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MULTI-LEVEL MODEL FOR ASSESSING THE IMPACT OF CULTURAL HERITAGE OBJECTS ON THE VALUE OF URBAN LAND AND REAL ESTATE

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Abstract. *The article proposes a multi-level theoretical and methodological model for assessing the impact of cultural heritage objects on the value of urban land and real estate. The relevance of the study stems from the fact that, in Ukrainian practice, the historical environment is still predominantly viewed as a constraint on development, while its market, fiscal, and spatial effects remain insufficiently measured.*

The aim of the article is to conceptualize the mechanisms through which heritage is capitalized into real estate value and to develop an analytical toolkit that combines classical spatial methods with new digital indicators of public attention.

The research methodology is based on a combination of institutional analysis, hedonic pricing, spatial econometrics, and externality analysis, as well as the use of data from geographic information systems, market monitoring, users' digital traces, reviews, and photometric indicators of platform visibility.

It is substantiated that the influence of heritage assets on value manifests through several channels: aesthetic-symbolic, tourism-commercial, institutional-regulatory, infrastructural, reputational, and fiscal.

The scientific novelty lies in introducing the concept of "net heritage capitalization," defined as the difference between the heritage premium and the heritage discount. It is demonstrated that a positive price effect does not arise automatically from the mere presence of a heritage asset, but depends on clearly registered use regimes, a transparent conservation agreement, low regulatory uncertainty, and the owner's capacity to maintain the property.

The practical significance of the article lies in providing a framework for improving normative monetary valuation, tax policy, urban planning regulation, and investment decision-making within historical areas.

It is concluded that the protection of cultural heritage should not be regarded as a consumption-type expenditure, but as a long-term investment in sustaining property values, strengthening local budget bases, and fostering the economic growth of historic territories.

Keywords: *cultural heritage; historic areas; real estate value; urban land; spatial econometrics; hedonic pricing; digital traces; conservation restrictions.*

Relevance of the problem

The value of urban land and real estate is shaped not only by area, location, transport accessibility, or the availability of engineering infrastructure. In historic cities and districts, intangible environmental characteristics also play a decisive role: authenticity, architectural quality, the symbolic status of a place, accumulated cultural memory, tourist recognizability, and the regulatory regime governing land use. Therefore, cultural heritage sites should not be viewed as a peripheral element of the urban landscape, but rather as a special type of spatial asset capable of influencing demand structure, investment intensity, the distribution of commercial activity, and the tax base of a territorial community [1; 3; 22].

In international scholarship, there is an increasingly established view that heritage should be assessed not in isolation, but as an element of the broader socio-economic system of the city [3; 22]. For urban areas, this means that monuments, historic ensembles, protection zones, and historic districts simultaneously produce both benefits and constraints. They can enhance address prestige, generate an environmental premium, and stimulate the development of tourism, hospitality, creative industries, and small businesses. At the same time, they may increase maintenance costs, impose restrictions on reconstruction, and create risks of regulatory uncertainty. Therefore, to measure the impact of heritage sites on real estate values in a scientifically sound manner, it is necessary to move beyond simplified notions of a purely “positive” or “negative” effect and instead analyze the net capitalization effect.

For Ukraine, this issue is particularly acute. Domestic debates on cultural heritage protection often focus on prohibitions, the formal classification of property as state or municipal ownership, and conflicts with development interests. Far less attention is paid to how heritage influences the market value of assets, the level of real estate taxation, owners' investment incentives, and the long-term economic competitiveness of historic areas. Even fewer tools have been developed to measure this impact using contemporary data sources—such as digital traces, platform visibility, user reviews, photo streams, and spatio-temporal patterns of attention. For this reason, what is needed is not merely another functional framework, but a methodologically coherent, multi-level evaluation model that integrates spatial economics, institutional analysis, and digital urban studies.

Analysis of Recent Studies and Publications

International real estate studies have convincingly demonstrated that cultural heritage can be capitalized into property values both directly and through spatial spillover effects. One of the classical empirical benchmarks is the work of F. Lazrak, P. Nijkamp, P. Rietveld, and J. Rouwendal, which, using a spatial hedonic model for the Dutch city of Zaanstad, identified three distinct channels of impact: a premium for the heritage status of the property itself, a premium for neighboring buildings, and a premium associated with being located within a protected heritage environment [5]. According to this study, buyers were willing to pay an additional price both for listed buildings and for properties situated within historic ensembles, thereby confirming the existence of an "historic environment effect" rather than merely an "individual monument effect" [5].

Subsequent research, including studies on UNESCO inscription effects in Italy, further refined these findings by showing that the positive impact of heritage often operates through tourism flows, income growth, and gentrification processes, with the strongest effects observed in highly urbanized municipalities [9].

