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Market Evaluation of Museum Buildings

Miklós Hajdu[1], István Hajnal[1*]

[1] Department of Construction Technology and Management, Faculty of Architecture, Budapest University of Technology and Economics, H-1521 Budapest, P.O.B. 91, Hungary
[*] Corresponding author, e-mail: drhajnali@gmail.com

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Abstract

One of the less explored areas in the profession of property valuation is the assessment of the market value of publicly owned or used properties (such as roads, public utilities, parks or prisons). In particular, the "quasi-market" segment, which partly operates according to market mechanisms, is the most challenging point. Hospitals, theatres and museums are examples of such "quasi-market" public properties. Those projects have some market revenues; however, these are not enough to provide a return on the invested capital. Advanced methods of decision-support and analysis have been developed regarding public investments, and the modern technical literature studies the measurement of consumers' willingness to pay (WTP) intensively. Adopting these foundations for a museum building, authors proposes a framework which follows the logic of market valuation and facilitates the Market Value appraisal of "quasi-market" properties based on uniform principles. This is an extended version of article titled as "Model for the market valuation of public, "quasi-market" properties, using the valuation of a museum building as an example", presented at Creative Construction Conference 2017, CCC 2017, 19-22 June 2017, Primosten, Croatia.

Keywords

Real Estate Valuation, public property, Market Value, museum, Willingness to Pay

1 Introduction

The discipline of property valuation mainly deals with the value appraisal of market players' various assets. The different standards, specifications and methods typically focus on appraising the so-called Market Value. According to the definition developed by The European Group of Valuation Associations (TEGoVA, 2016), "Market Value is the estimated amount for which the property should be exchanged on the date of valuation between a willing buyer and a willing seller in an arm's length transaction after proper marketing, wherein the parties had each acted knowledgeably, prudently and without compulsion." This definition assumes a functional, active market, as well as sellers and buyers in the segment of the property examined. Several well-functioning methods have been developed based on this definition, which are used by professionals regarding "market" assets without any problems. However, difficulties arise when there is no market context at all, or it is highly specific. Such is the case for a wide range of public properties: there is no active market for public utilities, roads, bridges or churches, while the market is very limited, for example, with regard to prisons, museums or educational buildings. Of course, there are some public properties that are marketable in a certain market segment: administrative buildings can be placed on the office market, while doctors' surgeries can be put to the test in the retail market. This article deals with the issue of the valuation of "quasi-market" properties, which are the most difficult to manage from a property valuation aspect. In order to facilitate understanding, a museum building will be used as an example. This case study has been chosen because the construction, restructuring and operation of museums go way beyond the technical issues of the property industry; art historians, museum educators and the whole of society all express their opinions regarding these facilities (Rostás, 2010) The property sector could be divided into three part from the viewpoint of usage (Barts, 2017). Fig. 1 shows three different attitude of the occupier.

In this article authors focus on the third, the non-profit occupiers segment. In the first part of the article, authors presents the project appraisal solutions normally used in public decision-making and, in the second part, the procedures developed based on user experience. In the third part, these approaches are contrasted and critically analyzed, while the fourth part of the article proposes a

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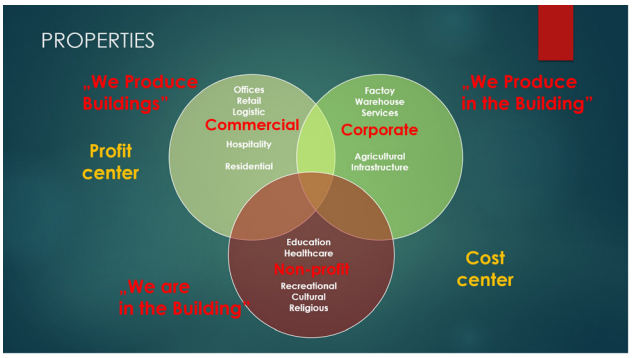

Fig. 1 Attitudes of building occupiers (Barts, 2017)

theoretical framework for the market value appraisal of the museum building, by combining the above concepts. This framework can be extended to appraising the Market Value of all public, "quasi-market" properties.

2 Valuation methods used in public decision-support

In the Middle Age, the value of any property must be equally known, at least intuitively and approximately, so as to form structured social relationships. The way it is expressed and measured is however highly variable and often difficult to interpret, particularly as resorting to equivalents does not always involve the expression of a monetary value. (Feller, 2014)

In the United States, the question whether the value of a public facility (or railway line, if applicable) can be different based on whether it is appraised for public or business purposes was already a subject of dispute in 1915. Butler (1915) enumerates the arguments still often used today, which assign lower end user prices to public goals (opening up markets, jobs, travel) and the reasons that the community may not want to pay the actual costs of the rail tracks – still, in this article of 1915, the author clearly argues that the public also has to pay the actual market value of an investment (through the price of train tickets). It is important to note that this collection of arguments assumes the presence of private investors and corporations and is based on their expectation on returns.

