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The impact of view-restriction: a Delphi case study from Budapest

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Abstract

Based on the international literature, the effect of an existing panoramic view on the Market Value of properties is positive and significant. This value-adding factor varies by location and by type of view. In Central Europe, no such evaluation study has been elaborated until now.
New building construction may restrict the existing panorama; this is the other side of the same phenomenon. View restriction may result in stigmatization, a negative effect on the property. There are two major methodologies to observe the effect – Revealed Preference Method (RPM) and Stated Preference Method (SPM). One SPM approach is Contingent Valuation (CV), wherein well-informed stakeholders give their opinion about the impact caused by the investigated effect. The CV methodology – using the Delphi approach – was employed to observe the Market Value decrease in the cases of several restricted panorama situations in Budapest. Based on the research, this effect in Budapest is in line with published western results. The result of the study can be used to support real estate developers and architects in their development decisions.

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Keywords: Market Value, Panorama, Stigmatized Property, Delphi Method

1. Introduction

In the international literature, the value-changing effect of a panorama in real estate has been studied extensively and in many different ways. Various studies have provided estimates for the added value of panoramas, with significant standard deviation [1]. However, in certain regions and cases, experts' findings converge more and more. We may conclude that a strong professional consensus has emerged regarding individual environments and panorama types. It should also be noted that the literature agrees that the existence of a panorama in the case of a residential property is a significant value-increasing factor [2]. However, to the best of the author's knowledge, the studies carried out so far have not yet covered the Central European region.

The virtual counterpart of the panorama's value-increasing effect is the reduction in value that results from the restriction of the view. We assume that the increase in value caused by the existence of a panorama and the decrease in value that results from its restriction show a close correlation. The effect of view-restriction can be studied and quantified based on the effect of the existence of a panorama and vice versa: the decrease in value resulting from a construction in front of the building can provide an estimate for the value of a panorama.

The possibility or factuality of view-restriction is a sort of encumbrance on a real property. The definition of stigmatised real estate is the following: *"Stigmatised real estate is a property that is marked by an external negative impact. The external influence may reduce the value of the real estate through a specific multilayer filter"* [3]. Given that the value of a view is generated as described in the definition, i.e. through a multilayer social, cultural and communications filter on individual real estate markets, such events of view-restriction fall within the scope of stigmatised real property.

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In the literature, the methods typically used for estimating decreases in the value of stigmatised real property can be divided into two groups: Revealed Preference Methods (RPM) and Stated Preference Methods (SPM). The majority of international studies follow RPM, applying one of its frequently used analytical methods, the generation of a hedonic model. However, in data-poor areas, several authors use SPM, particularly one of its branches, the Contingent Valuation (CV) method.

That said, the hypothesis in this article is that the extent of the decrease in value that results from view-restriction regarding residential properties situated in Budapest follow the trends that determine the value of panorama, which were described in the literature. To examine the hypothesis, we used the Delphi method, which is part of the CV methodology.

Following these introductory thoughts, the article will present the research in the following structure: first, it provides a review on the findings of the literature, then it describes the methodology and implementation of the examination, and finally, it ends with the analysis of the results and the conclusions.

2. Literature Review

The literature already discussed the value-increasing effect of a view back in the early 1900s [4]. The first hedonic analysis that has provided an actual value was published by Brown [5] in 1977, when he studied the value-increasing effect of waterfronts. He has made the important conclusion that the value of a real property decreases as the distance from the waterfront increases; three quarters of the value-increase caused by a waterfront location is already lost 100 metres (300 feet) away from the waterfront. In 1994, Rodriguez and Sirmans [6] studied the market for detached houses in Virginia (USA), and concluded, based on 194 observations, that the existence of a panorama leads to an 8% increase in value. This finding has been frequently cited ever since. The type of panorama had not been specified in early studies; Benson et al [7] were the first to do so in 1998. Benson et al analysed 11 years of data, obtaining variables from an official valuation database. Since this database did not contain any data on the view, they visited the entire sample of 5,000 and personally rated the view of each property, i.e. how full or restricted the panorama is. The time factor was treated as an annual, so-called “dummy” variable in the model. The distance from the waterfront was also taken into account as an additional variable. This study also confirmed that the view is a significantly value-increasing factor, as well as the fact that the closer the property is to the waterfront, the higher the value-increasing effect gets. According to their analysis, the value-increasing effect of a view of the ocean is 60%, that of a “nice view” is 30.8%, that of a “good view” is 29.4%, while that of a partial view to the ocean is 8.2%. According to a study carried out in Minnesota (USA) based on nearly 5,000 observations, the value-increasing effect of a waterfront panorama regarding a residential property is 10% [8].