An additional line of research addresses cultural heritage as a factor of local development. Studies in cultural economics and urban studies demonstrate that heritage generates not only direct market benefits, but also option value, existence value, bequest value, as well as indirect spillover effects on small business development, employment, place branding, and municipal tax revenues [1; 3; 4; 7; 8]. In this context, the UNESCO Historic Urban Landscape approach is particularly significant, as it conceptualizes the historic city not as a static museum artifact, but as a living system in which the conservation of cultural resources is integrated with broader social and economic development objectives [3]. Emerging integrated assessment frameworks, including index-based and multi-criteria models, seek to combine conservation, social, infrastructural, and economic parameters into unified diagnostic tools [22].

At the same time, the classical empirical literature has several limitations. First, a substantial share of studies relies on hedonic pricing models in which heritage is reduced to one or two variables, such as distance to a monument, formal designation status, or location within a historic district. Second, many models insufficiently account for the institutional context, including the presence or absence of usage regimes, conservation agreements, uncertainty regarding permitted interventions, and enforcement practices. Third, traditional approaches rarely integrate digital data sources, which today increasingly capture public perception of place, intensity of symbolic consumption, and actual platform-based visibility.

Against this backdrop, a new research direction has emerged, focusing on the use of big geospatial data, social media, street-view imagery, mobility data, rating platforms, and explainable AI. Studies on place-oriented hedonic pricing have shown that housing prices are influenced not only by structural and locational characteristics, but also by human dynamics and place perception, which can be measured using mobility datasets and visual analytics [10]. Research based on Google Maps data demonstrates that even the attributes of surrounding urban points of interest and their platform-based popularity are statistically associated with real estate prices, with this relationship often exhibiting non-linear

patterns [11]. Analyses of user reviews and thematic content of comments on urban infrastructure suggest that crowd-sourced data can be operationalized as indicators of public perception of the urban environment [13]. Social media are also increasingly used to identify early signals of spatial change, including gentrification pressure and shifts in neighborhood reputation [12].

In Ukrainian academic literature, an important theoretical foundation has been established regarding the management of historic areas, risk assessment of urbanization for cultural heritage, restoration and reconstruction of historic cities, and the role of cultural landscapes [2; 20; 21; 23; 24]. However, several key aspects remain underdeveloped: (a) the economic theory of heritage capitalization in real estate values; (b) the integration of spatial and digital data for measuring such effects; (c) the institutional analysis of differences between formal ownership structures and actual conservation capacity; and (d) the fiscal dimension of heritage impacts through property taxation and budget revenues. These gaps define the research niche of this article.

Purpose and objectives of the research

The aim of this research is to develop a multilevel theoretical and methodological framework for assessing the impact of cultural heritage sites on the value of urban land and real estate. The proposed framework integrates conventional spatial analytical tools with emerging digital indicators reflecting public attention, reputation, and patterns of place usage.

To achieve this aim, the following objectives were addressed:

1. to systematize the economic transmission channels through which heritage assets and historic environments influence real estate markets.
2. to synthesize traditional methods for assessing heritage effects based on geospatial data and market monitoring.
3. to justify the use of novel data sources, including reviews, ratings, photo streams, social media, visual analytics, and digital mobility traces.

4. to formulate the concept of net heritage capitalization and propose its analytical structure.
5. to demonstrate that heritage protection is determined not merely by ownership form, but by the quality of the institutional regime, including registered restrictions, protection agreements, enforceability of use control, maintenance capacity, and predictability of legal enforcement.
6. to identify fiscal and spatial externalities associated with increases or decreases in real estate values within historic areas.

Materials and Methods of the Study

The study is of a theoretical and methodological nature and is based on a combination of several groups of methods. First, an institutional analysis of Ukrainian legislation in the field of cultural heritage protection was conducted, in particular provisions regulating the use regimes of monuments, historical areas, and heritage protection agreements [16–18]. Second, methods of real estate and land economics were applied, primarily the hedonic approach, which allows decomposing the market price of a property into the value of its individual characteristics—structural, locational, environmental, and institutional ones [5; 10; 11; 14]. Third, tools of spatial econometrics were used, accounting for spatial dependence, diffusion of price effects, and the heterogeneity of heritage impacts depending on the scale and configuration of the historical environment [5; 10].

The material basis of the proposed model consists of five groups of data. The first group includes classical market data: transaction or listing prices, property type, floor area, technical condition, number of floors, functional use, year of construction, and land parcel characteristics. The second group comprises spatial data: object coordinates, distance to monuments, protection zones, tourist attractions, central places, public transport stops, green areas, and pedestrian accessibility routes.

The third group includes institutional data: heritage status, existence of a protection agreement, availability of scientific and design documentation, usage regimes, restrictions on reconstruction, building height and façade modifications, and permitted functional uses. The fourth group consists of financial and organizational data: maintenance costs, funding sources, ownership type, availability of co-financing or tax incentives, and investment programs for revitalization.