Investment criteria and expected return in the public sector, however, are inevitably different from those of the private sector. In the event of a public investment, risks are also different since the financial surcharges that private investments have to recover virtually do not arise in this case. In the public sector in the UK, a fixed expected return is applied in corporate decision-supporting calculations (the 6 % value that was used in 1997 has been reduced to 3.5 %). It is assumed that the expectation on returns is equal to the financing costs, which is absolutely not true in the private sector (Brealey et al., 1997). However, Brealey argues that the cost of capital should still be recorded on a market basis, as a kind of "opportunity cost". He claims that the only difference in the appraisal is the fact that, with regard to public enterprises, the profit before taxes has to be entered in the cash flow, unlike in the practice of appraisals intended for market players, since taxes also accrue to the government.

Since 1998, the introduction of railway services in Japan is always preceded by a mandatory Cost-Benefit Analysis (CBA) (Kato, 2013).

The analysis is prepared from the perspective of both the user and the – usually private – investor, as well as the environment; it measures the NPV, CBR and economic IRR, calculated based on a fixed yield for the entire time frame of the project. User preferences are assessed with a detailed opinion poll carried out every five years. The value of travel time as an input to CBA was defined differently for each metropolis; in Tokyo, for example, the value / cost of one minute of travel time was JPY 47 in 2010.

Australian municipalities appraise their assets, including their roads, locally. For the appraisal of roads, they use standard schemes (prototypes), the use of which is regulated and explained in detail. The valuation is usually performed on a cost basis (Hales and Jordan, 2012).

In addition to the RICS "Red Book" on property valuation, a new color has appeared in the valuation literature: the "Green Book", which was published by the British Treasury in 2011, is now used for appraising public projects. (This "Green Book" is complemented by a "Magnet Book", which provides methods and recommendations for conducting public opinion polls.) The guide was prepared for governmental bodies, for the evaluation and appraisal of future projects. It prescribes a universal 3.5 % rate of return for financial analyses. The third annex of the work deals with property valuation; it deems the appraisal of Market Value essential, regardless of whether the public operator is the owner or the user of the property. For this reason, it is not the current use but the possible uses, i.e. the Highest and Best Use (HBU), that need to be examined – by analyzing the public impact of the transition to these uses. Regarding the impacts on the public, it claims that if the planned use imposes costs on taxpayers in some way then that sum must be included in the assessment (Annex 3, Section 16). If the use is "market-base", then no distinction is necessary (Section 17); if it is "quasi-market based", such as with a museum, then the property and its revenue have to be compared with the private sector; if

it has no market at all (e.g. prison), then it should be valued as the higher of the value of the site for development and the market value of its current use (Sections 18-19). The cost method should only be used where there is no market and the continuing operation of the property is likely to be necessary over the period of the appraisal.

While valuation standards such as the "Red Book" base their methodologies for appraising the market value of public property on traditional valuation methods, more and more references to the application of non-traditional valuation methods can be found in the technical literature (Horváth and Hajnal, 2014). These include methods such as the Hedonic Method and the Contingent Valuation approach. These non-traditional methods may be suitable for the valuation of non-market assets as well. The aim is still to determine a figure which measures the monetary value of something that is not traded on the market (such as public goods), because the justification for a public decision-making procedure cannot be conclusive without including the comparison of the costs and different kinds of benefits.

3 Modern methods developed for assessing opinions

Measuring willingness to pay for products has a long tradition in the retail market; in Europe alone, hundreds of such consumer surveys are concluded every year (Breidert et al., 2006). The utility that a good constitutes for a person can be "market-based" and "non-market-based"; moreover, even a "quasi-market-based" utility exists (e.g. for education and health). Experts would like to express all this in monetary terms. This value can be measured by Willingness to Pay.

The concept of willingness to pay (WTP) or reservation price, defined as the maximum price a given consumer accepts to pay for a product or service, is of particular interest as it is richer in individual information (Le Gall-Ely, 2009). The following Fig. 2 shows classification framework for methods to measure willingness-to-pay.

