CULTURAL HERITAGE: HEDONIC PRICES FOR NON-MARKET VALUES

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"*So that settlement is a good which enhances the continuity of a culture and the survival of its people, increases a sense of connection in time and space, and permits and spurs individual growth: development, within continuity, via openness and connection*"

(Kevin Lynch, A Theory of Good City Form, MIT Press, Cambridge, 1981, p. 117)

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1.   Introduction

A significant part of the cultural history of our world is mirrored in human-made remainings from the past with a unique and great social value, often coined cultural heritage. This is a broad concept that does not only comprise individual assets such as castles, museums or churches, but also complex and compound assets such as urban districts, local identity, historical landscapes and so on. In a broader sense, local resources – be it material or immaterial human resources – map out the history of the local cultural endowment. These cultural resources have a high societal value, act as attraction forces for visitors and assume a prominent place in sustainable development of our planet (Deodhar 2004).

Cultural heritage is usually seen as historical tangible and intangible capital whose value is determined by subjective perceptions and arbitrary preferences of residents, policy-makers or visitors. Clearly, a cultural heritage is normally a non-market oriented legacy from the past, while it is conceived of as a capital asset for present and future generations. The economic evaluation of cultural heritage is fraught with many measurement problems (see, e.g., Fusco Girard and Nijkamp 2009, Navrud and Ready 2002), which are related to the nature of the cultural good itself, but also to its broader cultural and natural context, to the attractiveness exerted on (potential) visitors and to its contribution to socio-economic or sustainable development (see also Giaoutzi and Nijkamp 2006). The current popularity of the concept of creative classes, industries and cities reinforces the economic and political significance of the presence and good maintenance of cultural capital (see also Florida 2004, Scott 2000).

The cultural-economic significance of cities is not only determined by cultural goods in a strict sense, but also – and sometimes even more so – by the spatial spillovers that manifest themselves as (positive, sometimes negative) externalities in adjacent areas (e.g. retail development, hospitality sector revenues, real estate values) and even far beyond, so that the economic implications of cultural heritage may have a long-range value chain pattern. Especially in case of clusters of cultural amenities (e.g. in old city centres), agglomeration advantages of a cultural complex may emerge as major economic contributors to urban growth (e.g., Rome, Amsterdam, Istanbul). Such externalities may also call for combined public-private initiatives in order to ensure both sustainability of cultural assets and efficient economic use of these resources (see also Coccossis and Nijkamp 1995, Frey 2003, 2007). There is a clear need for a solid economic assessment of the broader benefits of cultural heritage for society at large.

The 1960s and 1970s showed a strong dominance of economic evaluation tools in public planning (for example, cost-benefit analysis, cost-effectiveness analysis). It was a widely held belief that a systematic application of rigorous economic thinking in evaluating and selecting

public projects or plans would be a major instrument in improving the performance of the public sector (for instance, see Little and Mirrlees 1974).

This conventional economic appraisal methodology found its basis mainly in welfare economics and was originally normative and prescriptive in nature, but it also implied various restrictive value judgments, such as the emphasis on efficiency and the repression of equity (Throsby 2001). Besides, the use of 'fictitious' shadow prices to assess benefits foregone was a major source of uncertainty in such project evaluations (see also Warr 1982). The aim to transform all relevant impacts into one common denominator, i.e., the 'measuring rod of money', has become a source of major criticism (for an interesting review see Renard 1986).

It is evident, however, that a compound evaluation of public or collective goods – and especially public capital goods such as churches, palaces, parks, landscapes, 'cityscapes', etc. – is far from easy and cannot be undertaken by the exclusive consideration of the tourist and recreation sector (see also Asabere et al. 1989, Kalman 1980, Lichfield 1989, Snowball 2008). Especially in the Anglo-Saxon literature, the expenditures made in visiting recreational destinations are often used as a proxy value for assessing the financial or economic meaning of natural parks, palaces, museums, etc. But it ought to be recognized that the indigenous socio-historico-cultural value of monuments – or cultural heritage in a broad sense – is often invariant with respect to the geographical coordinates (apart from the scale economies emanating from a 'socio-cultural complex'), so that we are still left with the problem of a compound evaluation. Various assessment and evaluation methods have been designed in the past decade. A prominent place in the literature has been obtained by contingent valuation methods (CVM).

