Using Discrete Choice Experiment to analyse the structure of public cultural expenditures: The case of the municipal theatres in Warsaw

author: Aleksandra Wiśniewska, PhD student, Faculty of Economic Sciences, University of Warsaw,

supervisor: Mikołaj Czajkowski, Associate Professor at Faculty of Economic Sciences, University of Warsaw

Abstract: While public support for culture, and performing arts in particular, appear as a less self-evident privilege than before all over the Europe, the economic evidence for benefits a society gains from these goods becomes essential for both: scientific research in the area of cultural economics and cultural policies. Although the non-market valuation has been used as a tool for measuring social benefits generated by cultural resources, the budget constraint has not been taken into account in most studies regarding performing arts. Due to this constraint the crucial question that decision-makers have to answer is then not 'whether to finance', even not 'how big should this support be', but rather 'how to allocate reserved resources'. The aim of this research is to investigate preferred ways of dividing public resources, thanks to which society has access to municipal theatres in Warsaw in respect to the type of performances offered. The problem investigated is a current issue for local policy-making. Inhabitants of Warsaw assign the positive value to the broader accessibility of municipal theatres and their willingness to pay for the introduction of such a change exceeds its costs. However, the cost-benefit relation varies across theatres with different type of plays in repertories. It implies different attitude toward public support for heterogeneous parts of theatre services.

Keywords: cultural economics, theatre, non-market valuation, discrete choice experiment, public expenditures

1. Introduction

Since the end of the Cold War and the victory of belief in the free market with its accompanying predominance of neo-liberal ideology, public theatre 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 theatre, conscious of its core responsibilities and specific remit.

Dragan Klaić, 2012

Public support for culture is common for cultural policies in most countries, especially in Europe. Among different parts of cultural sectors, performing arts are one of the most often supported by public budgets (Towse, 2010). In Poland, most institutions that engage in performing arts are art institutions within the meaning of the provisions of Polish law, which means that the government is obliged to provide resources needed to conduct their existence and performance production. The crucial question that decision-makers have to answer is not 'whether to finance 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 public budget'.

From the beginning of 21st century, the supply driven approaches in analysis of public support for culture is giving way for demand-led and consumer-oriented approach (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 performing arts, which can be expressed in terms of demand for performing arts and the value people assign to it. As long as the matter of interest is art, it seems reasonable to consider artistic features: typology of plays, based on the characteristics recognizable by viewers, delivers the easy way to describe a piece of performing arts.

Accepting the rule of consumer sovereignty, it should be said that public expenditures are justifiable if they are consistent with peoples' preferences bearing costs of those expenditures (i.e. pay taxes that public budget consists of in general). Therefore, costs of public support for culture should not exceed benefits which society gains from these goods. For the same reason, the structure of public expenditures on culture should be consistent with the structure of 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 preferences matter to the extent that is relevant to know, where investing resources for achieving "best value"'. To assess those benefits the researcher has to find out the total value of considered goods, including non-market value. It is possible if the non-market valuation method is used. Contingent valuation method (CVM) in the variant of choice experiment (CE) serves to analyse the optimality of public cultural expenditures considered in this paper.

The aim of this research is to investigate preferred ways of dividing public resources, thanks to which society has access to municipal theatres in Warsaw, capital city of Poland, in respect to the type of performances offered. Even though, these institutions consists of several theatres situated all over the city, it can be treated as one service provided by the municipality. In contrary to theatres in smaller cities which very often are the only performing arts institutions in a region trying to deliver varied theatre productions, municipal theatres in Warsaw specialise in different types of repertory. Instead of concentrating on particular performances, volatile form their nature, representing different types of plays, attention can be drawn to well-defined municipal institutions.

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

Context

This research arises from a very practical issue. Warsaw municipal theatres are a set of 18 institutions managed by the capital city of Poland. It is a very heterogeneous group including small children theatres, the biggest musical theatre in the country, two internationally famous experimental scenes and many theatres that perform dramas approachable for the average local community. They play five times a week on average and host 1 million of theatregoers altogether annually. On average their budget consists of municipal subsidy of nearly 65% and of revenues from tickets of 25%.

In recent years these theatres met the constraints that Klaić describes as 'less self-evident privilege of public support' (Klaić, 2012). Their budget became half of municipality's cultural expenditures. However it was still barely enough to cover the fixed costs of all the institutions. It means that they managed to survive, but producing new performances was challenging. The crisis can be described with an instance of 2012, when Grzegorz Jarzyna, the director of TR Warszawa, a worldwide famous theatre and Warsaw municipal institution as well, did not extend the term of his managerial contract explaining that insufficient support caused a lack of his financial liquidity, although TR gets one of the highest subsidies in Warsaw (with exception of national theatres financed directly from the Ministry of Culture and National Heritage).