Two fundamental methods are known: Stated Preference, and Revealed Preference (also called the Hedonic Method). The technical literature voices many reservations and comments about these inquiries. While some of them can be corrected (with adequate inquiries and filtering), some will remain part of the estimate. Public benefits, which will be used in the Cost-Benefit Analysis (CBA), can be estimated in several different ways. The methodology of Choice Experiment (CE) is one of the non-traditional "Stated Preference" sets of methods. The aim of the inquiry is for the respondent to decide how much they are willing to pay for (a certain level of) a good. CE, as a method, provides specific choices with several attributes, where one of the attributes is the cost of the choice. The respondent considers and chooses between the alternatives, taking their additional costs into account. In mathematical terms, this can be solved as a discrete optimisation problem. Because, in this case, the community of respondents consider multiple attributes, it is possible to evaluate the connection between them (Alpizar et al., 2003). The true nature of individual preferences can be checked with the help of a new branch of research, neuroeconomics, by examining respondents using fMRI equipment while they respond (Fujiwara and Campbell, 2012).

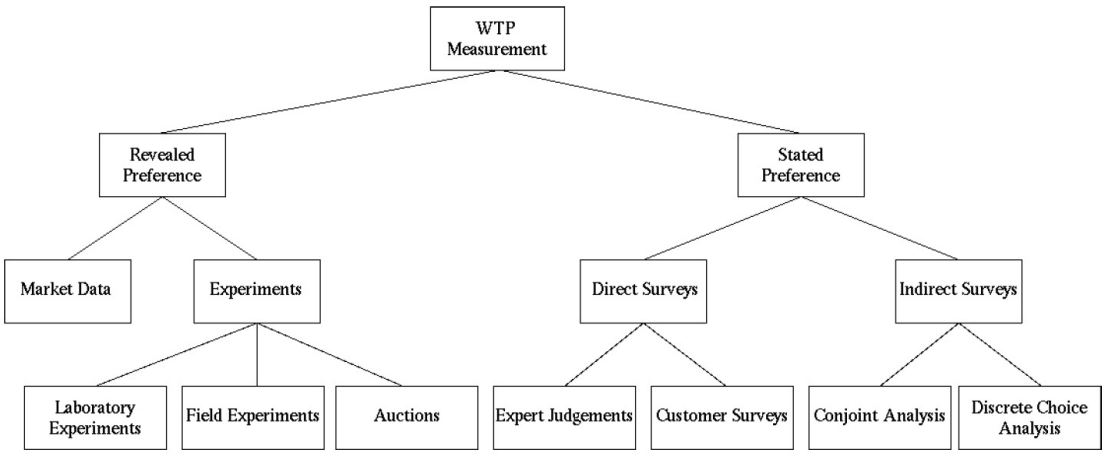

Fig. 2 Classification of methods (Breidert et al., 2006)

Fujiwara extended traditional methodologies with a third major method: it is the Life Satisfaction Approach (Fujiwara and Campbell, 2012). The Life Satisfaction Approach (LSA) implies that there is regression between personal income and the existence or lack of public goods, and in this way it quantifies the personal value of the given welfare element expressed in monetary terms. Its application has been extended to a wide range of situations and goods, such as terrorism (Frey et al., 2009) air pollution (Luechinger, 2009) and visiting museums (Fujiwara, 2013a). In France, researchers measured the (current) effect of terrorism on the average family income and obtained a result of 4 %. Luechinger (2009) examined the effect of air pollution in Germany using the LSA model in his article. The test significantly overestimates the value that clean air adds to personal income compared to the estimate of difference in values of rents provided by the regression analysis carried out using the Hedonic Method (based on the same database). Consequently, it is clear that the property market does not price in total personal satisfaction. The study (Fujiwara and Campbell, 2012) also includes a comparative table of LSA articles – containing results with extremely high standard deviations. "Wellbeing valuation" is a new method developed within the LSA methodology and, after the initial enthusiasm wore off, it became apparent that it produces suspiciously high results. Fujiwara (2013a) processed the problems related to the model and refined the method. The value of wellbeing (also called happiness) can be determined by measuring the incremental change in income. According to Fujiwara's analysis of 2013, visiting museums increased the value of quality of life by GBP 3200, while playing sports did so by only GBP 1500 (Fujiwara, 2013b).

In 2013, Madureira prepared a very detailed report for the EU on the valuation of agricultural public goods based on the review of all previous relevant literature (Madureira et al., 2013). She includes landscape, biodiversity, water quality, the accessibility of water, soil quality, air quality, climate stability, and resilience to fire and flooding among value creators. She subgroups the resulting values into four categories: direct use value, indirect use value, future use value and non-use value. She approximates these values with the WTP, and chooses Choice Experiment as a suitable procedure for appraising these goods by having attribute groups compared. As already indicated, within the Stated Preference (SP) methodology, the Willingness to Pay (WTP) is measured here using the Choice Experiment (CE) procedure. The report, which can be used for the valuation of other public goods as well, sets an example and includes an entire sample questionnaire, together with its complete analysis.