Stated preference valuation techniques try to discover what individuals are willing to pay or are willing to accept, through the use of survey questionnaires. CVM form an important class of preference elicitation methods and focus directly on willingness to pay by using open ended questions (for an overview see Mitchell and Carson 1989). CVM have been applied to the evaluation of cultural heritage in numerous evaluation studies. Noonan (2003) offers a meta-analysis of this rich literature. Snowball (2008, chapter 4) provides an update of the contingent valuation literature.

Contrary to the interview-based valuation of cultural heritage by CVM, the hedonic price models measures the value of cultural heritage by using revealed preferences. Griliches (1971) and Rosen (1974) developed the idea of implicit prices for characteristics, which can be estimated by regressing prices on these characteristics. Like ordinary prices, these implicit prices reveal the marginal willingness to pay of consumers. An important problem for hedonic price analyses is that, in principle, there can be many variables that influence the value of real estate. In a conventional cross section, limited information about potentially relevant characteristics implies the risk of omitted variable bias. Nevertheless, a further development and use of hedonic

price analysis may offer a considerable promise for a better understanding of the value of cultural heritage. An important challenge for the hedonic price models is to use a good taxonomy with regard to different types of cultural heritage.

In the following sections we present the theoretical background of the hedonic price model and its application to cultural heritage (section 2), discuss in a systematic way different hedonic price models which estimate different aspects with regard to cultural heritage (section 3), and finish with some concluding remarks (section 4).

2. Hedonic Pricing and Cultural Heritage

By regarding the price of a dwelling as a result of a bundle of attributes, the neoclassical in economics approach managed to find a solution for comparing the prices of these dwellings. The hedonic price method is based on the observation – generally attributed to Lancaster (1966, 1979) - that *"...goods are valued for their utility bearing attributes characteristics"* (Rosen 1974). This leads straightforwardly to the idea that prices of heterogeneous goods are a function of the characteristics of the varieties. Meaning that a changing value of an attribute, changes the price of that good where this change can be interpreted as the implicit price of the changed characteristic. Like ordinary prices, these implicit prices reveal the marginal willingness to pay of consumers. Although Rosen's (1974) original analyses were developed for a market with perfect competition, the method is also applicable under alternative market conditions (Bajari and Benkard 2005).

An important problem for hedonic price analyses is that, in principle, there can be many variables that influence the value of real estate. The hedonic price model regresses prices on transaction-related, structural and spatial characteristics. In a conventional cross-section, limited information about potentially relevant characteristics implies the risk of omitted variable bias. On the other hand, there is the possibility that some other determinants of value are strongly correlated with the variable of interest (for instance, an architectural feature that is typical for a particular period or style) which makes it difficult to identify its effect. Moreover, economic theory offers little guidance for the specification of a hedonic price function (see e.g. Jones and Dunse 1996).

In the current literature, hedonic price models are used to monetise a variety of non-market goods. For instance, Rouwendal and Van der Straaten (2008) use a hedonic model to estimate the value of open space in Amsterdam, The Hague and Utrecht. Daniel (2008) uses a spatial hedonic price model to estimate the price effect of flood risk in the Netherlands. Dekkers and Van der Straaten (2008) use a hedonic price model to value aircraft noise around Amsterdam airport.

In a more general environmental-economic context, the study of Boyle and Kiel (2001) reviews existing studies that use hedonic price models to value environmental goods such as air quality, water quality, and distance from toxic or potentially toxic sites. A relevant question on cultural heritage research is whether churches are amenities or disamenities to its neighbourhood (see e.g. Do et al. 1994, Carroll et al. 1996) here, the question of spatial externalities is at stake. And this prompt of course the question how to value non-market features

Although the existing literature on valuation of cultural heritage often uses stated preference techniques, applications of hedonic price models are not completely absent from the literature. Clearly, the literature covers various aspects of cultural heritage. Some early studies concentrate on the effect of designation of a building as cultural heritage. Designation is supposed to have various use effects, both negative as positive. An important adverse aspect of designation to buildings is that it restricts the owner's property rights. A beneficial aspect of listing is being eligible for various forms of tax deductions. Asabere and Huffman (1994b) find that restrictions to condominiums cause a value discount of 30 percent. While the paper of Asabere and Huffman (1994a) indicates that federal historic districts increase sales price with 26 percent although taxation benefits are absence. Leichenko et al. (2001) offers a review of the existing literature on such designation of property values.