The city's Culture Bureau manager [Biuro Kultury m.st Warszawy] announced a reform in the policy of subsidising theatres. Reduction of the total subsidy for Warsaw's theatres and changes in the structure of expenditures was expected on the basis of observation of the decisions from previous years, when reductions started affecting each of the municipal theatres to a different extent, e.g. one of entertainment theatres lost nearly all support. The Culture Bureau begun a discussion with theatres' managers. One of the aims was to create a typology of theatres and assign each theatre with a type that will serve as an instrument for future financial decisions.

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

2. Discrete Choice Experiment in the analysis of cultural policies

Non-market valuation techniques have been developing since the 1960's in relation 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 kind of data analysed: 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 modelling provides essential information needed for effective public policies: management and distribution of non-market goods. Concerning that culture and performing arts in particular have some features of public goods, non-market valuation is a proper tool to value benefits people gain from these goods (for description of public characteristic of culture see: Throsby, 2001, for public characteristic of theatre see: Trzeciak, 2011).

Due to advantages accompanying the use of stated preferences (e.g. possibility to estimate total value including passive use values and to value hypothetical situations that are not already available for consumers) and relative ease in gathering proper data, methods based on them found the broadest application (Carson, 2012), in particular: contingent valuation method (CV). The basic guidelines for conducting quality research were formulated by a panel of experts convened by The National Oceanic and Atmospheric Administration (NOAA, USA) and chaired by Nobel laureates: Kenneth Arrow and Robert Solow (Arrow et al., 1993).

Since the 1980's non-market valuation of cultural goods has been gaining interest among researchers, however studies of cultural resources is but a small fraction of the whole bibliography of non-market valuation studies. Within cultural economics contingent valuation (CVM) is the method used in the broadest extend. Even though more than 100 attempts have been undertaken since the beginning of the 21st century (Noonan, 2003), only a few articles examining non-market value of performing arts have been published so far: Bille Hansen, 1997, Willis and Snawball, 2009, Grisolia and Willis, 2011,

Grisolia and Willis, 2012[1]. Authors of the three last studies used one of the newest modifications of CVM, the discrete choice experiment (DCE) also known as choice experiment, choice modelling or conjoint analysis. Apart from these examples DCE has been used in cultural economics only a few times more, namely in: Mazzanti, 2003, Morey et al., 2002, Choi et al., 2010.

The aim of the majority of the studies was to evaluate the cultural policy chosen by comparing current costs of these policies with benefits associated with them gained by a society. In example, the case was to estimate whether to finance on a given level: conservations and restoration of cultural heritage objects and sites (for the review see: Navrud and Ready, 2002), various programming services provided by Australian television stations (Papandrea, 1999) or CBC (Finn et all, 2003), the Royal Theatre in Copenhagen (Bille Hansen, 1997) and even ship wreck – submerged maritime cultural resources (Whitehead and Finney, 2003). DCE method gives a possibility to value not only the cultural goods or services, but also each of the specified characteristics (attributes) used to describe the good or service. However, authors of mentioned DCE studies use this technique to deepen research of the determinants of demand in different cultural disciplines (reasoning on the basis of determinants of utility function given in estimated models) and give same general directions for developing goods and services. They do not use this method to verify the optimality of the structure of cultural expenditures, i.e. to what extend do heterogeneous forms of cultural goods and services participate in generating their total value.

The set of variables used to explain the variability of utility people gain from cultural resources consists of goods' or services' attributes and consumers 'socio-demographic features.. In case of performing arts, in the first group researchers use variables found as important in studies of demand for performing arts i.e. mostly price and different estimates of quality (Throsby and Whiters, 1983, Abbe-Decarroux, 1994, Urrutiaguer, 2002, Werck and Heyndels, 2007). The type of play, or the repertoires' alternativeness were just some of the quality factors used. In articles published in recent years, the authors considered the type of play a separate factor, arguing that 'different shows satisfy different tastes regardless to the perception of quality' (Grisolia and Willis, 2012: 119, see also: Grisolia and Willis, 2011). 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 (Abbe-Decarroux, 1994). One of the reasons for such discrepancies may be a different cultural context for each of the analysed piece of culture and the fact, that the source data for those studies quite often narrow: tree stages of Pacific Conservatory of the Performing Arts (Corning and Levy, 2002), patrons of theatre in Montreal (Colbert et al., 1998), Northern Stage in Newcastle-upon-Tyne (Grisolia and Willis, 2012). It is very likely that the proper set of categories varies between cultural contexts, while "Shakespeare" can be a crucial category in the United Kingdom, but not in South Africa. There is no better way than making an empirical investigation of domain undertaken in a research.