4 Criticism of the methodologies described in technical literature

Institutional investors calculate the market value of a property using a rate determined in the market: yield. Yield is the ratio of the annual net (reduced by costs) income from the property and its market value. The level of yield, that is, the level of pricing at any time, is determined by the experiences associated with the transactions normally concluded on the market. This is expressed in the following formula:

$$Y_{Mar} = \frac{R_{Mar}}{MV} \tag{1}$$

where

MV: Market Value,

Y_{Mar}: Market Yield,

R_{Mar}: Market Revenue per annum.

Traditional valuation methods, as we have already mentioned, are not suitable for the valuation of public property where there is no market environment or market activity in the given situation. The modern, non-traditional approach integrates the secondary market, the consumer experience of cultural goods, into the valuation process; the different procedures (HP, SP, LSA) convert the individual experience into money, based on questioning. Here, a market is described where consumers choose things that are important and useful for them from the market of public goods and services. The methods of analysis described in the previous chapters do not approximate the market value but examine (analyze) the facility or the related user experience from a specific aspect instead.

Taking the example of a museum again, visitors to a museum gain experiences, which constitute a value for them and contribute to their personal lives, but, indirectly, these experiences are also useful for the entire society. The cost-benefit analysis (CBA), which is used for the preparation and analysis of public investments, takes these public benefits into account by comparing them with the yield received by the public. However, this correlation is not market-based and can only be partially measured, by calculating using an imaginary, pre-defined rate of return, which presents the policy makers' opinions. CBA is not suitable for determining the Market Value; this analysis only justifies the public decision, taking the preferences of the decision-makers into consideration. The value that visitors' assign to these goods and services can be assessed using WTP-type

measurements; these are the methods that convert the experience of the visits into money (therefore, into a market-based approach). Aggregating visitors' WTP over a certain time period, for example, a year, we can determine the revenue-generating capacity of the facility from a societal aspect. This means that there is capital expenditure (which reflects a public approach), and there is an imaginary benefit experienced by the consumer, which can be expressed in monetary terms. According to the formula of return calculation used in market value appraisal, this "quasi-market" is best described by the public yield, which can be expressed as the ratio of these two values. This is illustrated in Fig. 3.

The analyses described in the literature review section do not take the ability typical of "quasi-market" public properties into consideration; they all have a certain capacity to generate revenue. Revenue from selling tickets, entrance fees for museums and the revenue of the café and museum shop are all market revenues: clearly though, these are not enough to provide a return on capital, and in most cases, the revenue from these sources cannot even cover the costs of operation. However, on a model level, the inclusion of these revenues is especially important in order to ensure that the market approach is clear, so that it cannot be assumed that these market revenues are the only reason for constructing the facility. Obviously, different yield levels pertain to different revenues, and while market revenues can be well interpreted using retail yields, with regard to revenues based on WTP, public yield has to be considered. The scheme of the double-yield concept is illustrated in Fig. 4.

5 A framework for appraising the market value of a museum

Based on the above remarks regarding the traditional methods, we developed the conceptual model of appraising the Market Value of a "quasi-market" public institution. The model – similarly to the direct capitalisation model of market valuation – combines investment costs, investment revenues and the two different types of yield.

In the event of a planned facility, capital expenditure ("CAPEX") is the key element of the model. With the establishment of a museum, the project may have elements that directly generate market revenue (for example, a cafeteria or a museum shop); however, the different parts of the building created to generate market revenues and non-market revenues usually cannot be separated. The museum ticket entitles the visitor to explore the entire exhibition area, but the entrance fee is usually set significantly lower than that prescribed by the return requirement of CAPEX. Yield, as we have seen, derives from two different types of "market": one can be derived from self-evidences of the market occurring in retail trade; the other can be determined by the comparative analysis of similar facilities and the relevant willingness to pay. Yield has to be used uniformly in the model, therefore, it is expedient to provide an estimate for the total yield by weighting the two different amounts based on the ratio of the different revenues.

