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UTILIZING THE DISCRETE CHOICE EXPERIMENT APPROACH FOR DESIGNING A SOCIALLY EFFICIENT CULTURAL POLICY: THE CASE OF MUNICIPAL THEATERS IN WARSAW

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Utilizing the Discrete Choice Experiment Approach for Designing a Socially Efficient Cultural Policy: The case of municipal theaters in Warsaw

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Abstract

While public support for culture, and performing arts in particular has become a less self-evident privilege all over Europe than in the past, the economic evidence for benefits a society gains from those goods has become essential for both of the following: scientific research in the area of cultural economics and cultural policy. Although the non-market valuation has been employed as a tool for measuring social benefits generated by cultural resources, the budget constraint has not been considered in most studies regarding the performing arts. Due to that constraint, the crucial question that decision-makers have to answer is then not “whether to finance” or “how big the support should be”, but rather “how to allocate scarce resources”. The aim of our study is to investigate socially preferred ways of allocating public resources in the context of the types of performances offered by municipal theaters in Warsaw. The problem investigated is a current issue for local policy-making, but in a broader sense, it illustrates how state-of-the-art stated preference methods could be employed to support cultural policy. We find that inhabitants of Warsaw assign positive value to the broader accessibility of municipal theaters, and their willingness to pay for making the theaters a truly public good (by introducing a program of highly discounted tickets) exceeds the costs of such a policy. However, we also find that the cost-benefit relationship varies across theaters with different types of plays in their repertoires. Our results imply a different level of socially efficient support for experimental, drama, children’s and entertainment theaters.

Keywords:

cultural economics, theater, non-market valuation, discrete choice experiment, public expenditures

JEL:

Z1, Z11, Z18, D61

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1. Introduction

Since the end of the Cold War and the victory of the belief in the free market with its accompanying predominance of neo-liberal ideology, public theater everywhere across Europe has been feeling vulnerable and menaced, and the public support it has been enjoying for decades has to come to appear as a less self-evident privilege than before. [...] Public subsidy can be neither an entitlement nor a renewable privilege; it should rather be a support extended in recognition of clear public benefit delivered by non-commercial theater, conscious of its core responsibilities and specific remit.

[Klaic \(2012\)](#)

Public support for culture is common for cultural policies in most countries, particularly in Europe. Among different parts of cultural sectors, the performing arts are one of the most often supported by public budgets ([Towse, 2010](#)). In Poland, most institutions that engage in the performing arts are art institutions within the meaning of the provisions of Polish law, which means that the government is obliged to provide the resources needed to maintain their existence and support their performance productions. The crucial question that decision-makers must answer is not ‘whether to finance the performing arts with public resources’ but rather ‘how big should this support be’, and even more importantly, ‘how to allocate reserved resources under the constraints of the public budget’.

Since the beginning of the 21st century, the supply-driven approaches in the analysis of public support for culture are giving way to demand-led and consumer-oriented approaches ([Mazzanti, 2003](#)). It changes the understanding of the services, i.e., results required from supported culture: it is not to produce cultural goods but rather to provide a service that can be defined as accessibility of culture for potential consumers ([Hausner, 2014](#)). There are different features of performance that can affect the response for this accessibility of the performing arts, which can be expressed in terms of demand for the performing arts and the value people assign to it. As long as the matter of interest is art, it appears reasonable to consider artistic features: the typology of plays, based on the characteristics recognizable by viewers, delivers an easy way to describe a performing arts piece.

Accepting the rule of consumer sovereignty, it should be said that public expenditures are justifiable if they are consistent with peoples’ preferences for bearing the costs of those expenditures (i.e., paying taxes that the public budget consists of in general). Therefore, the costs of public support for culture should not exceed the benefits that society gains from those goods. For the same reason, the structure of public expenditures on culture should be consistent with the structure of the benefits that society gains from different types of cultural goods. [Mazzanti \(2003\)](#) claims that as long as cultural institutions compete with each other for sharing the budget “pie”, ‘people’s preferences matter to the extent that is relevant to know where investing resources for achieving the “best value”’. To assess those benefits, the researcher must determine the total value of the considered goods, including the non-market value. This is possible if the non-market valuation method is employed. In this paper, the contingent valuation

method (CVM) with a discrete choice experiment (DCE) elicitation format is employed to analyze the optimality of public cultural expenditures.