3. Methods & data

Choice experiment method

Choice experiments are based on consumer demand theory, in particular the theory in which a good is described as a collection of attributes (Lancester, 1966). The assumption made says that a consumer gains utility, for example from a theatre service, making a choices between alternative states of nature on the base of characteristics of this service. The underlying theory explaining the discrete choices

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

made by consumer is the random utility model (McFadden, 1976, Louviere, 2000, Hensher et al., 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 a 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. ε is a random error, which captures unobserved characteristics of respondents. V_{ij} is assumed to be a linear and additive function of observed attributes of alternatives (x_{ij}). Assumptions made about the distribution of the unobserved component lead to different types of models.

Multinomial logit model (MNL) requires the restrictive assumption: error disturbances are assumed to be independently and identically distributed (i.i.d.) according to a Type 1 extreme value distribution with the cumulative distribution function. 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 parameters of the MNL model are of high interest, as they allow to determine consumers' willingness to pay and thereby, enable valuation of different economic policies, 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 while there is evidence that theatrical preferences used to be heterogeneous. Literature evidence includes papers by Colbert et al. (1998), Grisolia and Willis (2011) and Grisolia and Willis (2012).

One of the most frequently used 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:

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

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 characterised by the following distribution: $\beta \backsim f(b, \sum)$, where b is a vector of mean parameter values in the population and $\sum$ is a variance-covariance matrix. σ_i is a scale parameter, which allows to introduce a desired level of randomness to the respondents' choices.

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:

$$P_{ijt} = \int \frac{\exp\left(\sigma_i {\beta'}_i^{x_{ijt}}\right)}{\sum_{q=1}^{M} \exp\left(\sigma_i {\beta'}_i^{x_{ijt}}\right)} f(\beta|b,\sum) d\beta$$

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

Random taste parameters induce correlation across choices made by the same agent and that is why usually the MXL model with correlations is estimated. So, '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 et al., 2003: 2). Another advantage of MXL is relaxing restrictive assumption of independence of irrelevant alternatives (IIA).

Once the random utility model is estimated, consumers' benefits of given alternatives can be calculated relative to the status quo. The measure of these benefits is willingness-to pay (WTP). The value of a marginal change in a single attribute as well as the total WTP (known also 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; Aanesen, 2015). The utility function in WTP-space is:

$$U_{ijt} = \sigma_i \alpha_i \left(p_{ijt} + \frac{\boldsymbol{\beta}_i'}{\alpha_i} \boldsymbol{x}_{ijt} \right) + e_{ijt} = \sigma_i \alpha_i \left(p_{ijt} + \boldsymbol{b'}_i \boldsymbol{x}_{ijt} \right) + e_{ijt}$$

where $\boldsymbol{b}_i$ can be interpreted as a vector of implicit prices for the attributes. The model parameters in basic MNL 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 2003). The total WTP for alternatives is no more a sum of for separate attributes, since the parameters could be correlated, but it can be calculated with the procedure described in Czajkowski et al. (2015).

Data gathering

Non-market valuation methods, DCE in particular, based on the analysis of stated preferences require gathering data in a survey designed in a specified manner. While microeconomics deals with a 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 characteristics of a good or a way that it is provided. The municipal service in the area of theatres is defined as a provision of accessibility of performances played in municipal theatres. As long as the accessibility is strictly connected with prices, such definition implies that the crucial changes concern increase and decrease in ticket prices.