The fifth group encompasses digital traces: number and dynamics of reviews, average ratings, thematic structure of comments, volume of uploaded photographs, visual richness of images, frequency of mentions in social media, geotagged routes, indicators of human mobility, and street-view or other sources of visual perception of the environment [10–15].

The methodological logic of the study is structured across three levels. At the first level, the basic spatial effect of heritage is assessed through distance to monuments, density of heritage assets within a given radius, inclusion in a historical area, and accessibility of key urban functions. At the second level, variables of regulatory certainty are introduced into the model, including formalized usage regimes, protection agreements, legal predictability, and the presence of defined intervention requirements. At the third level, indicators of public attention and platform visibility are incorporated, reflecting not the potential but the realized symbolic and touristic value of place.

The generalized specification of the proposed model can be presented as follows:

$$Vi = f\ (H_i, R_i, D_i, C_i, X_i, W_i),$$

where V_i–denotes the market value of the i-th property; H_i −represents the spatial heritage effect (heritage exposure); R_i − captures regulatory regime parameters; D_i – reflects digital indicators of public attention and reputation; C_i −denotes the capacity for maintenance and physical condition; X_i −is a vector of control structural and locational variables; and W_i −represents the matrix of spatial interdependencies.

This specification allows a shift from the narrow question of “does a heritage site increase property values?” to a more complex but significantly more analytically

productive inquiry: “under what conditions, through which channels, and in what configuration does heritage become capitalized or, conversely, discounted in real estate prices?”

For the interpretation of results, it is proposed to adopt the principle of explainable valuation: if machine learning algorithms are applied, their outputs should be complemented with interpretable measures of the contribution of individual variables and verified against professional standards of transparency [15].

This is particularly important in domains where valuation outcomes affect taxation, compensation mechanisms, urban planning regulations, and judicial disputes.

Results and Discussion

1. The economic nature of heritage impacts on real estate values

From an economic perspective, heritage sites do not directly influence property prices. Instead, they operate through changes in the flow of benefits and costs expected by owners, buyers, tenants, or investors. Any real estate price represents the present capitalization of anticipated future advantages and risks associated with the use of the asset.

If a heritage site or historic environment enhances the prestige of an address, tourist flows, pedestrian activity, symbolic place recognition, commercial traffic, aesthetic quality of the environment, or the reputation of a neighborhood, these effects are transformed into a heritage premium. Conversely, if heritage status is associated with high transaction costs, uncertainty regarding permissible interventions, physical deterioration of assets, insufficient maintenance resources, or excessive tourism pressure, a heritage discount emerges.

On this basis, the study introduces the concept of Net Heritage Capitalization (NHC), defined as the difference between the Heritage Premium (HP) and the Heritage Discount (HD):

$$NHC=HP-HD,$$

where HP represents the set of positive effects capitalized into property value, and HD represents the set of negative effects that reduce price or increase the discount rate applied to the asset.

This formulation is fundamental because it eliminates the false dichotomy according to which cultural heritage either “always increases value” or “always hinders development.” Market outcomes depend on the interplay of at least six groups of factors: aesthetic-symbolic, tourism-commercial, regulatory-institutional, infrastructural, operational-cost, and reputation-digital.

For this reason, the same heritage asset may generate a price premium for a nearby restaurant, while simultaneously producing a discount for a neglected building lacking a clear legal regime and access to restoration financing.

Table 1. Channels of influence of cultural heritage on urban land and real estate values

Channel of influence	Economic content	Potential sign of effect	Typical indicators
Aesthetic-symbolic	Increasing the prestige of the address, the quality of the visual environment, the identity of the place	Mostly positive	architectural integrity, monument visibility, environmental assessment
Tourist and commercial	Growth in attendance, foot traffic, demand for rentals and services	Positive/Mixed	visitor flow, number of establishments, commercial turnover
Regulatory and institutional	The impact of restrictions and predictability of the use regime on investment risk	Positive for high certainty; negative for uncertainty	security agreement, modes of use, duration of approvals
Infrastructure	Improvement or underdevelopment of access, amenities, public spaces	Mixed	transport accessibility, walking routes, landscaping

Expendable	The need for repairs, restoration, special materials, compliance with regimes	Mostly negative for the individual owner	maintenance costs, restoration costs, technical condition
Reputational and digital	Online visibility, ratings, reviews, photo streams as signals of market attention	Positive/Mixed	rating, number of reviews, tone, number of photos

Source: summarized by the authors based on [1; 3–5; 9–15; 22].

In the Ukrainian context, the traditional spatial approach should be extended by at least three additional components. First, it is necessary to distinguish between the effect of an individual monument and the effect of an ensemble, a block, or a historic district. The price premium generated by a coherent historic environment is generally more stable than the premium associated with an isolated object embedded in a degraded surrounding context.