The aim of our research is to investigate the preferred ways of allocating public resources, thanks to which society has access to the municipal theaters in Warsaw, the capital city of Poland, with respect to the type of performances offered. Although those institutions include several theaters situated all over the city, they can be treated as one service provided by the municipality. In contrast with theaters in smaller cities, which very often are the only performing arts institutions in a region and try to deliver varied theater productions, municipal theaters in Warsaw specialize in different types of repertoires. Instead of concentrating on particular performances, which is risky by nature, by representing different types of plays, attention can be drawn to the well-defined municipal institutions.

This paper is organized as follows: first, there is a literature review in the following section that presents studies on the evaluation of public expenditures for culture, in particular the theater, performed in a demand-led approach; Section 3 presents the non-market valuation methods employed in the research, the experimental design of the study and data collection methods; the results presented in Section 4 reveal the scope of the municipal theaters' accessibility as preferred by Warsaw's inhabitants and express the preferences, understood as the willingness to pay, used to deliberate over the cultural policy implications driven from the research; next, the inquiry into the structure of the cost-benefit relationship is presented in Section 5. The article concludes by summarizing the main findings of the paper, with some directions for further research.

1.1. Context of the study – municipal theaters in Warsaw

This research arises from a very practical issue. Warsaw municipal theaters are a set of 18 institutions managed by the capital city of Poland. This is a very heterogeneous group including small children's theaters, the largest musical theater in the country, two internationally famous experimental venues and many theaters that perform dramas approachable for the average local community. They play five times a week, on average, and host 1 million theatergoers in total annually. On average, their budget consists of municipal subsidies of approximately 65% and of revenues from tickets of 25%.

In recent years, those theaters met the constraints that Klaic described as the 'less self-evident privilege of public support' ([Klaic, 2012](#)). Their budget was one-half of the municipality's cultural expenditures. However, it was still barely enough to cover the fixed costs of all of the institutions. It means that they managed to survive, but producing new performances was challenging.

The city's Culture Bureau manager [Biuro Kultury m.st Warszawy] announced a reform in the policy of subsidizing theaters. A reduction of the total subsidy for Warsaw's theaters and changes in the structure of expenditures were expected on the basis of the observation of the decisions from previous

years, when reductions started affecting each of the municipal theaters to a different extent, e.g., one entertainment theater lost nearly all support. The Culture Bureau began a discussion with the theaters' managers. One of the aims was to create a typology of theaters and assign each theater with a classification that would serve as an instrument for future financial decisions.

A few questions have arisen regarding the changes observed: Are the hitherto subsidies justifiable? Does the Culture Bureau manager operate in agreement with the preferences of the society he represents? If reform is necessary, what changes in the value and structure of public support for theaters would be acceptable from an economic and social perspective? These questions create a starting point for our research.

2. Non-market valuation methods in the analysis of cultural policies

Non-market valuation techniques have been developed since the 1960s in response to problems with estimating benefits gained by consumers of public and mixed goods ([Noonan, 2003](#)). These methods can be divided into two categories with respect to the type of data analyzed: revealed preferences (actual choices made by consumers in the market – what people do) or stated preferences (declared choices that would have been made by a consumer in a hypothetical situation described in a questionnaire – what people say they would do). Preference modeling provides essential information needed for effective public policies: management and distribution of non-market goods. Considering that culture and the performing arts, in particular, exhibit some features of public goods, non-market valuation is a proper tool to value the benefits people gain from those goods ([for a description of the public characteristics of culture, see Throsby, 2001](#); [for the public characteristics of theater, see Trzeciak, 2011](#)).

Due to the advantages accompanying the use of stated preferences (e.g., the possibility to estimate total value, including passive use values, and to value hypothetical situations that are not already available for consumers) and the relative ease in gathering proper data, methods based on them found the broadest application ([Carson, 2012](#)), in particular the contingent valuation method (CV). Guidelines for conducting quality research have been developed for decades ([Arrow et al., 1993](#); [Bateman et al., 2004](#); [Champ, Boyle and Brown, 2004](#); [Hensher, Rose and Greene, 2005](#); [Kanninen, 2007](#); [Hess and Daly, 2014](#)) and employed in thousands of applications ([Carson, 2012](#)).