The survey was conducted by a professional firm on February and March 2014. The hypothetical scenario described in the questionnaire tells about the potential decrease of ticket prices: from 42 PLN (10 EUR) on average to 5 PLN (1.25 EUR)[2], what is the level of maximum accessibility of theatres in

[2] Here and after the average exchange rate is used: 4 PLN/EUR.

respect to price[3]. It was told that this programme could cover chosen theatres: all of municipal institutions or only those that specialise in specific type of plays in repertory. Types of repertory were used as the attributes of the programme introduced in the survey. The last attribute relates to the payment vehicle: the cost of introducing the programme given in terms of yearly additional tax that each of inhabitants of Warsaw will have to pay. Five levels of cost were introduced: 0, 10, 20, 50 and 100 PLN (about 0, 2, 4, 10 and 20 EUR respectively)

1700 respondents, including 100 in a pilot group, 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 in respect to gender, age and education. It consists of both: theatregoers and people that did not visit theatre in last year or even have never been in theatre. The first section of the questionnaire introduced the subject of the study – Warsaw's theatre market and involved respondents to reflect over their theatrical and cultural preferences. The answers collected in this part supported choosing the type of play as the issue of interest. Respondents were asked to answer what guides them in choosing a theatre. 44% claimed type of play (respondents were provided with example categories such as comedy, drama, performance for children) a very important factor when deciding, 95% - took it into account (this factors being noted the highest in the questionnaire).

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

The DCE design included 12 'choice sets'. It gives 20400 observations altogether. In each task respondents were asked to choose one of the two alternatives presented: the first was 'status quo' option, the second was introducing the scenario described above. The second alternative differs from set to set by the extension of hypothetical scenario (number and types of theatres are included - a dummy variable for each attribute where 1 means inclusion) and the cost (monetary variable). The design was updated after the pilot and once throughout the main study, in order to collect more precise information about respondents' preferences. An example of a choice card is presented in Appendix A. Attributes and attribute levels are described in Table 1.

Table 1. Attributes and their levels.

Attribute	Level
Entertainment theatre (ENT)	no change (0) – not included into the programme of cheap tickets ticket price: 5 PLN (1) – included into the programme of cheap tickets
Drama theatre (DRAMA)	no change (0) – not included into the programme of cheap tickets ticket price: 5 PLN (1) – included into the programme of cheap tickets
Children theatre (CHILD)	no change (0) – not included into the programme of cheap tickets ticket price: 5 PLN (1) – included into the programme of cheap tickets
Experimental theatre (EXP)	no change (0) – not included into the programme of cheap tickets

[3] Non-zero level was chosen in response to the anxiety of interlocutors of depth interviews conducted for the purposes of designing the survey: free tickets could be found by respondents as rather negative than positive change because 'people do not care about goods that they can have for free'.

	ticket price: 5 PLN (1) – included into the programme of cheap tickets
Yearly cost (COST)	0, 10, 20, 50 and 100 PLN

4. Cost-benefit analysis

Benefits' estimates

The estimation for MXL model with correlations and, for comparison, for the MNL model, are displayed in Table 2. Both models are estimated in WTP-space. The general fit of MXL is clearly better than MNL in terms of both: log-likelihood ratio (LL; the lower the measure, the better the fit) and pseud R^2 (the higher the measure, the better the fit).

Table 2. Estimation results from the MNL and the MXL models. *** indicates estimates significant at1% level.

Attribute	MNL	MXL	
	Coefficient	Mean	Std. Err. Coeff.
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***
Model characteristics			
LL	-12774.5477	-9122.2173	
Pseudo R2	0.0827	0.3449	
N	20400	20400	

All attributes are highly significant (at a level much lower than 1%) and in the MXL model also their associated standard deviations are significant, which implicate the presence of respondents' unobserved preference heterogeneity. Nearly all coefficients have the expected sign, except for the cost coefficient in the MNL model, which is expected to be negative as in a standard economical relationship between price and demand. However, in the MXL models, which will be used as a base for further reasoning, monetary attribute has an expected sign.

'SQ' variable that states 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 the extension of programme described in this set. The SQ coefficient can be interpreted as: a negative change in respondents benefits, if the programme of cheap tickets would be introduced, assigned to the non-observed features of the programme (all except those described in attributes); disuse. In the MXL model the coefficient is three times lower than in MNL, but still positive. In general, a respondent is unwilling to have the tickets in municipal theatres nearly for free, which might not be connected with the attitudes towards the accessibility of theatres. In the survey, respondents were asked directly about attitudes towards ticket prices and public expenditures that can explain the reaction in a hypothetical scenario. The results show that in general they would like to have theatres accessible with the ticket price of 5 PLN (75% agree or rather agree with the statement 'I would like the tickets prices in

municipal theatres been at the level of 5 PLN'[4]) and believe that it is possible to introduce the programme (62%). But nearly 80% agree that money collected via taxes are badly distributed and, in consequence, also money collected to finance the programme of cheap theatres would be wasted. Moreover, more than 50% state that they cannot afford higher taxes; 53% is against any additional taxes.