Market players with different cultural backgrounds provide differing estimates in various geographical environments. In Hong Kong, where high-rise buildings are typical, a panorama of the ocean (based on 1474 observations) only increased the value by 2.97%, based on the hedonic method; moreover, a view of mountains even had a 6.7% value-reducing effect [9]. A study carried out in South Africa (230 observations) concluded that the value-increasing effect is 18% [10]. However, in Geneva, Switzerland, a panorama of Lake Geneva can be as high as 57% [11]; interestingly, if this view also includes the famous fountain, the Jet d’Eau, the value further increases by 3.6%. Fleischer studied hotels in the Mediterranean, as well as their pricing, in 2011 [12]. Based on the hedonic analysis of the prices of 2819 hotel rooms, the author found that a view of the sea leads to a 10% increase in the room price, regardless of seasons and regions. However, a partial view of the sea (e.g. if the panorama can only be seen from a part of the balcony) does not change the room’s price. Staying within the region, according to a study carried out using the CV method, the view of the Acropolis in Athens has a value-increasing effect of 56% [13].

Authors have tried to differentiate types of panoramas in various manners. Previous studies categorised different panoramas based on their degrees or the extent of the obstruction, and represented them in the model with a “dummy” variable [1, 2, 5, 6, 7, 8, 9]. Another solution is to segment the view and describe it based on its composition [14]. In the most recent literature, authors focus on determining and analysing the field of view. Certain authors consider the view angle as a hedonic variable [15, 16]. Fung et al [15] created a simplified model. The authors introduced the Shadow Mask variable (SMK). This – parallel to the view – measures the view of the open sky. In their studies, they show that three view angles (40, 90 and 140 degrees) give a good approximation to the full value-changing effect of the shadow mask. According to an article of Mothorpe and Wyman from 2017 [16], in the event of non-waterfront parcels, a 1% increase in field of view results in a 0.42% percent value-increase, while in the event of directly waterfront land, this value is 3.85%. With the methodology of computer assisted aerial mapping, LIDAR, the automatic examination of the field of view is more and more frequent. As part of this, the size of visible water surface [8, 11, 17,

18] and green surface [18, 19], as well as the view of open space [18] are rated with the use of automatically interconnected regional (GIS) and aerial (LIDAR) databases.

As we can see, in the research of the panorama's value-increasing effect, the application of methods for analysing stigmatised property, particularly the hedonic method, is dominant [1]. The application of the "Spatial Durbin" model, which filters out spatial interaction and is used in the most recent studies, can be considered an improvement of the hedonic model. [20, 21] However, analysts also use methods related to the CV methodology, which is based on fuzzy logic [14] or the Delphi model [13].

In Central Europe, the number of scientific studies carried out with regard to stigmatised real estate is negligible. Some research has already been carried out using the hedonic model on detecting the stigmatising effect of the Budapest Ferenc Liszt International Airport [22] and the differences in the values of historical buildings [23]. According to the literature explored by the author, no research has been carried out in this region regarding the value-changing effect of the panorama yet.

3. The methodology of the examination

In a data-poor environment, the evaluation of stigmatised properties can be carried out with the CV method [24]. For the purpose of this study, the Delphi methodology has been selected within the CV method. The Delphi methodology is based on expert opinions that are brought closer together in the course of a joint learning process in order to provide more and more efficient and precise answers [25, 26].

This study followed the standard Delphi method. The expert panel consisted of 20 senior valuers, who are all well-informed regarding the real estate market in Budapest. The panel established its expert opinion as part of the Valuation Knowledge Management Programme of Grant Thornton, an international consulting company, during an all-day event on 31 January 2018. The panelists were previously informed on the Work Programme, which started with an initial opinion survey. The first round of opinions was not presented, instead, the experts listened to lectures on the methods for evaluating the effect of view-restriction, as well as the international literature on the value-changing effect of a panorama. After the lectures, the second query took place, after which the members of the panel learned about the anonymised, aggregated results of the first and second queries. Their interpretation was followed by the third query, then the joint acknowledgment and acceptance of its results.