So far we have focused on the sources of revenue; however, we cannot disregard the costs of continuous maintenance and operation (operating expense, OPEX). Costs of

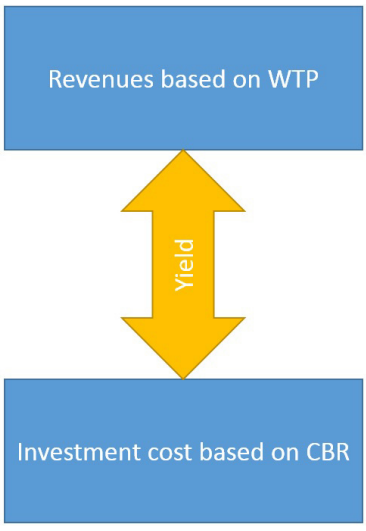

Fig. 3 Valuation scheme

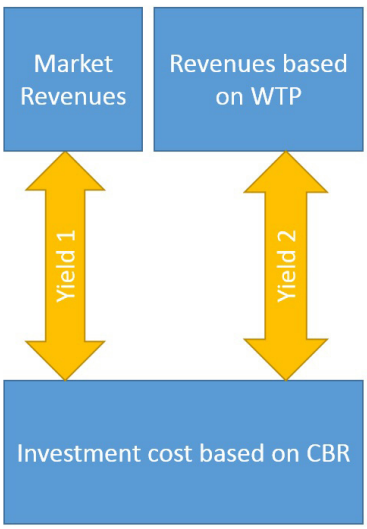

Fig. 4 Market-based valuation scheme

this kind have to be determined and optimized in the early stages of planning (Hajnal, 2016). The planned reconstruction of public and historic buildings results in significantly lower life-cycle costs than the incidental repairs of neglected buildings (Kutasi and Vidovszky, 2010). For this reason, it is recommended to take into account the regular maintenance of the building structure in the operational plan of the public building. In the suggested model, the revenues reduced by OPEX have to be indicated when generating the statement of annual net revenues. Since, just like the amount invested, maintenance and operation cannot be clearly divided between the market side and the "hedonic" side either, these operating expenses have to be deducted collectively from the complete revenue, i.e. the net income has to be applied in the model. The complete conceptual model based on the principle of direct capitalization is illustrated in Fig. 5.

The model shows the relationship between three factors: Market Value is the ratio of the total net revenue to the weighted yield. The total net revenue is the sum of market revenues and "hedonic" revenues, reduced by the amount of the operating expenses (OPEX). Weighted yield is the sum of the retail industry rate of return and the rate of return calculated based on the willingness to pay, weighted by the ratio of the different revenues. This is expressed in the following formula:

$$MV = \frac{\left(R_{Mar} + R_{WtP}\right) - Opex}{w_{Mar} Y_{Mar} + w_{WtP} Y_{WtP}} \tag{2}$$

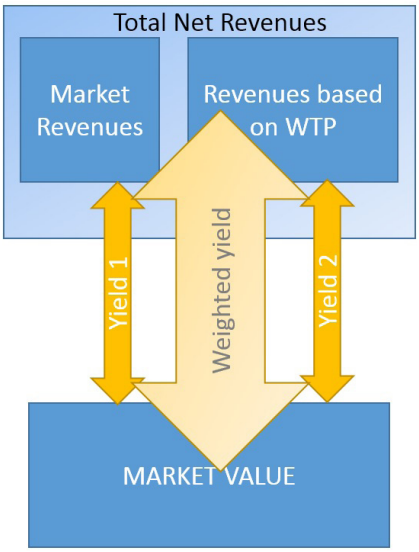

Fig. 5 Proposed valuation scheme

where
MV: Market Value,
Y_{Mar}: Market Yield,
R_{Mar}: Market Revenue per annum
w_{Mar}: Market weight,
R_{WtP}: Willingness-to-Pay Revenue per annum,
$Opex$: Operational Cost per annum,
w_{WtP}: Willingness-to-Pay weight,
Y_{WtP}: Willingness-to-Pay Yield.

Obviously, this formula can be extended to multiple sources of revenue as well, where the appropriate yield and their weight in the corresponding market segment have to be assigned to each source.

6 Conclusion

The described conceptual model is suitable for interpreting the concepts that emerge in the profession of valuers in the context of each other. As such, the model clarifies that the Market Value cannot be approximated with either the historic cost, or the revenue obtained by aggregating visitors' willingness to pay. The two approaches have to be linked by a measured yield that is determined in the given segment and, for public, "quasi-market" properties, the pure market revenue has to be separated from the imaginary revenue of consumer satisfaction.

In order to ensure that the conceptual model outlined above works, even for just a small segment of museums, analyzing and determining the level of yield is necessary. These levels of yield will deviate significantly from market yields. It is, however, an exciting question whether these levels of yield correlate in the museums segment, either at a European level or worldwide, i.e. whether visitors are willing to pay for the experience at the same level as the level of the various investment costs in each national economy. The examination of completed museums and the relevant willingness to pay could be a possible next step towards the practical development of the Market Value appraisal of museum buildings.

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