Second, distance should be complemented by accessibility indicators: not merely how many meters separate a property from a heritage site, but how many minutes of walking are required to reach it, how well it is integrated into public routes, and whether it is visible from key public spaces. This shifts the focus from Euclidean proximity to functional and experiential accessibility.

Third, it is essential to account for both formal and de facto regulatory geography – including the boundaries of historic areas, monument protection zones, buffer zones, and regulated districts, as well as the degree of their legal and cartographic clarity and enforcement [16–18; 20].

Table 2. Traditional and New Data Sources for Assessing the Impact of Heritage

Data group	Zmist	Advantages	Limitation
Market data	transaction prices, rental rates, property characteristics	directly reflect the capitalized cost	incompleteness, different quality standards, update lags
Geodata	coordinates of monuments, boundaries of areas, transport, landscaping	suitable for GIS analysis and spillover modeling	do not capture reputational and emotional factors

Regulatory and legal data	modes of use, security agreements, documentation	allow to assess regulatory certainty	often fragmentary or incompletely digitized
Environmental monitoring data	technical condition, investments, tourist flow	allow to assess value maintenance	need regular collection
Digital footprints	reviews, ratings, photos, routes, mentions	capture actual public attention and perception	representativeness, platform biases, legal restrictions

Source: compiled by the authors.

2. New digital tools: from platform visibility to public emotion analysis

Contemporary urban environments are assessed by the market not only through physical proximity to valuable assets, but also through their media, platform-based, and social presence. While classical urban studies operated with maps and cadastral data, digital urbanism also works with a "map of attention." The number of reviews about a monument or district, average place ratings, dynamics of photo uploads, frequency of mentions in social media, thematic structure of comments, and photographic density along routes all serve as indirect yet informative indicators of how strongly a place is represented in the shared perception of residents, tourists, and businesses [11–13].

For this reason, digital traces should be considered not only indicators of popularity but also of the economic activation of heritage. If a cultural heritage site has a high rating, a large number of reviews, a stable flow of photographs, and a positive thematic structure of comments, this implies that its cultural significance is no longer merely normatively defined but has become part of the everyday practice of urban space consumption. Such "activated heritage" is more likely to be capitalized into the value of nearby commercial real estate, short-term rental markets, food and beverage establishments, tourism services, and subsequently even residential assets.

At the same time, digital indicators cannot be treated as a simple substitute for official statistical data. They should function as a complementary analytical layer. First, online reputation can be manipulated or socially biased. Second, the popularity of a heritage site does not necessarily imply a positive impact on residents: a place may receive high ratings

from tourists while simultaneously degrading local living conditions due to noise, pressure on infrastructure, and rising rents. Third, digital traces primarily reflect the behavior of platform-active groups and therefore require correction for demographic and spatial representativeness [12; 13].

Despite these limitations, the inclusion of digital traces in the assessment model is methodologically justified. Studies based on Google Maps have demonstrated that the characteristics of points of interest (amenities) and their popularity are nonlinearly associated with housing prices, while machine learning approaches allow the detection of relationships that are poorly captured by linear regression models [11]. Other research has shown the feasibility of using review texts as a source of structured information on sentiment, thematic content, and perceived functional attributes of places [13].

Accordingly, for historic areas it is reasonable to construct a dedicated set of digital indicators: a platform visibility index, a positive sentiment index, a visual intensity index, a route inclusion index, and a seasonal attention index (Table 3).

Table 3. Proposed block of digital indicators for assessing the impact of heritage

Indicator	**Content**	**Data source**	**Possible economic interpretation**
Platform Visibility Index	number of reviews, frequency of mentions, dynamics of attention	mapping services, social networks	degree of market recognition of the place
Reputation index	average rating and tone of comments	Google Maps and other public platforms	expected quality of the environment for the consumer
Visual intensity index	number of photos, variety of angles, stability of the photo stream	photo platforms, open galleries	aesthetic and tourist appeal

Route inclusion index	density of geotagged routes, pedestrian accessibility	mobile and geospatial data	commercial traffic and accessibility
Emotional Perception Index	proportion of positive/negative descriptions, value themes	NLP analysis of comments	the quality of the symbolic capital of the territory

Source: developed by the authors.

3. Pure inheritance capitalization model

The main theoretical proposition of the present study is that the impact of heritage sites on real estate values should not be measured as a simple "presence of cultural heritage" effect, but rather as an outcome of the interaction of three regimes: the regime of visibility, the regime of institutional certainty, and the regime of capacity.

The regime of visibility captures the extent to which a heritage site is embedded in the actual use of urban space—pedestrian routes, tourist trajectories, consumption patterns, visual practices, and digital platforms. An "invisible" heritage asset, even if highly valuable in historical and cultural terms, tends to be weakly capitalized in property prices.