The panel consisted of 13 male and 7 female experts. The panel members' average age was 51 years and their average experience as valuation experts was 18 years. All panelists had personal experience in the issue of view-restriction; those present have previously provided independent expert opinions in 46 such cases altogether.

The query, in addition to the registration of personal data, consisted of two main parts in all three rounds: first, the participants had to rate different panoramas, then estimate the value-decreasing effect of an establishment that partially or fully obstructs the panorama.

The views intended to represent the real estate market environment in Budapest were the following:

- full view of Budapest with a panorama of the city and the Danube (Image A)
- a rural panorama of hills (Image B);
- a view of houses and roofs typical to densely built-up areas in Budapest (Image C);
- a view of blocks of flats, which defines a significant proportion of the built environment in Budapest (Image D); and
- the direct view of an ongoing construction.

In each case, the question asked concerned the view from the living room of a flat with a floor space of 100 square metres, situated in one of the mountainous areas of Buda. The first figure shows the studied panoramas that have been presented.

Fig. 1. (a) full Budapest panorama; (b) hilly landscape; (c) roof-view; (d) block-buildings.

In the event of the first question, the experts' task was to determine a favourability index for each view on a scale of 1 to 100, where 100 represents the maximum favourability index and 1 represents the minimum favourability index. Of the views, the fifth one, which directly showed a construction, was rejected by most panelists, valuating it to be really unfavourable, as an average of 21 on the scale of 1 to 100. For this reason, this view was excluded from the rest of the study.

The second group of questions presented three situations of view-restriction for each of the four views:

- partial view-restriction due to the installation of a mobile phone tower;
- full view-restriction due to the installation of a mobile phone tower and
- partial view-restriction due to a construction in front of the building (ongoing construction).

The second figure presents the reviewed situations regarding case (a), the full view of Budapest. The same images were shown regarding all four views.

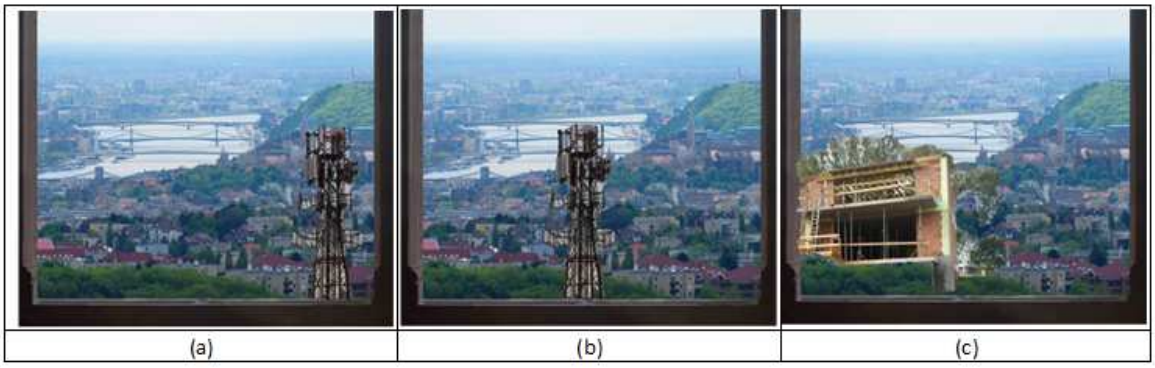

Fig. 2. (a) partial view restriction; (b) full view restriction; (c) partial restriction with on-going construction.

The task of the experts in the case of the second group of questions was to determine the value of the fictional property with regard to the unobstructed (full) panorama for each situation of view-restriction. I.e. if the value of the property is 100 units with a full panorama, the panelists had to determine how many units the value of the property would lose in the event of the view-restriction.

After the third query, the participants did not wish to modify their opinions anymore. Therefore, the unanimous expert consensus required by the Delphi methodology had been established.

4. Empirical results

The results of the answers to the first question regarding the favourability index are specified in Table 1.