Since the 1980s, the non-market valuation of cultural goods has been gaining interest among researchers; however, studies of cultural resources are but a small fraction of the entire bibliography of non-market valuation studies. Within cultural economics, contingent valuation (CVM) is the method employed to the broadest extent. Although more than 100 attempts have been undertaken since the beginning of the 21st century ([Noonan, 2003](#)), only a few articles examining the non-market value of the performing arts have been published so far ([Hansen, 1997](#); [Willis and Snowball, 2009](#); [Grisolia and Willis, 2010](#); [Grisolia and Willis, 2012](#))¹. The authors of the three last studies employed one of the newest modifications of CVM, the discrete choice experiment (DCE). In addition to those examples, DCE has only been employed in cultural economics a few other times (namely: [Mazzanti, 2003](#); [Morey and Rossmann, 2003](#); [Choi et al., 2010](#)).

The aim of the majority of those studies was to evaluate the cultural policy chosen by comparing the current costs of those policies with the benefits associated with them gained by society. For example, the case was to estimate whether to finance on a given level: conservation and restoration of cultural heritage objects and sites ([for a review, see Navrud and Ready, 2002](#)), various broadcasting services provided by Australian television stations ([Papandrea, 1999](#)) or the Canadian Broadcasting Corporation

¹ Two additional valuations were conducted with the use of another non-market valuation technique, the travel cost method: [Forrest, Grime and Woods \(2000\)](#), [Willis et al. \(2012\)](#).

([Finn, McFadyen and Hoskins, 2003](#)), the Royal Theater in Copenhagen ([Hansen, 1997](#)) and even ship wrecks – submerged maritime cultural resources ([Whitehead and Finney, 2003](#)). The DCE provides a possibility to value not only the cultural goods or services but also each of the specified characteristics (attributes) employed to describe the good or service. However, the authors of the mentioned DCE studies typically employ this technique to deepen the research of the determinants of demand in different cultural disciplines (reasoning on the basis of determinants of utility functions given in estimated models) and provide general directions for developing goods and services. They do not employ that method to verify the optimality of the structure of cultural expenditures, i.e., to what extent do heterogeneous forms of cultural goods and services participate in generating their total value. Our study demonstrates that this is also possible.

The set of variables employed to explain the variability of utility that people gain from cultural resources consists of goods or services attributes and consumers' socio-demographic characteristics. In the case of the performing arts, in the first group, researchers employ the variables found as important in studies of the demand for the performing arts, i.e., mostly prices and different estimates of quality ([Throsby and Withers, 1985](#); [Abbé-Decarroux, 1994](#); [Urrutiaguer, 2002](#); [Werck and Heyndels, 2007](#)). The type of play or the repertoires' alternativeness were just some of the quality factors employed. In articles published in recent years, the authors considered the type of play a separate factor, arguing that 'different shows satisfy different tastes regardless of the perception of quality' ([Grisolia and Willis, 2012: 119, see also Grisolia and Willis, 2010](#)). However, there is a problem with setting proper categories. The list of categories varies depending on research: e.g., comedy/musical/drama/Shakespeare ([Corning and Levy, 2002](#)), comedy/drama/experimental ([Grisolia and Willis, 2012](#)), classic/modern/contemporary/atypical ([Abbé-Decarroux, 1994](#)). One of the reasons for such discrepancies may be a different cultural context for each of the analyzed pieces of culture and the fact that the source data for those studies quite often are narrow: three stages of the Pacific Conservatory of the Performing Arts ([Corning and Levy, 2002](#)), theater patrons in Montreal ([Colbert, Beauregard and Vallée, 1998](#)), and the Northern Stage in Newcastle-upon-Tyne ([Grisolia and Willis, 2012](#)). It is very likely that the proper set of categories varies between cultural contexts, for instance, while "Shakespeare" can be a crucial category in the United Kingdom, it is not in South Africa. There is no better way than making an empirical investigation of domains undertaken in a research study.

3. Methods and data

3.1. The discrete choice experiment method

Discrete choice experiments are based on consumer demand theory, in particular the theory in which a good is described as a collection of attributes ([Lancaster, 1966](#)). The assumption says that a consumer gains utility, for example, from a theater service, making a choice between alternative states of nature on the basis of the characteristics of this service. The underlying theory explaining the discrete choices made by consumers is the random utility model ([McFadden, 1974](#); [Louviere, Hensher and Swait, 2000](#); [Hensher, Rose and Greene, 2005](#)). The function of utility of a consumer i from choosing a j alternative can be represented by the following formula:

$$U_{ij} = V_{ij} + e_{ij} = \alpha p_{ij} + \beta' x_{ij} + e_{ij}$$

U is the indirect utility function associated with option j of individual i . V is an objective component that consists of α – parameter associated with price p , β – a vector of individual-specific taste parameters associated with marginal utilities of the non-price choice attributes and x – a vector of the non-price attributes specific for a particular consumer and the alternative. e is a random error, which captures the unobserved characteristics of respondents. V_{ij} is assumed to be a linear and additive function of the observed attributes of the alternatives (x_{ij}). Assumptions made about the distribution of the unobserved component lead to different types of models.