After all, the respondents assign positive utility with having particular types of plays more accessible than today. The mean sum of benefits assigned to each type of theatre by an individual is EUR 19,95 (the sum of coefficients associated with all types described). The entertainment theatre has the highest mean WTP. Respondents are willing to pay more than EUR 9 per year (on average) for theatres accessibility programme if theatres specialised in this type of repertory are included in the programme compared to the programme excluding them. The interpretation of the remaining coefficients can be given in the same way. Respondents assign the mean value of EUR 5.48 to the broad accessibility in drama theatres, EUR 3.08 in children theatres and 2.55 in experimental ones. The results from MNL model are very similar. However, a bit higher for all types of repertory. The difference in coefficients associated with different types of repertory is not higher than EUR 0.34 (for experimental theatres).

Altogether, the mean total WTP of an individual for the hypothetical scenario is nearly EUR 19 (and less than EUR 18 in MNL mostly due to high estimates of the parameter by SQ variable). WTP in case of this research is the level of annual cost for single inhabitant of Warsaw. Aggregate citywide WTP can by calculated by multiplying individual WTP by the number of adult inhabitants of Warsaw, i.e. for 2013: 1 448 444 people (data of Central Statistical Office of Poland). The results are reported in Table 3. Total aggregate WTP estimates for the hypothetical scenario is more than EUR 27 million annually. Total aggregate WTP for each type of theatres' repertory is given respectively to the structure of estimated total benefits, i.e. nearly EUR 13 million for entertainment theatre, nearly EUR million for drama, EUR 4.5 million – children ad above EUR 3.5 million for experimental theatre.

Table 3. Willingness to pay (WTP) in Euro.

	MNL	MXL
WTP per individual	17.76	18.97
total WTP for the hypothetical scenario	25 724 512.18	27 472 622.05

Cultural policy implications

These results provide the cultural policy implications in two domains: policy towards broadening the accessibility of theatres by changing ticket prices, and current and future structure of subsidies divided in respect to the type of the repertory that theatres specialise in.

If the benefits are bigger than the costs, the change could be justified. Total revenues of municipal theatres consists mostly of subsidies and revenues from selling tickets; and are not higher than expenditures. While the municipality wants to maintain theatrical production in the institutions dependent on the city, lowering prices has to be compensated by additional subsidies, particularly the difference between current revenues from selling and revenues associated with the price at EUR 1.25 proposed in the hypothetical scenario. The additional subsidy can be calculated by multiplying

[4] Possible answers in incentive capability checking questions were: 'I agree', 'I rather agree', 'It is difficult to say', 'I rather do not agree', 'I do not agree'.

difference between current level of ticket prices and EUR 5 with the number of tickets to be sold annually. Table 4 shows the results of this procedure.[5]

Current average level of ticket prices differs in respect to theatre from EUR 5.31 up to EUR 19.45. They also differ much between theatres with different types of repertory. Tickets at the highest prices are sold in the entertainment theatres (more than 13 EUR). To see a drama, a viewer has to pay more than EUR 12. Average ticket for experimental performances costs about EUR 9. Children theatres are the most accessible with average ticket price at less than 6 EUR (less than a half of price for entertainment theatre ticket). On average the municipality would have to pay about EUR 910 extra for every ticket to maintain stable financial situation of theatres.

The number of tickets to be sold can be approximated with the use of data from two sources: official data from Warsaw Cultural Bureau for previous years or behaviours declared in additional questions of the survey. The official data provides information about nearly 1 million viewers (counted by tickets sold in 2012). The survey contained two questions about next year visits in municipal theatres (I) if ticket prices remain unchanged and (II) if tickets would cost 1.25 EUR. The results show a big shift in stated number of visits associated with the change of prices.

Table 4. Cost of introducing the hypothetical scenario (monetary values in euro) in all theatres.

average of tickets*	additional subsidy per ticket	no. of tickets I*	total additional subsidy I	no. of tickets II**	total additional subsidy II	no. of tickets III**	total additional subsidy III
10.05	**8.80**	**917 163**	**9 584 081.14**	**12 725 007**	**122 964 244.09**	**2 426 560**	**24 961 132.88**

The most conservative choice is to use current number of tickets sold annually in the theatres (no. of tickets I' in Table 4), while any change is only a prediction. The results in this case support broadening the accessibility of theatres, while costs are much lower than benefits estimated. If stated number of visits under new prices would be used, the total additional subsidy required would be about five times higher than benefits ('total additional subsidy II' in Table 4). However, the credibility of statements used is doubtful. The comparison of stated number of visits under current prices and visits observed shows that the former is on average nearly nine times higher than the latter. The balanced way of calculating tickets sold under new prices can be to use observed demand and multiply it with the shift observed in stated change of behaviour, i.e. 2,7 times increase in average. Total cost of introducing cheap tickets in this case is shown in column 'total additional subsidy III' and is close to, but lower than total benefits.

