorrelated with reservation prices because service is demanded when damage has occurred (e.g., repair services). Findings revealed that YM is advantageous when applied to class A services, that is when the PI segment prefers to buy at a later point of time than the PS segment, which would rather book early.

3. Empirical Analysis and Results

The study takes the literature as a starting point to identify research questions that investigate whether the objectives, assumptions, conditions, and operational aspects of YM could be satisfied in the environment of Swiss public theaters. The entire population, meaning all 29 theaters affiliated with the Union of Swiss Theatres, is finite, known, not fully homogeneous, and manageable in terms of size. Thus, a full sample survey was conducted using an internet-mediated, standardized questionnaire for data-collection sent via personalized e-mail to the theaters’ senior managements. To ensure a congruent operationalization of the research questions in the context of the Swiss public theater sector, expert interviews were carried out. Eighteen theaters took part in the survey (response rate: 64%), which was carried out in German and French. A chi-square test for goodness of fit and a binominal test showed no statistically significant difference between the respondent theaters and the population. Thus, the representativity of the respondent sample was validated.

Subsidy contracts and autonomy

Only a third of the theaters have subsidy contracts with clauses stipulating the volume of self-earned revenue they must generate. Furthermore, 39% of the theaters need to achieve an average of 72% of capacity utilization per season. 78% of the theaters enjoy a large degree of autonomy with regard to ticket prices. Yet, they need to comply with binding regulations, such as having to offer reductions of between 20 and 50% on the full price of tickets to students, the unemployed, and holders of the Swiss cultural card. Stronger regulations determining, for example, the price range of tickets are less frequent.

Pricing objectives

The most important objective that a pricing mechanism should follow is for prices to be set in a way that allows for various audience groups to be served, even at the expense of generating less ticket revenue. Almost two-thirds of the respondents agree/strongly agree with this (see Appendix). Secondly, a relevant but rather subordinate related objective seems to be the pursuit of high levels of attendance, even at the cost of sacrificing ticket revenue in order to keep prices accessible. Pricing decisions are usually taken by the theater’s managing director, the artistic director or, to a lesser extent, the theater’s supervisory board (see Appendix). However, in 40% of the cases pricing is also handled by the artistic coordination office. Marketing and box-office

3 “KulturLegi” is an ID card offered by Caritas Switzerland and issued to people with low income to facilitate access to cultural events throughout Switzerland.
managers are seldom involved in the decision-making process. Advice from external consultants is not sought.

**Nature of theatergoers’ arrivals**

Following the afore-mentioned two-segment model, theater managers were asked to evaluate the nature of theatergoers’ arrivals in terms of whether price-sensitive (PS) and price-insensitive (PI) customers tend to book tickets long in advance or rather closer to the date of the performance. Considering both segments together, it can be suggested that arrivals are not perceived to clearly correspond with theatergoers’ reservation prices, i.e. with either PS or PI customers. However, a slight tendency was observed for the PI segment to book early, that is, a long time before the performance takes place.

**Advance booking and online sales**

Advance booking, a key condition for successful YM implementation, is a well-established practice: While in 72% of the cases tickets are bookable throughout the entire season, in the remaining theaters the pre-sale period tends to be rather short, starting four weeks before the respective performance. Moreover, about 72% of the theaters sell tickets online, either through their own website or through an external provider. Although 17% of theaters do not keep statistics about online sales, the data from the remaining respondents indicates that online sales represent between 10 and 35% of total sales (on average 21%).