A multinomial logit model (MNL) requires a restrictive assumption: error disturbances are assumed to be independently and identically distributed (i.i.d.) according to a Type 1 extreme value distribution. However, it is a standard approach applied to estimate the parameters of the utility function estimated from stated-choice questions. This model assumes also that the function parameters are the same for all consumers and that the random error has the same independent distribution for each consumer. Taking into consideration the assumptions of this approach, the probability of choosing an alternative j by a consumer I in MNL is

$$P_{ij} = \frac{\exp(\beta' x_{ij})}{\sum_{q=1}^M \exp(\beta' x_{iq})},$$

where M is a set of all available alternatives to the consumer.

Estimates of the parameters of the MNL model are of interest, as they allow one to determine consumers' willingness to pay and thereby enable valuation of different economic policies and can be obtained by the implementation of a maximum likelihood method. However, this approach does not fully capture the effect of preference heterogeneity across consumers. It can become a problem, as there is evidence that theatrical preferences are heterogeneous. Evidence in the literature includes papers by [Colbert, Beauregard and Vallée \(1998\)](#), [Grisolía and Willis \(2010\)](#) and [Grisolía and Willis \(2012\)](#).

One of the most frequently employed approaches in controlling the unobserved consumer preference heterogeneity is a Mixed Logit (MXL), also known as the Random Parameters Model, allowing random taste variation over individuals. As explained by [Morey and Rossmann \(2003\)](#): ‘one assumes individual i ’s preference parameter on some characteristic is a random draw from some distribution where the family of the distribution is specified, but the mean and variance of the distribution are unknown, and so estimated’. According to this approach, the expected utility of a consumer i from choosing an alternative j in the choice situation t can be expressed as

$$U_{ijt} = \alpha_i p_{ijt} + \beta_i' x_{ijt} + e_{ijt}.$$

The vector of parameters β in this model is specific for each consumer, and it can be obtained with the use of information about consumer choices in T situations in which preferences are treated as constant, by assumption. The parameters of the utility function are random variables characterized by the following distribution: $\beta \sim f(b, \Sigma)$, where b is a vector of mean parameter values in the population and Σ is a variance-covariance matrix.

In the case of this model, the probability of choosing an alternative j by a consumer i in the situation choice t is represented by the following formula:

$$P_{ijt} = \int \frac{\exp(\beta_i' x_{ijt})}{\sum_{q=1}^M \exp(\beta_i' x_{ijt})} f(\beta|b, \Sigma) d\beta,$$

where $f(\beta|b, \Sigma)$ is a density function of random parameters with the mean value equal to b and a variance-covariance matrix Σ (random parameters could potentially be correlated). Therefore, the MNL model can be treated as a special case of the MXL model in which the vector β is constant.

Random taste parameters induce correlation across choices made by the same agent. As a result, the model accounts for the fact that two pairwise choices, one from each of two individuals, contain more information than two choices from the same individual ([Morey and Rossmann, 2003: 2](#)). Another advantage of MXL is the relaxing of the restrictive assumption of independence of irrelevant alternatives (IIA).

Consumers’ benefits of given alternatives can be calculated relative to the status quo. The measure of those benefits is willingness-to pay (WTP). The value of a marginal change in a single attribute as well as the total WTP (also known as compensating variation) for the alternatives can be found. Given the interest in establishing estimates of WTP for the non-monetary attributes, it is convenient to find the results directly in WTP-space and interpret coefficients found in monetary terms ([Train and Weeks, 2005](#)). The utility function in WTP-space is

$$U_{ijt} = \alpha_i \left(p_{ijt} + \frac{\beta_i'}{\alpha_i} x_{ijt} \right) + e_{ijt} = \alpha_i (p_{ijt} + \mathbf{b}_i' x_{ijt}) + e_{ijt},$$

where $\mathbf{b}_i$ could be interpreted as a vector of implicit prices for the attributes. The model parameters are estimated with the use of maximum likelihood techniques; however, in the case of MXL, they are

approximated numerically by means of simulation methods by averaging over D draws from the assumed distribution ([Train, 2009](#)). WTP for a particular policy can then be simulated, considering the implicit prices of its characteristics (attribute levels).