Table 1. The statistical indicators of the favourability indices

	1. round			2. round			3. round		
	Average	Median	Std. Dev.	Average	Median	Std. Dev.	Average	Median	Std. Dev.
Full Budapest	80.25	80	13.98	89.75	90	11.36	92.25	97.5	10.45
Hilly view	71.25	70	14.73	84.75	80	11.25	86.00	85	11.42
Roof-view	42.75	40	24.20	58.25	60	14.26	67.75	70	12.19
Block-buildings	26.80	22.5	16.31	44.55	50	19.87	52.30	50	22.68
Construction	4.55	1	8.68	9.55	1	12.27	21.85	15	23.52

The third figure shows well that in the event of each examined view, the favourability index increased in each round. In the event of the first three views, the decrease in the answers' standard deviation confirms the establishment of an expert consensus. However, the favourability indices of blocks of flats and constructions shows a higher and higher standard deviation: the experts participating in the panel had larger and larger differences of opinion regarding these views.

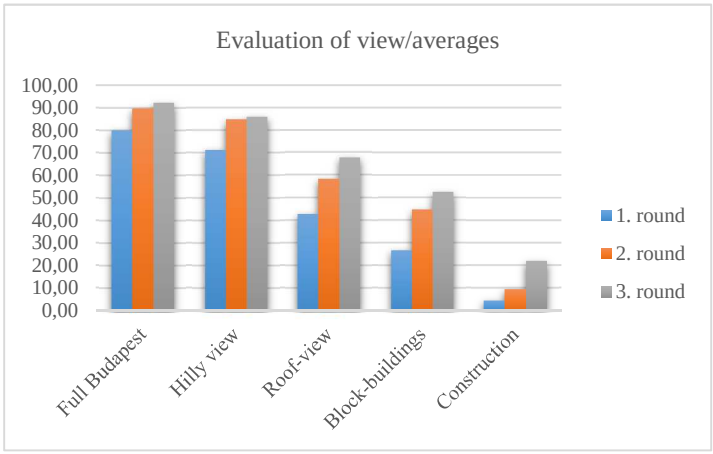

Fig. 3. The averages of the favourability indices

The statistical features of the answers to the second group of questions are specified in Table 2.

Table 2. The statistical indices of the valuations

		1. round			2. round			3. round		
		Average	Median	Std. Dev.	Average	Median	Std. Dev.	Average	Median	Std. Dev.
Full Budapest										
	Partial	76.00	80	21.69	77.95	80	13.50	87.70	90	7.38
	Partial w/const.	64.75	70	20.24	66.90	65	18.54	81.75	85	9.22
	Full	54.80	62.5	24.44	58.00	60	22.62	76.15	80	10.16
Hilly view										
	Partial	73.00	75	17.28	76.35	80	18.17	87.05	87.5	6.43
	Partial w/const.	58.25	60	25.23	62.75	70	24.40	81.75	82.5	7.12
	Full	50.80	50	26.55	54.75	55	25.14	76.40	75	9.91
Roof-view										
	Partial	79.00	90	22.42	72.95	80	26.21	89.05	95	10.39
	Partial w/const.	72.90	87.5	26.68	68.85	80	29.89	85.60	90	12.70
	Full	65.25	77.5	26.64	61.70	65	27.78	82.90	90	11.53

Block-buildings	1. round			2. round			3. round		
	Average	Median	Std. Dev.	Average	Median	Std. Dev.	Average	Median	Std. Dev.
Partial	76.25	87.5	26.24	67.70	80	32.13	87.10	95	16.10
Partial w/const.	70.40	82.5	30.55	65.45	80	34.56	84.95	92	19.01
Full	61.00	77.5	29.50	56.70	70	32.99	81.10	90	17.48

In the table, the standard deviation data related to the answers clearly show that the members of the panel converged towards an expert consensus in each case. In the event of all views, as the examination progressed, panelists gave higher and higher values, i.e. the initial extreme opinions softened in the course of the collaboration.

We examined the correlations between the extent of expert experience and the solidity of their opinions in order to support the results of our research. Based on the number of years in operation and expert opinions established (the latter weighted by 0.2), we assigned an experience indicator to each expert, and compared them to the solidity of their answers to individual questions. The regressive relationship set up this way showed a weak correlation (R=0.590; R^2=0.348).