5. Cost-benefits structure

On the basis of estimated coefficients assign to non-monetary attributes one can easily find the structure of benefits gained by society (theatregoers and non-theatregoers while the sample consists of both groups) from the broader accessibility of Warsaw municipal theatres. Shares of each type is a fraction of the WTP for a particular type and the sum of these coefficients. The results are: 44.31% of benefits driven from entertainment theatre, 27.48% - drama, 15.44% - children and 12.77% from experimental theatre. This structure is more or less consistent with the fraction of viewers that visit each type of theatre (see: Table 5). However, for an entertainment theatre the fraction of visitors is bigger than the fraction of the sum of estimated WTP for all types, while in other theatres there is an

[5] In the Table and in following reasoning the data from Warsaw Cultural Bureau for 2012 are used.

inverse relation. It can be interpreted in terms of characteristics of utility driven from different types: while from entertainment people gain use value, in other theatres the passive use values should be taken into account. For instance drama theatre debating current issues in its performances and very general human problems can deliver the feeling of a community and participation in the broader group; people assign higher value to children theatre because of educational value; experimental theatre can be valued because of its artistic features even though only a small friction of the society visits it.

Total aggregate WTP for each type of theatres' repertory is given respectively to the structure of estimated benefits per individual, i.e. nearly EUR 13 million for entertainment theatre, nearly EUR million for drama, EUR 4.5 million – children ad above EUR 3.5 million for experimental theatre.

Table. 5 Benefits and costs assigned to the introduction of the hypothetical scenario in respect to the type of theatre.

	entertainment	drama	children	experimental
total WTP (MXL)	12 805 530.87	7 940 499.47	4 462 435.46	3 691 276.88
average prices of tickets*	13.16	12.07	5.86	9.09
additional subsidy per ticket	11.91	10.82	4.61	7.84
no. of tickets I*	548 956	197 095	133 000	38 112
total additional subsidy I	6 539 685.74	2 132 386.39	613 327.03	298 681.97
no. of tickets II**	5 144 532	3 207 877	2 262 129	2 110 468
total additional subsidy II	61 286 559.21	34 706 279.68	10 431 764.60	16 539 640.59
no. of tickets III**	1 423 184	490 134	408 698	104 544
total additional subsidy III	16 954 324.83	5 302 797.06	1 884 702.86	819 308.14

*source of data: current data from Culture Bureau of Warsaw
***source of data: number of visits stated in a survey
***source of data: current data form from Culture Bureau of Warsaw multiplied by the stated change in visits (data from the survey)

A bit deeper inquiry into the relation between aggregated benefits and costs of the programme offered show that, however the introduction of the hypothetical scenario as a whole is justifiable, cost-benefit relation is not the same in all types if theatre. In case of entertainment theatres, the society gains less than it would be willing to pay (nearly EUR 17 million of costs vs. less than EUR 13 million of benefits). The benefits of the accessibility of remaining theatres exceeds costs and thus the inclusion of drama, children and experimental theatres into the programme seems more reasonable. Entertainment theatres could be excluded, even though their inclusion means gaining a big fraction of benefits.

Some implications to the structure of current subsidies can be derived from the research. As it was shown, the structure of WTP is consistent with the structure of demand However theatres other than entertainment seems to generate more benefits than it could be derived from actual visits. The differences between the estimates of WTP for each type of theatre which are interpreted as the additional subsidy required to broaden the accessibility and the structure of current subsidy are much more evident. If we assume that consumers do not distinguish accessibility up to current level and over it, but treat it as a homogenous good provided in different quantity, than we can try to treat the structure of estimated benefits also as an information about social preferences regarded to current

subsidy[6]. Consequently it can be claimed that the municipality do not value enough entertainment and children theatres while overvaluing drama and experimental theatres

Table 5. Structure of WTP for theatres with different repertory, their current subsidy and current number of viewers.