**4. Discussion and Conclusion**

Predetermined targets in subsidy contracts influence the pricing strategies of Swiss public theaters only slightly. The determining factor is their main organizational goals as subsidized theaters. Further, subsidized theaters tend to enjoy a large degree of independence with regard to setting their own ticket prices and determining their own pricing strategies. Nevertheless, the majority of theaters consider it to be more important to set prices in a way that serves a varied audience rather than reaching high attendance levels. These findings are consistent with the literature in the sense that subsidized theaters need to accomplish different goals (Frey & Pommerehne, 1990; Throsby & Withers, 1993; Brooks, 2006). The application of any price mechanism in the context of public theaters in Switzerland needs to take this into account. It is against this background that the following discussion of YM takes place. Thus, the potential of YM within the current environment of Swiss public theaters is limited. Firstly, revenue is not considered an overriding pricing objective. Secondly, given that the main organizational goal of public theaters is to offer their output to as large an audience as possible - even at the expense of sacrificing self-earned revenue - restricting sales, a key policy of YM, would contradict their *raison d'être*. Even if this were not the case, the application of YM to the context of Swiss public theaters would nonetheless be limited because YM is successful in relation to services for which PI customers make late bookings (i.e. class A services). The findings suggest that theatergoers do not to exhibit such booking patterns. Instead, there is a perceived slight tendency of PI customers to arrive early and hence theaters seats can be presumed to be class B services. Because the PI segment tends to book early, it is not advantageous for theaters to apply YM policies such as restricting capacity or discounting early prices. On the contrary, prices should - if anything - be lowered over time. Furthermore, it should be recalled that public theaters already engage in indirect segmentation by means of offering different qualities and quantities of services (i.e. seat categories and subscriptions) and direct segmentation (e.g., price reductions for students and the unemployed). Even if it was possible to (indirectly) segment the market according to booking patterns - a key condition for successful YM implementation - the existence of direct
segmentation will allow the PS segment to buy in periods that are “reserved” for the PI segment, thus making the sealing of the market difficult. Not only does direct segmentation tend to be more profitable, at least a third of the theaters are nevertheless bound to regulations that see a price reduction for the low-income segment (e.g., cultural card holders). Against this background and in view of the perceived inconsistent booking patterns of theatergoers, advance booking does not seem to constitute a criterion to effectively segment the market. Lastly, at the operational level, YM implementation is currently limited by the low reach of online sales, which suggests that this is not yet an established distribution channel. Without being able to implement pricing policies over the Internet, high congestion costs and increasing marginal costs may be incurred.

**Managerial implications**

Theater managers should introduce discount price policies in late booking periods, such as last-minute tickets, in order to be able to react to demand fluctuations and fill up capacity. Currently, only a third of public theaters in Switzerland engage in such practices. However, to avoid strategic behavior and ensure that the PI segment does not purchase at discounted prices, last-minute tickets should not be offered without restrictions (Cachon & Feldman, 2010). Instead, they should be offered when demand is low (i.e. when sales estimates are not being reached) and to the low-income segment upon presentation of a valid ID. If they introduce discount price policies in late periods, and in order to ensure that subscriptions remain an established pricing practice, theaters should apply a multi-period pricing strategy. The first period would be the sale of subscriptions. This starts any time in the previous season and lasts until the beginning of the season for which the subscriptions are being sold. The second booking period would normally start at the beginning of the season and last until prices are discounted, which marks the start of the third booking period. Furthermore, theaters should increase and improve online ticket sales so as to implement discount price policies without running the risk of incurring congestion costs. Moreover, theaters should keep accurate records of sales as well as maintain their ticketing database in a reliable manner. The more theater managers learn about their customers’ behavior, the more informed decisions about pricing they can make. Involving marketing and box office managers in the pricing decision-making process can further help theaters to generate more accurate sales estimates and pricing decisions. Not only might marketing managers offer a different and qualified perspective on pricing, the box-office is still one of the most prominent sales points for theaters. And box-office managers get daily feedback from the customers about the way they perceive prices, book their tickets, etc.

**Contribution to Theory, Limitations, and Further Research**

The empirical findings contribute to the body of knowledge about pricing in (Swiss) public theaters and provide a reference for other public performing arts organizations, such as orchestras. The discussion about Yield Management is explorative in nature and should be considered as a point of departure in the study of dynamic pricing in the subsidized performing arts. The internal validity of the findings about the nature of arrivals of PS and PI customers is rather low. Further research should include empirical analysis about the reservation prices and booking patterns of theatergoers. Moreover, relevant insights could be gained by investigating whether the educational background of those responsible for pricing influences the way they frame analysis and take decisions about pricing. Finally, within the scope of this study other aspects of pricing such as competition, advertising, and marketing strategy, as well as customer satisfaction, were not considered. Further research on these subjects might add important insights to the body of knowledge about pricing in the subsidized performing arts sector.
References


Appendix

Figure 1: Overriding objective of a public theaters’ pricing mechanism

(in %; n=18)

Figure 2: Responsible for pricing of theater’s tickets

(in %; n=18)