The first study estimating a full hedonic price function with respect to designation is Ford (1989) who reports a positive impact of designation on property values. Recently, Deodar (2004) used a hedonic price function to estimate the market price difference between heritage listed and regular, unlisted houses in Sydney's upper north shore. The author finds a 12 percent premium of listed over unlisted houses in Ku-ring-gai after controlling for other property attributes.

One concern raised by historic designation studies is that it is not always clear whether there is a causal effect of historic designation itself (for instance, because it protects the valuable characteristics of a building or a district) or whether the listing merely signals the presence of valuable characteristics that are already recognized by the market. Various forms of historic designation cause restriction in the owner's property right because subsequent alterations or alternative property use is not allowed. On the positive side there are tax abatements and subsidies preserve the dwelling. Even with a repeat sales approach a positive coefficient for historic designation might be interpreted as the effect of listing or as the effect of increased appreciation of specific aspects of cultural heritage (both effects can be present simultaneously).

The evaluation of architecture and architectural quality is another way in which several hedonic studies try to estimate cultural heritage effects (Ruijgrok 2006; Vandell and Lane 1989; Moorhouse and Smith 1994; Hough and Kratz 1983). These studies focus on different measurable aspects of architecture or architectural quality in a city. For example, the authors focus on architectural style, number of façades with a historical or architectural quality. In "Can

'good' architecture meet the market test?", Hough and Kratz (1983) investigate the way the office market of downtown Chicago values "good" architecture. Their results indicate that a considerable rent premium is paid for "good" new architecture, but not for "good" old architecture. In another study, Moorhouse and Smith (1994) regress the original purchase price as dependent variable on relevant architectural characteristics collected by Smith through visual inspections of houses which were built between 1850 and 1873. It is thus clear that economic valuation of cultural heritage assets poses many complicated question of both methodological and applied nature. For this reason, the next section offers a concise review of a number of studies that offer various empirical applications of the valuation of cultural heritage.

3.   Overview of Hedonic Price Models for Valuing Cultural Heritage

Various scholars have used hedonic price models to value different features with regard to cultural heritage (see Table 2 for a concise overview of the available literature). The current literature focuses mainly on various types of historic designation as a measurement for the amount of cultural heritage. Currently various forms of designation are used in hedonic price models. Historic designation is thought to have a positive impact, because it prevents lock-ins which arises due to the public character of investments in the exterior of historic dwellings. These lock-ins arise due to the fact that owners are not willing to invest in their dwelling if there neighbour is not investing in his dwelling.

A first distinction in such studies is made between local, federal and national designation. The study of Ford (1989) is one of the first studies addressing local historic designation and residential property values. In USA local designation is aimed at preserving exterior facades and appearances so that the neighbourhood may retain its special character (Ford 1989). Using samples of multiple listing services transactions in several neighbourhoods, Ford finds that historic districts in Baltimore gain price premiums over similar properties in non-historic districts. In the same vein, Schaeffer and Millerick (1991) show that the effect of historic designation may depend on whether a property is locally or nationally designated. In their study they found a positive influence of national designation, but a negative influence of local designation.

Asabere et al. (1994) found that small historic apartment buildings experience a 24 percent reduction compared to non-locally certified property. Unlike their significant local result, the federal district variable included in their model produced insignificant results. The study of Asabere and Huffman (1994a) shows a positive impact of federally certified historic districts. Residential property located in a federally certified historic district sells at a 26 percent premium compared to a similar property outside of the district.

Some recent studies use individually designated property instead of districts. Narwold et al. (2008) show that designation creates a 16 percent increase in house value which is higher than capitalization of the property tax savings related to designation suggesting additional economic value of cultural heritage.

A study conducted by Noonan (2007) shows that designated landmarks sell for a 10.6 percent premium over comparable properties, while properties located in landmark districts receive only 3% to 5 % premium. In a study Deodhar (2004), the autor estimates the differential between heritage-listed and unlisted houses in the Ku-ring-gai district located on Sydney's upper north shore. After controlling for other property attributes, heritage-listed houses appeared to generate a premium of 12 percent on average (Deodhar 2004).