The regime of institutional certainty reflects the quality of the regulatory and governance framework surrounding heritage: whether boundaries and use restrictions are clearly defined, whether conservation agreements exist, whether intervention rules are transparent, and whether the risk of arbitrary changes in administrative practice is low. It is this regulatory certainty that transforms a heritage asset from a source of uncertainty into a stable spatial asset [16–18].

The regime of capacity characterizes the availability of financial, organizational, and managerial resources required by the owner or user to maintain the physical condition of the asset. If a heritage site is neglected and its owner—whether public, municipal, or private—is unable to ensure adequate maintenance, conservation, restoration, and appropriate use, the positive heritage premium rapidly erodes and may instead transform into a price discount.

Within this theoretical framework, the following four scenarios are proposed:

1. High visibility + high certainty + high capacity = stable heritage premium This configuration produces a persistent and predictable price premium associated with heritage value.

2. High visibility + low certainty = volatile premium or speculative growth with elevated risk.

3. In this case, strong spatial or symbolic exposure is not supported by stable institutional conditions, leading to price fluctuations and speculative dynamics.

4. Low visibility + high certainty = conservation-protected but weakly capitalized asset.

Here, heritage is institutionally safeguarded, but its limited integration into everyday urban practices results in weak or marginal effects on real estate valuation.

5. Low capacity under any ownership structure = physical degradation and gradual erosion of the heritage premium.

Insufficient financial, organizational, or managerial capacity leads to deterioration of the built environment and a progressive loss of any positive price effect associated with heritage status.

This typology makes it possible to overcome the simplified view that treats heritage as a self-sufficient "price driver." The driver of value is not cultural significance per se, but rather institutionally supported and socially activated cultural value. This distinction captures the key difference between an abstract "heritage site on paper" and a genuinely capitalized heritage asset embedded in urban and market dynamics.

5. On the fallacy of the claim that public ownership automatically ensures the protection of heritage monuments.

One of the most persistent myths in post-Soviet cultural and archaeological heritage policy is the assumption that public or municipal ownership provides better protection for monuments than private ownership. From an institutional perspective, this assumption is methodologically flawed. The form of ownership merely defines the holder of rights and obligations; it does not guarantee either adequate maintenance resources, quality of

management, or compliance with use restrictions. Ukrainian legislation explicitly stipulates that the owner or user of a monument is obliged to maintain it in proper condition, carry out timely repairs, and protect it from damage, destruction, or deterioration, while its use must comply with established protection regimes [16]. Thus, the protective logic of the law is not tied to the public or private status of the owner, but rather to the enforcement of specific conservation requirements.

Moreover, the legal framework governing historic areas and heritage protection agreements demonstrates that the key instruments of conservation are regulatory regimes and the formalization of constraints: delineation of protected area boundaries, specification of permissible interventions, conclusion of heritage protection agreements, preparation of scientific and project documentation, and administrative supervision [17; 18]. In the absence of these elements, even the presence of a monument in state or municipal ownership does not create an effective protection mechanism.

From an economic perspective, public ownership often entails structural limitations that can reduce the likelihood of adequate conservation outcomes: fragmented responsibility, the absence of a clear residual claimant, budget constraints, slow decision-making processes, political volatility in priorities, and difficulties in attracting long-term investment. For the state and local governments, chronic underfunding of large portfolios of real estate is typical, resulting in heritage assets remaining under-maintained for extended periods. In such cases, public ownership does not safeguard the monument but merely postpones its eventual deterioration through administrative means.

At the same time, private ownership does not inherently guarantee preservation either. In the absence of clear, measurable, and enforceable restrictions, private owners may seek to maximize short-term returns through aggressive redevelopment, façade alterations, or destructive adaptation. Therefore, the correct conclusion is not that either private or public ownership is inherently superior, but rather that effective heritage conservation emerges only when property rights are encumbered by a transparent

regulatory regime, supported by oversight, reinforced by adequate financial maintenance mechanisms, and integrated into a system of market-compatible incentives.

Table 4. Security effectiveness matrix depending on the restriction regime and the owner's capacity

Ownership form	Clear security restrictions	Holding capacity	Likely result for the landmark	Expected effect on environmental value
Public	No	Low	formal protection without real preservation; degradation	discount due to decline and uncertainty
Public	Yes	Low	partial protection, but delayed repairs and accumulation of wear and tear	weak or unstable premium
Public	Yes	High	stable preservation, possibility of revitalization	positive bonus
Private	No	High	high risk of destructive adaptation or distortion	short-term growth, long-term risk
Private	Yes	Low	compliance with the regime is complicated by a lack of resources	neutral or negative effect
Private	Yes	High	the best conditions for preservation and economic revitalization	stable positive premium

Source: author's development.

