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The value of view through the eyes of real estate experts: A Fuzzy Delphi Approach

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ABSTRACT

So far, numerous studies have established that view plays a significant role in the market price of a dwelling. The vast majority of those studies have been conducted by means of the hedonic pricing method, which is generally considered to be time-consuming and expensive. In addition, several issues such as model specification and interpretation of results are also argued to be important in the relative literature. This paper presents the results of a study aimed at exploring the effect of pleasant and unpleasant views, e.g. green areas, seashore, cultural monuments, cemeteries, and industrial facilities, on property prices in the broader area of Athens, Greece. The survey was carried out using an alternative approach, which is based on an expert judgment technique, namely the Fuzzy Delphi method. The results indicate that a pleasant view could considerably increase the price of a house, up to about 50%, while an unpleasant view could lead to a decrease in the house price even by about 25%. The implementation of the Fuzzy Delphi method in the field of scenic view valuation seems to be promising, at least from a practical point of view. The method is fast, flexible and inexpensive and could be used as an alternative to hedonic analysis. However, the method faces some shortcomings and further research would be necessary before any firm conclusions could be drawn.

1. Introduction

Generally, many internal and external factors affect the value of a property, i.e. housing characteristics (e.g. number of rooms and quality of accommodation), neighbourhood characteristics (e.g. level and quality of social infrastructure, housing density, and presence of other facilities) and the quality of the environment (air pollution, noise level, etc.). Some of the external factors, for instance, the distance from shopping centres, amenity sites and other facilities (e.g. Des Rosiers et al., 1996), the amount of open view and concealment offered within the surrounding environment and the physical attributes considered to be beneficial to survival (Appleton, 1975; Kaplan, 1992), etc., tend to be subjectively perceived by individuals and, thus, they are not easily quantifiable. Nevertheless, this piece of information is of significant importance for policy- and decision-makers (e.g. city planners), real estate investors, government agencies (e.g. tax authorities) and of course homeowners, buyers and sellers.

As far as the role of natural features in property values is concerned, it is commonly acknowledged that dwellings located in the vicinity of urban parks, lakes, river corridors, etc., attract a premium over less favourably located dwellings of similar characteristics (e.g. Damigos and Kaliampakos, 2003; Luttik, 2000; Tyrväinen, 1997). Besides proximity and access to attractive landscape features, the effect of the view is also very substantial for residential and commercial properties as several studies have proved (e.g. Benson et al., 1998; Bourassa et al., 2004; Jim and Chen, 2009; Lange and Schaeffer, 2001; Luttik, 2000; Tyrväinen and Miettinen, 2000). Although it is highly recognized that landscape features (e.g. water bodies and green belts) are valued differently, the vast majority of studies with few exceptions (e.g. Benson et al., 1998; Bourassa et al., 2004; Luttik, 2000; Tyrväinen, 1997) focus on a particular type of view. This situation is mainly attributed to the time-consuming process required in order to examine the existence and the type of view of the properties included in the sample by site inspection. Recent developments in the use of GIS data and 3D simulation provide the means to account for the effect of view through visibility measures without site inspections (e.g. Bishop et al., 2004; Lake et al., 2000; Yu et al., 2007), and even for future scenarios (Lange et al., 2008). Nevertheless, some researchers argue that the findings of studies based solely on GIS data should be considered with caution as the visibility measures are prone to measurement error and cannot take into account other externalities affecting property prices, e.g. air pollution (Bourassa et al., 2004). A next logical step would be perhaps to use GIS, simulation models and visualization techniques integrated into one system (e.g. Roßmann et al., 2009; Wang, 2005) that could simulta-

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neously model multiple environmental factors affecting property prices.

Taking into consideration the advantages and disadvantages of the processes applied for exploring the effect of different views on property prices, this paper illustrates an alternative and promising approach from a practical point of view, which is based on an expert judgment technique, i.e. the Fuzzy Delphi method (FDM) introduced by Kaufman and Gupta (1988). More specifically, the value of scenic views associated with green areas, seashore, cultural monuments, etc. is investigated through the eyes of real estate experts, who provide their estimates about the attractiveness of each landscape and its effect on housing prices. Although some of the shortcomings of current approaches (e.g. the simultaneous effect of other types of externalities) cannot be addressed, the application of the proposed method, especially under time and budget constraints, could still provide useful data about the value of view in densely populated urban environments.

2. Literature review

2.1. Stated and revealed valuation methods: issues in brief

So far, the approaches used in order to assess the influence of environmental benefits on property prices fall mainly into two broad categories: stated (i.e. contingent valuation) and revealed preferences (i.e. hedonic pricing). Yet, despite the tens of valuation studies carried out over the last decades there has been a continuous debate around theoretical and methodological issues of the abovementioned techniques. Although a detailed analysis of those arguments is beyond the scope of this paper, some of these issues are discussed briefly, as follows.