There are also studies, which focus on the existence of historical designation externalities. Schaeffer and Millerick (1991) state that neighbourhood externalities are thought to be substantial. Noonan (2007) shows with a repeat-sales estimator that preservation of more landmarks in the block group is an amenity; this shows that the external effects of designation are stronger when more cultural heritage gets designated (Noonan, 2007). The repeat sales approach can value this, because it follows neighbourhoods through time. Coulson and Leichenko (2001) use the percentage of houses in the tract that are designated to measure the externality effect and find a positive and significant coefficient indicating the existence of positive neighbourhood effects of designated houses. Each additional designated house within the census tract increases the value of each house in that census tract with 0.14 percent.

Next to various methods of historic designation, architecture and façades may be used to measure the value of cultural heritage. Hough and Kratz (1983) conducted one of the first studies with regard to cultural heritage. Their study investigated the way the office market of downtown Chicago values "good" architecture. The results indicate that a considerable rent premium is paid for "good" new architecture but not for "good" old architecture. Vandell and Lane (1989) use amenity data from a set of class A office buildings in Boston and Cambridge to measure the contribution of architectural quality to the value of a building. The results of their study confirm a strong relation between design quality and rents, but a weak relation between that quality and vacancy behaviour.

The first hedonic price study in the Netherlands- a study by Ruijgrok (2006)- uses monument status, façade type, authenticity and number of historical façade elements to estimate the economic value of cultural heritage. The study values housing comfort in the old Hanseatic town of Tiel and finds a 15 percent premium for houses which are part of 'heritage'. An innovative element of Ruijgrok's study is used by her to develop a taxonomy with regard to cultural heritage. With the help of experts, she developed a classification of different cultural heritage architectural features and used them as variables in a hedonic price model. Her study

offers a good starting point for further exploration of the positive effects of cultural heritage on housing prices in the Netherlands.

As stated by Narwold et al. (2008), a possible drawback of most hedonic price model is the reliance on valuing historic designation within a particular market. To correct for this, the study of Leichenko et al. (2001) expands upon previous work by examining the effects of designation on property values across a larger set of cities. Corrected for structural and neighbourhood characteristics, they estimated the effect of historic designation on house prices in nine different Texas' cities. The premium of historic designation upon undesignated property varies between 5 and 20 percent.

Table 1 divides the used studies in a geographic dimension and its valuation effect. The research regarding historical designation and architectural features is, as mentioned above, subdivided in local versus supra-local –federal and national historic designation-, and internalized value and externalities –market based versus non-market based. Some studies are capable to estimate various effects they are counted as multiple studies.

Table 1: Studied effects of historic designation

Geographic dimension / Valuation effect	Local	Supra-local
Market based	13	7
Non-market based	3	1

The mentioned studies are summarized in Table 2 and offer a good insight in the available literature. The studies mentioned offers a concise overview the effects of historic designation both individual as district historic designation. Also it shows that historic designation arises on various geographical levels. Further it exhibits that architectural quality and features offer an interesting path for further research with hedonic price models to value cultural heritage.