6. Externalities of inheritance: from property tax to economic growth

The increase in the value of real estate in historic areas has not only a private but also a public dimension. If cultural heritage increases the price of residential and commercial real estate, then the property tax base also increases, which, if local taxes are properly set, should be reflected in the financial capacity of the community [19]. In this sense, heritage protection creates a fiscal externality: part of the benefits from cultural value are returned to the local budget and can potentially be reinvested in the maintenance of the historic environment. In an ideal design, a closed cycle arises: protection →

improvement of the quality of the environment → increase in market value → expansion of the tax base → additional resources for conservation.

However, this cycle is not automatic. First, in Ukraine, the relationship between market value growth, the valuation base, and budget policy remains indirect. Second, without special mechanisms for returning part of the value increase to conservation needs, the classic problem of the mismatch between private gain and public expenditure arises. Owners receive a premium from the prestige of the historical environment, but the costs of maintaining it are often borne by the public budget or are not incurred at all. That is why it is advisable to discuss mechanisms for capturing value - from targeted restoration co-financing programs to instruments for partial withdrawal of heritage rent in the interests of environmental protection [6].

Along with positive fiscal externalities, there are also negative ones. Rising prices can accelerate the displacement of less affluent residents, change the social structure of historic districts, stimulate the conversion of housing to short-term rentals, increase speculative pressure on land, and exacerbate the conflict between everyday life and tourist consumption of the place [9; 13]. Therefore, assessing the impact of monuments on real estate values cannot be limited to fixing a premium; it should include an analysis of the distribution of benefits and costs between owners, residents, businesses, and the community.

7. Methodological conclusions for Ukraine

For Ukrainian cities, the most productive is the phased assessment model. At the first stage, a single geospatial layer of historical areas, protected areas, monuments and use restrictions should be formed. At the second stage, it should be integrated with market monitoring arrays of real estate and land plots. At the third stage, digital indicators of platform visibility, reputation and visual activity should be added. At the fourth stage, a spatial hedonic or hybrid explainable AI model should be built, which will allow the contribution of regulatory, cultural, digital and infrastructure factors to be separately

assessed. At the fifth stage, the results should be translated into management decisions: regimes, tax settings, revitalization programs, co-financing agreements, prioritization of public investments.

The key methodological principle should be to abandon the assessment of heritage as a mere “protection burden”. A monument is a special kind of capital – unreproduced, spatially fixed, symbolically rich and sensitive to the quality of institutional management. In this sense, heritage protection is not an alternative to economic development, but one of its tools. Where a cultural resource becomes understandable, manageable and integrated into the market and urban policy, it increases the value of the environment. Where a monument remains legally undefined, physically neglected and financially unprotected, it becomes a source of degradation and price discounting.

Conclusions and prospects for further research

The article substantiates that the impact of cultural heritage sites on the value of urban land and real estate is multi-channel in nature and cannot be adequately described only by the distance to the site or the formal status of the site. The concept of pure heritage capitalization is proposed as the difference between the heritage premium and discount. This allows us to explain both positive and negative effects of heritage depending on the combination of spatial attractiveness, regulatory certainty and the owner's ability to ensure proper maintenance.

It is shown that traditional valuation methods - hedonic pricing, spatial analysis, GIS modeling, market monitoring analysis - remain basic and necessary. However, for modern historical territories they should be supplemented with new digital tools: analysis of social networks, comments and ratings on mapping services, photo streams, geotagged routes, visual analytics and other indicators of actual public attention to the place. It is the combination of these sources that makes it possible to move from static measurement of heritage to analysis of its real market-activated value.

Theoretically, the idea that public ownership automatically protects monuments has been proven false. Protection is ensured not by the form of ownership, but by the institutional quality of the protection regime: clearly registered and measurable restrictions, a protection contract, supervision, predictability of enforcement, and the resource capacity of the owner. In the absence of these elements, state or municipal ownership can lead to the degradation of a monument just as much as private ownership.

It has been found that the increase in real estate values in historic areas generates important externalities: an increase in the tax base, increased investment attractiveness, expanded opportunities for local businesses, but also risks of social displacement, tourist overload and speculative pressure. Therefore, the protection of cultural heritage should be considered as an investment in maintaining real estate values, the financial viability of communities and the long-term economic growth of historic areas.

Prospects for further research are related to the empirical testing of the proposed model in Ukrainian historical cities, the construction of panel databases on transactions and leases, the development of an index of digital visibility of monuments, as well as the study of mechanisms for fiscal capture of value, which will allow directing part of the heritage premium to the reproduction and preservation of the historical environment.