3.2. Empirical study

Non-market valuation methods, and DCE in particular, are based on the analysis of stated preferences and hence require gathering data in a survey designed in a specific manner. While microeconomics addresses the problem of marginal value derived from marginal changes, the question posed in a survey to learn stated preferences is formed in terms of a hypothetical change in the characteristics of a good or a way that it is provided. The municipal service in the area of theaters is defined as a provision of accessibility of performances played in municipal theaters. As long as the accessibility is strictly connected with prices, such a definition implies that the crucial changes concern increases and decreases in ticket prices.

Our survey was conducted by a professional polling agency using Computer Assisted Web Interviews in February and March 2014. The hypothetical scenario described in the questionnaire tells about the potential decrease in ticket prices: from an average of 42 PLN (10 EUR) to a flat rate of 5 PLN (1.25 EUR)², which represents the level of maximum accessibility of theaters with respect to price.³ It was told that this program could cover chosen theaters: all municipal institutions or only those that specialize in specific types of plays in repertory. Types of repertory were employed as the attributes of the program introduced in the survey. The last attribute relates to the payment vehicle: the cost of introducing the program given in terms of yearly additional tax that each of the inhabitants of Warsaw would need to pay. Five levels of cost were introduced: 0, 10, 20, 50 and 100 PLN (approximately 0, 2, 4, 10 and 20 EUR, respectively)

There were 1,700 respondents, including 100 in a pilot group, who participated in the survey. This was a sample of Warsaw's inhabitants (people that live and pay taxes in the city) aged over 18, representative with respect to gender, age and education. The survey included both theatergoers and people who did not visit the theater in the previous year or perhaps have never been in a theater. The first section of the questionnaire introduced the subject of the study – Warsaw's theater market – and asked respondents to reflect over their theatrical and cultural preferences. The answers collected in this part focused on choosing the types of plays. Respondents were asked to answer what guides them in choosing a theater. There were 44% who claimed that the type of play (respondents were provided with example categories

² Here and following, the average exchange rate is used: 1 PLN = 0.25 EUR.

³ A non-zero level was chosen in response to the anxiety of interlocutors on the depth of interviews conducted for the purposes of designing the survey: free tickets were associated with problems with reserving tickets and not attending the spectacles.

such as comedy, drama, and performances for children) was a very important factor when deciding, while 95% said they took that into account.

The in-depth interviews and the pilot study demonstrated that it is possible to use the following commonly distinguishable and easily understandable division of Warsaw municipal theaters into four categories: entertainment, drama, children and experimental. Entertainment theaters were described as those with mostly comedies and musical performances in the repertoire, which aim to amuse and relax viewers; there were 6 such institutions among the 18 Warsaw municipal theaters. Drama theaters (6 of 18) provide dramas and more ambitious comedies. Three children's theaters offer mostly puppet performances and fairy tales. Three experimental theaters employ new techniques, often producing plays of contemporary play-writers that appear to be controversial for a part of society.

The DCE design included 12 choice tasks per respondent, which resulted in 20,400 observations in total. In each choice task, respondents were asked to choose one of the two alternatives presented: the first was the 'status quo' option, and the second was introducing the scenario described above. The second alternative differed from choice task to choice task by the extension of the hypothetical scenario (number and types of theaters included in the program) and the cost (monetary variable). The Bayesian efficient experimental design ([Scarpa and Rose, 2008](#)) was updated after the pilot and once throughout the main study to collect more precise information about respondents' preferences. An example of a choice card is presented in Figure 1. Attributes and attribute levels are described in Table 1.