Table 2. Overview of hedonic price studies with regard to cultural heritage

Study	Study	Study area	Key findings
Narwold et al. (2008)	The effect of historically designated houses on sale price	San Diego, USA	Historic designation of single-family residences creates a 16 percent increase in housing value which is higher than the capitalization of the property tax savings due to designation.
Noonan (2007)	The effect of landmarks and districts on sale price	Chicago, USA	Designated property has a positive effect on both itself and neighbouring properties.
Ruijgrok (2006)	The effect of 'authenticity', 'ensemble' and landmark designation on house prices	Tiel, Netherlands	Authenticity and façade elements accounts for 15 percent of sale prices in the Hanseatic city of Tiel.
Coulson and Lahr (2005)	The effect of district designation on appreciation rate	Memphis, Tennessee, USA	Appreciation rate were 14-23% higher when properties were in neighbourhoods which were zoned historical. Local designation is more important than national designation.
Deodhar (2004)	The effect of heritage listing on sale prices	Sydney, Australia	On average heritage listed houses commanded a 12 percent premium over non heritage listed houses. This premium is a combined value of heritage character, their architectural style elements, and their statutory listing status.
Coulson and Leichenko (2001)	The effect of designation on tax-appraisal value	Abilane, Texas, USA	Local historic designation raises value 17.6 percent of designated property.
Leichenko et al. (2001)	The effect of historic designation on house prices	nine different Texas cities, USA	Historical designated properties in Texas enjoy 5-20% higher appraised prices than other property.
Asabere and Huffman (1994a)	The effect of federal historic district on sales prices	Philadelphia, USA	Owner-occupied property located in national historic districts in Philadelphia sell at a premium of 26 percent.
Asabere and Huffman (1994b)	The effect of historic façade easements on sale prices	Philadelphia, USA	Condominiums with historic easements sell for about 30 percent less than comparable properties.
Asabere et al. (1994)	The sales effects of local preservation	Philadelphia, USA	Small historic apartment buildings experience a 24 percent reduction in price compared to nonlocally certified properties.
Moorhouse and Smith (1994)	The effect of architecture on original purchase price	Boston, USA	Architecture design was valued with a premium.
Schaefffer and Millerick (1991)	The impact of historic district on sale prices	Chicago, USA	Properties with national historic designation have a premium and local historic designation have a discount over non designated properties. Properties near a historic district may enjoy positive externalities.
Asabere et al. (1989)	The effect of architecture and historic district on home value	Newburyport, Massachusetts, USA	Historical architectural styles have positive premiums. The historic district of Newburyport does not have positive external effects.
Ford (1989)	The price effects of local historic districts	Baltimore, Maryland, USA	Historic districts do have higher prices than non-historical districts.
Vandell and Lane (1989)	The effect of design quality on rent and vacancy behaviour on the office market	Boston and Cambridge, USA	Design quality has a positive premium of 22 percent on rents but there is a weak relationship between vacancy behaviour and design quality.
Hough and Kratz (1983)	The effect of architectural quality on office rents	Chicago, USA	Tenants are willing to pay a premium to be in new architecturally significant office building, but apparently see no benefits associated with old office buildings that express recognized aesthetics excellence.

4.   Concluding Remarks

As shown in a review study, hedonic price models use historic designation to value distinct features of cultural heritage. Noonan and Krupka (2008) pointed out that, *"very little has been said about the determinants in the first instance- and even less has been done to empirically describe why we preserve what is preserved"* (Noonan and Krupka 2008, p. 5). In regard to this Dunse and Jones (1998) criticize the fact that hedonic price models assume equilibrium throughout the property market and imply no interrelationship between the price of attributes.

To improve estimates of hedonic price models with regard to cultural heritage, it is necessary to develop an appropriate taxonomy of heritage in which cultural heritage derives its importance its aesthetic or architectural values. Nevertheless, a further development and use of hedonic price analysis may offer a considerable promise for a better understanding of the value of cultural heritage. A great advantage of this approach is the frequent availability of large databases – constructed, for instance, by Land Registry or Cadastral Offices – containing often detailed information about transactions in the real asset market. These data are especially useful, if they comprise disaggregated data about the characteristics of the properties sold. In this context GIS techniques often offer the possibility to further enrich such data with information about geographic neighborhood characteristics. With such data, the problem of omitted variables can be mitigated considerably, while the large number of observations enables the analyst to incorporate a satisfactory number of regressors.

In the available literature, various methods are used to value cultural heritage. Most of the existing studies use stated preference methods. A disadvantage of these methods is the presence of a number of biases, some of which are difficult to address in the estimation methodology. The increasing use of hedonic price techniques may provide alternative and new information about the value of cultural heritage. Because of the increasing availability of rich databases about real estate transactions, further application of the hedonic method seems to offer a promising avenue for further research. To correct the data for potential spatial autocorrelation it is useful for future research to estimates the simultaneous autoregressive specification.

In the Netherlands, 'landmark-status' is a useful proxy which offers an opportunity to measure cultural heritage. Nationally listed landmarks are investigated by a government agency which evaluates its cultural significance by a clear taxonomy. An important question that can be addressed by hedonic price models is whether the cost of designation (for example associated with higher maintenance cost) exceeds the benefits of having this status, or vice versa. Another interesting question with important policy implications is if individually listed landmarks generate externalities on real estate in the neighbourhood. Thus, there is still a wealth of research questions of both a methodological and policy nature.

Acknowledgement

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