References

1. Fedorovych, O., & Rubanovskyi, K. (2019). *Ekonomika spadshchyny: posibnyk dlia malykh hromad* [Economics of heritage: A guide for small communities]. Ivano-Frankivsk: Turystychna asotsiatsiia Ivano-Frankivshchyny; TOV “Znaty pro Zakarpattia”. 120. [in Ukrainian]

2. Prokopenko, I. (Ed.). (2022). *Konservatsiia i restavratsiia obiektiv kulturnoi spadshchyny* [Conservation and restoration of cultural heritage objects]. Kyiv: Samit-knyha. 434. [in Ukrainian]

3. UNESCO. (2011). *Recommendation on the Historic Urban Landscape*. Available at: https://whc.unesco.org/en/hul/

4. Mason, R. (2005). *Economics and historic preservation: A guide and review of the literature*. Washington, DC: The Brookings Institution Metropolitan Policy Program. 75 p.

5. Lazrak, F., Nijkamp, P., Rietveld, P., & Rouwendal, J. (2014). The market value of cultural heritage in urban areas: An application of spatial hedonic pricing. *Journal of Geographical Systems, 16*(1), 89–114. DOI: https://doi.org/10.1007/s10109-013-0188-1

6. Wu, J., Hu, Y., Wang, Q., Chen, Y., He, Q., & Ta, N. (2019). Exploring value capture mechanisms for heritage protection under public leasehold systems: A case study of West Lake Cultural Landscape. *Cities, 86*, 198–209. DOI: https://doi.org/10.1016/j.cities.2018.09.014

7. Panzera, E., de Graaff, T., & de Groot, H. L. F. (2021). European cultural heritage and tourism flows: The magnetic role of superstar World Heritage Sites. *Papers in Regional Science, 100*(1), 101–123. DOI: https://doi.org/10.1111/pirs.12562

8. Muštra, V., Škrabić Perić, B., & Pivčević, S. (2023). Cultural heritage sites, tourism and regional economic resilience. *Papers in Regional Science, 102*(3), 465–483. DOI: https://doi.org/10.1111/pirs.12731

9. Bertacchini, E., Revelli, F., & Zotti, R. (2024). The economic impact of UNESCO World Heritage: Evidence from Italy. *Regional Science and Urban Economics, 105*, Article 103996. DOI: https://doi.org/10.1016/j.regsciurbeco.2024.103996

10. Kang, Y., Zhang, F., Gao, S., Peng, W., & Ratti, C. (2021). Human settlement value assessment from a place perspective: Considering human dynamics and perceptions in house price modeling. *Cities, 118*, Article 103333. DOI: https://doi.org/10.1016/j.cities.2021.103333

11. Taecharungroj, V. (2021). Google Maps amenities and condominium prices: Investigating the effects and relationships using machine learning. *Habitat International, 118*, Article 102463. DOI: https://doi.org/10.1016/j.habitatint.2021.102463

12. Comber, A., Kieu, M., Bui, Q.-T., & Malleson, N. (2024). Using social media data to identify neighbourhood change. *AGILE: GIScience Series, 5*, Article 20. DOI: https://doi.org/10.5194/agile-giss-5-20-2024

13. Xiong, Y., Liang, J., & Guan, C. (2025). Decoding public sentiment topics in Google Map reviews on urban infrastructure development of Belt and Road Initiative. *Scientific Reports, 15*, Article 21363. DOI: https://doi.org/10.1038/s41598-025-06451-6

14. Kee, T., & Chau, K. W. (2025). An empirical study on the economic factors of the architectural industrial heritage of Hong Kong via the hedonic pricing model. *Built Heritage, 9*, Article 19. DOI: https://doi.org/10.1186/s43238-025-00193-0

15. Yiu, C. Y., & Cheung, K. S. (2025). Enhancing explainable AI land valuations reporting for consistency, objectivity, and transparency. *Land, 14*(5), Article 927. DOI: https://doi.org/10.3390/land14050927

16. Verkhovna Rada Ukrainy. (2000). *Pro okhoronu kulturnoi spadshchyny: Zakon Ukrainy № 1805-III* [On protection of cultural heritage: Law of Ukraine No. 1805-III]. Available at: https://zakon.rada.gov.ua/go/1805-14 [in Ukrainian]

17. Kabinet Ministriv Ukrainy. (2001). *Pro zatverdzhennia Poriadku ukladennia okhoronnykh dohovoriv na pam'iatky kulturnoi spadshchyny…: Postanova № 1768* [On approval of the procedure for concluding protection agreements…: Resolution No. 1768]. Available at: https://zakon.rada.gov.ua/go/1768-2001-%D0%BF [in Ukrainian]

18. Kabinet Ministriv Ukrainy. (2002). *Pro zatverdzhennia Poriadku vyznachennia mezh ta rezhymiv vykorystannia istorychnykh arealiv…: Postanova № 318* [On approval of the procedure for defining boundaries and usage regimes…: Resolution No. 318]. Available at: https://zakon.rada.gov.ua/go/318-2002-%D0%BF [in Ukrainian]