	fraction of WTP (MXL)	fraction of current subsidy	fraction of viewers
ENT	44,31%	22,41%	59,85%
DRAMA	27,48%	43,24%	21,49%
CHILD	15,44%	9,69%	14,50%
EXP	12,77%	24,66%	4,16%

6. Conclusion

Inhabitants of Warsaw assign the positive value to the broader accessibility of municipal theatres and their willingness to pay for the introduction of such a change exceeds its costs. However, the cost-benefit relation varies across theatres with different type of plays in repertory. Benefits are greater than costs in drama, children and experimental theatre, while the entertainment theatre meet the opposite relation. The comparison of the structure of benefits associated to different theatres and the structure of visits in these theatres suggest that in drama, children and experimental theatre the sum of use values gained by individuals from the broader accessibility of performances is lower than the aggregated social benefits. It could be an evidence for passive use values generated by these theatres, and lack of them in the case of entertainment theatres. Therefore, the municipality can find in the support for providing higher subsidy for theatres in the purpose of lowering prices and broadening the accessibility, and justification for excluding entertainment theatres from this change.

There are at least a few areas which require further research. First of all, division between use and non-use values in different kinds of theatres, only mentioned in this paper, can be examined more carefully since there is a probability that this division differs between theatres. Once found, it can serve as an important support for decision makers since non-use values is the value that cannot be ever captured by the market transactions.

Secondly, the determinants of willingness to pay and correlates of heterogeneity can be found with the use of socio-demographic and attitudinal data that is available on the basis of results from the survey used in the current research. The important question arises in the Polish (and not only) debate on expenditures on theatres: 'who do we support if we support theatre?'. The most common answer is that the richest benefit more than the others. However this claim does not find sufficient support in hitherto studies (Ginsburgh and Throsby, 2006), it can be interesting to take the heterogeneity of theatres into account and examine the determinants of demand for (and consequentially the value of) different types of theatres or performances (for the first studies in this area see: 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, 1987). The theatre can be an example. The problem lies in the unwillingness to show the affiliation to the lower social groups. For example, if an individual think that being a theatregoer is a feature of a member of higher social classes, then he could not state the

[6] This identification could not be true if the marginal utility for additional accessibility of theatres vary significantly from the changes experienced at the low and high level of the accessibility.

preferences honestly. Some of the results of the survey analysed in this paper indicate this problem. For instance very little fraction of respondents state that they visit theatre in general, while the other data shows the opposite.

Estimates of willingness-to-pay cannot only be an information on how much people value public or non-market goods and services that can serve in decision-making, but also to what extent are those values and structure of current public expenditures compatible. Non-market valuation arise as a useful and meaningful framework for collecting valuable information for decision-makers that want to make decisions on the basis of quantitative information and facts.

References

Aanesen, M., Armstrong, C., Czajkowski, M., Falk-Petersen, J., Hanley, N., Navrud, S. (2015). "Willingness to pay for unfamiliar public goods: Preserving cold-water coral in Norway." Ecological Economics 112: 53-67.

Abbé-Decarroux, F. (1994). "The Perception of Quality and the Demand for Services. Empirical Application to the Performing Arts." Journal of Economic Behaviour and Organization 23.

Arrow, K., Solow R., Portney P.R., Leamer E.E., Radner R., Schuman H. (1993). Report of the NOAA Panel on contingent valuation. F. Register. 58.

Bille Hansen, T. (1997). "The Willingness-to-Pay for the Royal Theatre in Copenhagen as a Public Good." Journal of Cultural Economics 21(1): 1-28.

Bourdieu, P. (1987). Dostinction. A Social Critique of the Judgement of Taste, Harard University Press.

Carson, R. T. (2012). Contingent valuation: A comprehensive bibliography and history. Northampton, Edward Elgar Publishing.

Choi, A. S., Ritchie, B.W., Papandrea, F., Bennett, J. (2010). "Economic valuation of cultural heritage sites: a choice modeling approach." Tourism Management 31.

Colbert, F., Beauregard, C., Valle, L. (1998). "The importance of ticket prices for theatre patrons." International Journal of Arts and Management 1.

Corning, J., A. Levy (2002). "Demand for Live Theater with Market Segmentation and Seasonality." Journal of Cultural Economics 26: 217–235.

Czajkowski, M., Hanley, N., LaRiviere, J. (2015). "The effects of experience on preference uncertainty: theory and empirics for public and quasi-public environmental goods." American Journal of Agricultural Economics 97(1): 333-351.

Forrest D., G. K., Woods R. (2000). "Is it worh subsidising regional repertory theatre?" Oxford Economic Papers 52(2): 381-397.