Figure 1. An example choice set used in the survey (originally in Polish)

	Alternative A	Alternative B (continuation of the current policy)
Entertainment theaters	No change	No change
Drama repertory theaters	Tickets for 5 PLN	No change
Children's theaters	No change	No change
Experimental theaters	Tickets for 5 PLN	No change
Annual cost for You	100 PLN	0 PLN
Your choice	☐	☐

Table 1. Attributes and their levels

Attribute	Level
Entertainment theater (<i>ENT</i>)	no change – not included in the program of discounted tickets ticket price: 5 PLN – included in the program of discounted tickets
Drama theater (<i>DRAMA</i>)	no change – not included in the program of discounted tickets ticket price: 5 PLN – included in the program of discounted tickets
Children’s theater (<i>CHILD</i>)	no change – not included in the program of discounted tickets ticket price: 5 PLN – included in the program of discounted tickets
Experimental theater (<i>EXP</i>)	no change – not included in the program of discounted tickets ticket price: 5 PLN – included in the program of discounted tickets
Annual cost for respondent (<i>COST</i>)	0, 10, 20, 50 or 100 PLN

4. Estimation of the benefits associated with the program of discounted theater tickets

The estimation results of the MXL model with normally distributed and freely correlated parameters⁴, along with the results of the MNL model for comparison, are presented in Table 2. Both models are estimated in WTP-space (coefficients in EUR). The general fit of MXL is clearly better than MNL in terms of log-likelihood (LL; the lower the measure, the better is the fit) McFadden's pseudo R² (the higher the measure, the better is the fit) and the normalized Akaike Information Criterion (AIC, the lower the measure, the better is the fit).

Table 2. Estimation results from the MNL and the MXL models

Attributes	MNL	MXL	
		Mean	Std. dev.
SQ	3.1811***	0.9826***	11.2635***
ENT	9.1489***	8.8409***	7.2893***
DRAMA	5.6676***	5.4821***	5.5614***
CHILD	3.2326***	3.0808***	4.0456***
EXP	2.8922***	2.5484***	4.9198***
COST	0.0854***	-1.1683***	1.1774***
<i>Model characteristics</i>			
LL	-12,774.5477	-9,122.2173	
McFadden's pseudo R ²	0.0827	0.3449	
AIC/n	1.2530	0.8970	
n (observations)	20,400	20,400	
k (parameters)	6	27	

*** indicates significance at the 1% level

All coefficients are highly significant (at a level much lower than 1%), including those of standard deviations in the MXL model, which implicate the presence of respondents' unobserved preference heterogeneity. All coefficients are of the expected sign.

The 'SQ' variable, which stands for 'status quo', is a dummy variable: 1 if a respondent chooses the status quo alternative in a choice set and 0 if he chooses the second alternative, regardless of its attribute levels. The SQ coefficient can be interpreted as a change in respondents' benefits, if the program of cheap tickets would be introduced, irrespectively of its attribute levels. In the MXL model, the SQ coefficient is positive, although there is considerable heterogeneity, indicating that part of the sample consists of respondents who are generally against introducing the new program.⁵

⁴ In the modeling, we employ negative costs converted to EUR. The random cost coefficient in the MXL model is assumed to be log-normally distributed – in this case, the parameters of the underlying normal distribution are reported.

⁵ This finding is in line with respondents' general attitudes collected in the survey: 75% agree or rather agree with the statement 'I would like the tickets prices in municipal theaters to be at the level of 5 PLN' and believe that it is possible to introduce the programme (62%). However, nearly 80% agree that money collected through taxes is poorly distributed, and consequently, money collected to finance the programme of cheap theaters could be wasted.

The positive coefficients associated with entertainment (*ENT*), drama (*DRAMA*), children's (*CHILD*) and experimental (*EXP*) theaters demonstrate that including any of these types of theaters in the program would result in a positive welfare change. The specific benefits vary, however. The entertainment theaters have the highest mean WTP. Respondents would be willing to pay approximately 9 EUR per year more (on average) for the program, which would include this type of repertory theaters. The interpretation of the remaining coefficients can be done in the same way. The conditional mean WTP (i.e., implicit price) for drama theaters was more than 5 EUR, approximately 3 EUR for children's theaters, and 2.5 EUR for experimental theaters.

Because the coefficients are allowed to be correlated, the mean WTP for a program that would include a particular mixture of attribute levels is not a simple sum of the conditional WTP for each of them. Table 3 presents the simulated welfare change associated with implementing a program that included access to all types of theaters at a discounted price. Such a program would result in a benefit of 18.97 EUR per individual. Aggregating citywide, WTP could be calculated by multiplying individual WTP by the number of adult taxpayers in Warsaw, i.e., for 2013: 1,448,444 people (data of Central Statistical Office of Poland). A simple calculation reveals that the total aggregate WTP for implementing the program of discounted tickets to all theaters was more than 27 million EUR annually.