19. Verkhovna Rada Ukrainy. (2010). *Podatkovyi kodeks Ukrainy № 2755-VI* [Tax Code of Ukraine No. 2755-VI]. Available at: https://zakon.rada.gov.ua/go/2755-17 [in Ukrainian]

20. Martyn, A. H., Novakivska, I. O., & Novakovskyi, D. L. (2024). Upravlinnia istoryko-kulturnoiu tsinnistiu terytorii cherez formuvannia istorychnykh arealiv mist

[Management of historical and cultural value of territories through the formation of historical areas of cities]. *Zemleustrii, kadastr i monitorynh zemel, 1*, 35–48. DOI: http://dx.doi.org/10.31548/zemleustriy2024.01.03 [in Ukrainian]

21. Novakivska, I. O., Bereza, O. I., & Novakovskyi, D. L. (2024). Otsinka ryzykiv dlia kulturnoi spadshchyny v umovakh urbanizatsii [Risk assessment for cultural heritage under urbanization]. *Naukovi perspektyvy. Seriia "Ekonomika", 1*(43), 514–526. DOI: https://doi.org/10.52058/2708-7530-2024-1(43)-514-525 [in Ukrainian]

22. Vinod, V., Sarkar, S., & Roy, S. (2025). From heritage valuation to evidence-based computational heritage town planning: Methodological development and application of the cultural heritage town development index. *Urban Science, 9*(12), Article 514. DOI: https://doi.org/10.3390/urbansci9120514

23. Humeniuk, T., & Som-Serdiukova, O. (2020). Pidstupy do dyskursu pro kulturnyi landshaft: kros-ievropeiskyi pidkhid [Approaches to the discourse on cultural landscape: A cross-European perspective]. *Naukovi zapysky NaUKMA. Istoriia i teoriia kultury, 3*, 5–12. DOI: https://doi.org/10.18523/2617-8907.2020.3.5-12 [in Ukrainian]

24. Kulyniak, I. Ya., Karyi, O. I., Prokopyshyn-Rashkevych, L. M., Ohinok, S. V., & Bondarenko, Yu. H. (2023). *Ievropeiskyi dosvid populiaryzatsii istorychnoi spadshchyny ta kulturnoho turyzmu: navchalnyi posibnyk* [European experience in promoting historical heritage and cultural tourism: A textbook]. Lviv: Rastr-7. 254. [in Ukrainian]

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БАГАТОРІВНЕВА МОДЕЛЬ ОЦІНЮВАННЯ ВПЛИВУ ОБ'ЄКТІВ КУЛЬТУРНОЇ СПАДЩИНИ НА ВАРТІСТЬ МІСЬКИХ ЗЕМЕЛЬ І НЕРУХОМОСТІ

Анотація. *У статті запропоновано багаторівневу теоретико-методичну модель оцінювання впливу об'єктів культурної спадщини на вартість міських*

земель і нерухомості. Актуальність дослідження зумовлена тим, що в українській практиці історичне середовище й досі переважно розглядається як обмеження для забудови, тоді як його ринковий, фіскальний і просторовий ефект лишається недостатньо виміряним. Метою статті є концептуалізація механізмів капіталізації спадщини у вартості нерухомості та формування аналітичного інструментарію, який поєднує класичні просторові методи з новими цифровими індикаторами суспільної уваги. Методологія дослідження спирається на поєднання інституціонального аналізу, гедонічного ціноутворення, просторової економетрики, аналізу зовнішніх ефектів, а також на використання даних геоінформаційних систем, ринкового моніторингу, цифрових слідів користувачів, відгуків і фотометричних індикаторів платформеної видимості. Обґрунтовано, що вплив пам'яток на вартість проявляється через кілька каналів: естетико-символічний, туристично-комерційний, інституційно-регуляторний, інфраструктурний, репутаційний та фіскальний. Наукова новизна полягає у введенні поняття «чиста капіталізація спадщини», яка визначається як різниця між премією та дисконтом спадщини. Показано, що позитивний ціновий ефект виникає не автоматично через сам факт наявності пам'ятки, а за наявності чітко зареєстрованих режимів використання, зрозумілого охоронного договору, низької регуляторної невизначеності та достатньої спроможності власника забезпечувати утримання об'єкта. Практична значущість статті полягає у формуванні рамки для удосконалення нормативної грошової оцінки, податкової політики, містобудівного регулювання та інвестиційних рішень у межах історичних ареалів. Зроблено висновок, що охорона культурної спадщини є не витратою споживчого характеру, а довгостроковою інвестицією у підтримання цінності нерухомості, бюджетної бази громад та економічного зростання історичних територій.

Ключові слова: *культурна спадщина; історичні ареали; вартість нерухомості; міські землі; просторова економетрика; гедонічне ціноутворення; цифрові сліди; охоронні обмеження.*