Contingent valuation is criticized mainly about the validity, i.e. the degree to which the CV method measures the theoretical construct of interest, which is the true economic value of individuals, and the reliability, i.e. the consistency and reproducibility of the results (Venkatachalam, 2004). For example, theoretical and empirical studies have emerged in the literature arguing about issues such as the hypothetical bias attributed to the nature of the method, the existence and measurement of 'non-use' values, the strategic behaviour of the respondents, the importance of 'information effect', and the influence of the elicitation question (e.g. Carson et al., 1999; Diamond et al., 1993; Horowitz and McConnell, 2002; Spash, 2008).

As regards the hedonic approach, it has been argued in the literature that several issues should be considered. For example, extensive data should be gathered in order to capture the effect of environmental quality on housing market, which, like the other primary valuation methods, is generally a time-consuming and expensive process. In addition, it is referred that the form of the hedonic model cannot be specified on purely theoretical grounds and must be determined empirically. Thus, the results may be highly sensitive to model specification and level of disaggregation (e.g. Tyrväinen, 1997; Tyrväinen and Miettinen, 2000). As a result, the same data set may give different and equally acceptable findings using different models (e.g. linear and log-linear). Problems also arise with respect to the number of the variables included in the hedonic regression model. According to Laasko (1997), who reviewed 18 hedonic studies, the number of explanatory variables varied from 3 to 30. Butler (1982) argues that a model containing a few variables would have a significant effect on the results. On the other hand, when a hedonistic regression equation contains a large number of variables, multicollinearity may undermine the results (Palmquist, 1991). Moreover, the temporal stability of hedonic value equations should be also considered (Palmquist, 1991), especially when housing market receives significant shocks over the time period (e.g. when a major change is announced in the area under investigation). Market distortions, which are present in many countries, increase also the possibility of spatial autocorrelation, data unavailability due to which some explanatory variables may be omitted, etc. Finally, hedonic studies cannot be easily applied when potential changes on the environmental quality are investigated (i.e. *ex ante* cases), as the method is applicable to *ex post* analyses.

2.2. The effect of view on property prices

Almost all studies dealing with the valuation of view in housing price have been carried out by means of hedonic models. Research efforts towards the valuation of "view" and "non-view" properties use single, i.e. properties "with" and "without view" or multiple dummy variables, combing view with other factors, i.e. visual quality, distance and other environmental features (e.g. Benson et al., 1998; Beron et al., 2001; Bourassa et al., 2003, 2004; Doss and Taff, 1996; Graves et al., 1988; Jim and Chen, 2009; Luttik, 2000; McLeod, 1984; Smith, 1994; Tyrväinen and Miettinen, 2000). The research findings vary. According to McLeod (1984), river views in Perth, Australia, were found to add 28% to property values, diminishing with distance to the river. Graves et al. (1988), in California, USA, reported that beach view adds 13% to property value. Smith (1994) estimated that the view to Lake Michigan in Chicago, USA, adds a premium of 11%, while Doss and Taff (1996), in Ramsey County (Minnesota), USA, found that lake view has a positive impact of 44%. Benson et al. (1998) estimated that a full ocean view adjacent to the coast adds a premium of 68%, which decreases to 4% for poor views two miles from the coast. In addition, they estimated that lake views from lakefront properties increase value by 127% and lake views from other properties by 18%. Luttik (2000), in the Netherlands, estimated that houses with scenic sight of forests could attract a premium of 6–12% and water bodies 8–10%. In general, attractive landscape types were shown to attract a premium of 5–12% over less attractive environmental settings. Tyrväinen and Miettinen (2000), in Finland, found that housing prices with a forest view could be 4.9% higher. Bourassa et al. (2003) estimated that a water view is important in Auckland, New Zealand, as the sale price increases approximately by 10%. In addition, Bourassa et al. (2004) found that properties having panoramic water views attract a premium of 65%. Jim and Chen (2006) in Guangzhou, China, found that view of green spaces and proximity to water bodies raised housing price at 7.1% and 13.2%, respectively. Furthermore, Jim and Chen (2009) estimated that a broad harbour view in Hong Kong could increase the value of an apartment by 2.97%. Contrary to authors' expectations, a broad mountain view could depress apartment price by 6.7%, reflecting home buyers' preferences towards apartments with sea view. The effect of view is also important on commercial properties (Lange and Schaeffer, 2001; Yin and Hastings, 2007).

3. Methodology and data

3.1. Methodological framework

The Fuzzy Delphi method is an analytical technique, which is based on the Delphi method and the Fuzzy Theory. The 'traditional' Delphi method was developed in the 1950s and 1960s at the RAND Corporation, at Santa Monica, CA (Dalkey, 1969; Dalkey and Helmer, 1962) and is perhaps the most-known group judgment technique. The Delphi method is actually an iterative structured process for the systematic collection and collation of judgments from a group of experts on a particular issue, by means of a series of questionnaires interspersed with controlled opinion feedback.