Table 3. Willingness to pay (EUR, annually) for implementing the program of discounted municipal theater tickets in Warsaw (all theaters)

	MXL
WTP per individual	18.97***
(95% confidence interval)	(17.82 – 20.10)
Total WTP	27,472,622***
(95% confidence interval)	(25,813,141 – 29,107,830)

More than 50% stated that they could afford higher taxes, while 53% were against any additional taxes. This mixture of attitudes provides justification for the observed heterogeneity in the perception of the institutional framework of the program, irrespective of its components (which could be interpreted as the negative SQ coefficient).

5. Cost-benefit analysis and cultural policy implications

The estimates of the benefits associated with discounted theater ticket prices provide implications for the cultural policy in two main domains: the policy towards broadening the accessibility of theaters by changing ticket prices and guidelines for the allocation of current and future subsidies for the theaters, depending on the type of the repertoire a theater specializes in.

There are two main sources of revenue of municipal theaters: subsidies from the city and revenues from selling tickets. While the municipality wants to maintain theatrical production in the institutions dependent on the city, lowering prices has to be compensated for with additional subsidies, particularly the difference between current revenues from selling and revenues associated with setting the price at 1.25 EUR, as described in the hypothetical scenario. The additional subsidy must also compensate for the expected increase in the number of tickets sold, if the price is lowered.

The current ticket prices differ between theaters, from 5.31 to 19.45 EUR, with a mean price of 10.05 EUR. The price differences are to some extent explained by the repertoire of the theaters, with entertainment theaters being the most expensive (mean ticket price exceeds 13 EUR), followed by drama (12 EUR), experimental (9 EUR) and children's theaters (6 EUR). Lowering the ticket prices in all theaters to a flat rate of 1.25 EUR would mean that the municipality would have to increase its subsidy differently for each type of theaters and, on average, by 8.80 EUR per ticket.⁶

Discounted tickets would likely result in an increase in the overall number of theater visits and, hence, an increase in the number of tickets sold. In what follows, we simulate the costs of two scenarios of this increase. Scenario I conservatively assumes that the number of visits remains unchanged. The official data obtained from Warsaw Cultural Bureau reveal that there were nearly 1 million viewers (tickets sold to municipal theaters in Warsaw) in 2012. Scenario II, however, assumes that the number of people's visits would increase to the extent that they expressed in the survey, according to the reported current and anticipated number of visits to each category of theaters. The mean ratio of the current and future visits reported by each respondent was 2.7, which could be considered to be somewhat exaggerated but provides a convenient upper bound for our simulation exercise.

The benefits and simulated costs of the two analyzed scenarios are presented in Table 4. Irrespective of whether introducing the discounted theater tickets program would result in no change in the number of viewers (scenario I) or an increase in theater visits according to respondents' stated behavior (scenario II), if the subsidies were increased to ensure that the theaters' revenue per ticket remained the same (despite an increase in the number of tickets sold), the costs of the program of 9.6 million EUR (scenario

⁶ We acknowledge that this approach does not consider the fact that not all of the theaters' costs increase linearly with the number of viewers, and as a result, a lower subsidy could also assure that the theaters' budgets are balanced. However, as we demonstrate below, even with this assumption, the benefits exceed the costs of introducing the discounted theater tickets program.

I) or 25 million EUR (scenario II) would still be lower than the benefits, estimated at 27.5 million EUR (with a 95% confidence interval of 25.8 – 29.1 million EUR). It appears that an increase in the provision of the quasi-public good in the form of discounted theater tickets would result in an increase in society's welfare.

Table 4. Benefits and cost of introducing the hypothetical program of discounted theater tickets (monetary values in EUR, annually)

	Entertainment theaters	Drama theaters	Children theaters	Experimental theaters	Total
Benefits of introducing discounted ticket prices	12,173,171	7,548,384	4,242,072	3,508,995	27,472,622
Average ticket price	13.16	12.07	5.86	9.09	10.05
Additional subsidy per ticket required	11.91	10.82	4.61	7.84	8.80
Number of tickets sold – scenario I	548,956	197,095	133,000	38,112	917,163
Number of tickets sold – scenario II	1,423,184	490,134	408,698	104,544	2,426,560
Additional subsidy required – scenario I	6,539,685	2,132,386	613,327	298,681	9,584,079
Additional subsidy required – scenario II	16,954,324	5,302,797	1,884,702	819,308	24,961,131

Interestingly, the relative net benefits associated with including each type of theater in the program differ. For example, while the entertainment theaters generate nearly 60% of theater visits, the benefits associated with introducing the program in this type of theaters constitute 44% of total benefits, but if the number of visits to this type of theater and the associated subsidies were to increase according to scenario II, introducing the program of discounted theater tickets there would result in a net loss. On the contrary, introducing the program in experimental, children's and drama theaters would result in a net benefit to society.