5. Discussion and Conclusion

Of the results obtained in the study, the findings of the third round made by consensus should be further analysed. The fictional values provided by the experts can be translated to a decrease in value of individual view-restriction cases defined as a percentage; these values are shown in Figure 4.

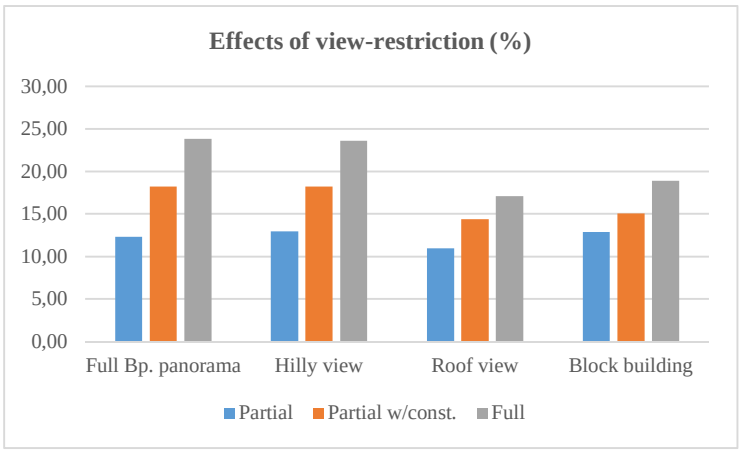

Fig. 4. The averages of the decreases in value

Our initial expectation, that a view with a lower favourability index would entail a smaller decrease in value only proved to be partially true based on the answers.

The value-reducing effect of the partial view-restriction caused by the mobile phone tower is between 10.95 and 12.85 per cent; this technically unanimous opinion is independent of the favourability index of the view that the owner of the property loses. In the event of views with high favourability indices, marked A and B, the effect of full view-restriction were estimated by experts to be higher (plus 11.55 and plus 10.65 per cent), while in the cases of views with lower favourability indices, marked C and D, the difference is smaller (6.15 and 6.00 per cent). Therefore, in this latter event, the fact of the obstruction weighs the same as in the event of views with high favourability indices, while the manner of obstruction (how much the view is impaired) has a smaller significance. Regarding the view angle, however, the previously cited assumption of the literature [15, 16] that the value-reducing effect of view-restriction would be proportionate to the view angle of the obstructed view, was not confirmed: in all three cases examined, the angle of

view is practically the same (from the right side, the center and the left side), however, the decreases in value differ significantly.

The presumed significant value-reducing effect of ongoing construction is expected to decline over time [27], particularly when the building is finished and the negative effects of the stigma's first appearance are not attached to the construction anymore. We may assume that in this case the value-reduction caused by the view-restriction of the building will not be greater then the partial decrease in value caused by the mobile tower, i.e. the same decrease in value can be expected from both the first and the second examined cases.

The hypothesis outlined in the introduction, according to which the extent of the decrease in value that results from view-restriction regarding residential properties situated in Budapest follows the trends described in the literature that determine the value of panorama, was confirmed. In the event of views in Budapest, the largest decrease in value is 23.85%, which is related to the restriction of the panorama rated to be the most beautiful (full view of Budapest). This value corresponds to the international literature cited, as well as the 11-13% value of the partial view-restriction established by the expert panel. However, the study results presumably include an additional element of stigma as well, since the negative social and community sentiments related to view-restriction are larger than the added value of the existing panorama. Therefore, the existence of a panorama may be assumed to have a lower value-increasing effect than the percentage determined by the expert panel in relation to Budapest.

The study is doubly limited due to its location. First of all, since the extent of the decrease in value caused by the view-restriction, according to the conclusions in the literature, is geographically bound, the results can primarily be used in Budapest. Second, since there are no databases available that could be suitable to apply the RPM methods, particularly the hedonic procedure, the backtesting of expert opinions with factual data is not yet possible. However, these research findings and the value-reduction values obtained may be useful for the preparation of real property development, the planning of building orientation with regard to the view, as well as the settlement of disputes regarding view-restriction. The Delphi method described here can also be easily implemented in other Central European locations, thereby also creating the possibility of comparing the value-changing effects of views regarding different locations.

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