Ginsburgh, V. A., Throsby, D., Ed. (2006). Handbook of the Economics of Art and Culture, Elsevier B.V.

Grisolia, J. M., K.G. Willis (2011). "An evening in the theatre: using choice experiments to model preferences for theatres and theatrical productions." Applied Economics 43: 3987-3998.

Grisolia, J. M., K.G. Willis (2012). "A latent class model of theatre demand." Journal of Cultural Economics 36: 113–139.

Hausner, J. (2014). Kultura i polityka rozwoju. Kultura a rozwój. Warszawa, Narodowe Centrum Kultury: 81-104.

Hensher, D. A., Rose, J. M., Greene,W. H. (2005). Applied choice analysis: A primer. Cambridge, Cambridge University Press.

Klaić, D. (2012). Resetting the Stage. Public Theatre Between the Market and Democracy, Intellect Ltd.

Lancaster, K. (1966). "A New Approach to Consumer Theory." Journal of Political Economy 74(2).

Louviere, J. J. (2001). Choice experiments: an overview of concepts and issues. The choice modelling approach to environmental valuation. R. B. J. Bennett.

Mazzanti, M. (2002). "Cultural heritage as multi-dimensional, multi-value and multi-attribute economic good: toward a new framework for economic analysis and valuation." Journal of Socio-Economics 31.

Mazzanti, M. (2003). "Valuing cultural heritage in multi-attribute framework microeconomic perspectives and policy implications." Journal of Socio-Economics 32.

McFadden, D. (1976). "The revealed preferences of a government bureaucracy: empirical evidence." The Bell Journal of Economics 7(1).

Morey, E., K. Greer Rossmann (2003). "Using Stated-Preference Questions to Investigate Variations in Willingness to Pay for Preserving Marble Monuments: Classic Heterogeneity, Random Parameters, and Mixture Models." Journal of Cultural Economics 27: 215–229.

Morey, E., Rossmann, K., Chestnut, L., Ragland, S. (2002). Valuing reduced acid deposition injuries to cultural resources: marble monuments in Washington, DC. Valuing Cultural Heritage. Applyin Environmental Valuation Techniques to Historic Buildings, Monuments and Artifacts. R. R. C. Navrud S. Cheltentham, UK, Northampton, MA,USA, Edward Elgar.

Nanoon, D. S. (2003). "Contingent valuation and cultural resources: a meta-analytic review of literature." Journal of Cultural Economics 27: 159–176.

Navrud, S., R.C. Ready (2002). Valuing Cultural Heritage. Applying Environemntal Valuation Techniques to Historic Buildings, Monuments and Artifacts. Cheltenham, UK, Narthampton, MA, USA, Edward Elgar.

Papandrea, F. (1999). "Willingness to Pay for Domestic Television Programming." Journal of Cultural Economics 23: 149–166.

Throsby, C. D., Withers, G. (1985). "What Price Culture?" Journal of Cultural Economics 9(2).

Throsby, D. (2001). Economics and Culture, Cambridge University Press.

Towse, R. (2010). A Textbook of Cultural Economics, Cambridge University Press.

Train, K. E., Weeks, M. (2005). Discrete choice models in preference space and willingness-to-pay space. Applications of Simulation Methods in Environmental and Resource Economics. R. Scarpa, Alberini, A. Dordrecht, Sprnger: 1-16.

Trzeciak, H. (2011). Ekonomika teatru. Warszawa, Instytut Teatralny im. Zbigniewa Raszewskiego.

Werck, K., B. Heyndels (2007). "Programmatic choices and the demand for theatre: the case of Flemish theatres." Journal of Cultural Economics 31: 25–41.

Whitehead, J., Finney S. (2003). "Willingness to Pay for Submerged Maritime Cultural Resources." Journal of Cultural Economics 27(3-4).

Willis, K. G., J.D. Snawball (2009). "Investigating how the attributes of live theatre productions influence consumption choices using conjoint analysis: the example of the National Arts Festival, South Africa." Journal of Cultural Economics 33: 167–183.

Literature

Appendix 1.

The example of choices set used in the survey (originally in Polish):

Situation 1	Variant A Status quo: continuation of current situation	Variant B
Entertainment theatres	no change	no change
Drama theatres	no change	ticket price: 5 PLN
Children theatres	no change	no change
Experimental theatres	no change	ticket price: 5 PLN
Yearly cost	0 zł	20 PLN
Your choice:	□	□