This result can be interpreted in terms of the characteristics of utility driven from different types: while from entertainment people gain use value, in other theaters, the passive use values should be considered. For instance, drama theater debating current issues in its performances and very general human problems could deliver the feeling of a community and participation in the broader group; people assign higher value to children's theater because of the educational value; experimental theater can be valued because of its artistic features, although only a small fraction of society visits these types of theaters.

In addition, our study bears some insights into the current (possibly not a very well designed) structure of subsidies that municipal theaters in Warsaw receive. As illustrated by Table 5, the municipality appears to subsidize entertainment and children's theaters less than what would be indicated by society's preferences. Because the current subsidies level does not appear to be a linear function of the number of

theater visits, our analysis also reveals that the municipality appears to prefer subsidizing drama and experimental theaters to make them more accessible, although they are not necessarily so keenly visited.

Table 5. The structure of benefits, subsidies and visitation rates of different repertory theaters

	Share of benefits of introducing discounted ticket prices	Share of current subsidies	Share of theater visits
Entertainment theaters	44.31%	22.41%	59.85%
Drama theaters	27.48%	43.24%	21.49%
Children's theaters	15.44%	9.69%	14.50%
Experimental theaters	12.77%	24.66%	4.16%

6. Summary and conclusions

Our study applies state-of-the-art non-market valuation methods to demonstrate that the inhabitants of Warsaw assign positive value to broader accessibility to municipal theaters and quantifies their willingness to pay for introducing the discounted tickets program. We then demonstrate that the benefits of introducing such a program outweigh the costs, and hence, it can be considered a way to increase social welfare.

The results also indicate, however, that the ratio of benefits to costs is highly dependent on the repertoire of the theaters. Introducing the program would be the most efficient for experimental theaters, followed by children's and drama theaters. Interestingly, if the number of theater visits rose according to respondents' stated behavior, introducing the discounted tickets program for entertainment theaters would result in a net loss, as the public's willingness to pay is lower than the additional subsidies needed to implement it.

Our results can also be employed to evaluate the municipality's current cultural policy and the current levels of subsidies for theaters, in particular. We find that the structure of subsidies does not reflect the shares of theater visits, nor the public's preferences. We acknowledge that different types of theaters could be associated with different shares of non-use values (or positive externalities that warrant public support); however, adjusting the current levels of subsidies to better reflect public preferences could improve social welfare.

There are at least a few areas that require further research. First, the division between use and non-use values in different types of theaters could be examined more closely. It seems interesting to investigate to what extent is respondents' willingness to pay driven by the desire to actually visit a particular type of theater more often and to what extent is it declared for non-use reasons. Such a result can serve as a valuable input for decision-makers because non-use values cannot be otherwise measured or reflected in market transactions.

Second, the observed determinants of the willingness to pay and, more generally preference heterogeneity, could be investigated. With the use of socio-demographic and attitudinal covariates, one could try to answer an important question for the debate on expenditures on theaters: "who do we support if we support the theater?" The most common answer is that the richest benefit the most. However, this claim does not find sufficient support in previous studies ([Ginsburgh and Throsby, 2006](#)). Considering the heterogeneity of theaters and examining the determinants of demand for (and, consequentially, the value of) different types of theaters or performances is a promising field for future research ([cf. Grisolia and Willis, 2012](#)).

The last area of research is the methodology of collecting stated preferences associated with issues that are related to social distinction ([Bourdieu, 1984](#)). The theaters provide an excellent case. The problem

lies in the unwillingness to present affiliation with lower social groups. For example, if an individual thinks that being a theatergoer is a feature of a member of higher social classes, then there are incentives for not stating one's preferences honestly.

Estimates of the willingness to pay are not only a useful source of information on how much people value public or non-market goods and services that can be useful for decision-making but also to what extent those values and the structure of current public expenditures are compatible. Cultural policy is therefore yet another field in which non-market valuation methods arise as a useful and meaningful framework for collecting valuable information for decision-makers who want to make decisions on the basis of quantitative information and economic efficiency.

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