

VALUATION OF MONUMENT BUILDINGS – INSURED VALUE OF OBJECTS



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Summary

The forthcoming transfer of St. Isaac's Cathedral in St. Petersburg being a UNESCO World Heritage Site to the Russian Orthodox Church ignites a heated debate within the Russian society. The cathedral being part of the State Museum Complex stands out as a pearl of the world's iconic architecture. Furthermore, it is the second most visited museum after the Hermitage, boasts an outstanding exhibition potential, and it regularly hosts church services and ritual events. Museum collections exceed twenty-four thousand items of storage, and they continue to be replenished with found rarities and newly restored objects with the status of a relic to be protected. It should be emphasized though that the protection of museum collections and the preservation of monument buildings in the country is extremely unsatisfactory [1]. In this case, there are not even approximate estimates of the market value of the object of research in the form of a monument-building St. Isaac's Cathedral with the occupied land plot, not to mention the reliable insured value of the assessed object, so necessary for compensation of damage and losses in the event of a catastrophe, fire and other spontaneous insurance of cases. The article is devoted to the professional appraisal of the insured value of the research object. The research is based on previously published series of papers by the author.

Key words

building monument, land plot, improvement,
real estate, real estate value, insurance value

JEL classification

G28, R390

"Money should be managed, not served"

Lucius Annie Seneca

a Roman philosopher, poet and politician [2]

Introduction

This article continues the discussion of the urban problem related to the transfer of the religious buildings of St. Petersburg to the Russian Orthodox Church (ROC). The discussion was presented in the following papers: «Herald of NAT», No. 4 (36) 2015, No. 4 (40) 2016, No. 3 2017, as well as in the foreign monographs [3].

On May 25, 2018, the police of the city of Moscow detained a vandal who, in the evening, broke a glass of the famous painting of Ilya Repin, "Ivan the Terrible and his son Ivan on November 16, 1581" (1883–85) in the Tretyakov Gallery (Figure 1). According to the official representative of the Ministry of Internal Affairs, a criminal case was instituted on damage to cultural heritage sites. According to the Telegramm channel "112", the detainee is an

Figure 1

"Ivan the Terrible and his son on November 16, 1581" (1883–85)



Source: ru.wikipedia.org.

unemployed person named Igor [22]. He said that he intentionally cut the picture with glass, because he considered the historical fact, represented by the artist, to be unreliable¹. The agency "Interfax" in the press service of the Tretyakov Gallery reported that the picture is seriously damaged. "The canvas is broken in three places in the central part of the work on the figure of the prince." The author's art frame was badly damaged from the fall of the glass, – they said [23].

The attacker seriously damaged the canvas, only the restoration of which, according to experts, will cost the museum more than 10 million rubles. But simultaneously it turned out that not a single picture from the collection of the Tretyakov Gallery is insured. Moreover, there is no insurance for any work of art in any museum of the Russian Federation, including the Hermitage. Not insured are in the territory of Russia and all monuments of architecture.

But monuments of architecture, history of culture and the world heritage burn in fires, suffer from natural disasters, anthropogenic pressure of tourists and visitors and so on. And these monuments were not insured for insurance because no one knows their insurance value. Their market value or intrinsic value is also unknown.

The main goal and problem of the study

Over the past three years, the public of St. Petersburg has been anxiously awaiting the end of the story of the donated transfer of St. Isaac's Cathedral of the Russian Orthodox Church. The last date the Ministry of Culture of the Russian Federation calls July 12, 2018 – the Day of Saints Peter and Paul, which is not the final date. But it remains unclear at what cost the ROC will take into account the Cathedral on its balance sheet?

Also, authorities and citizens are concerned about the future security and safety of this outstanding architectural monument, which has been working as a remarkable museum in recent years. Uncertainty of the future use of the disputable monument building, however, allows us to consider the accounting capabilities of the methodological tools of valuation activities to measure the market value of such a property and land plot with it, say, for insurance purposes. The latter and determines the main purpose of this study.

History of the problem

St. Isaac's Cathedral was built in 1818–1858 and designed by O. Montferrand. Its height at the time of completion of the construction exceeded 102 m, and the internal area was more than 4 thousand m². The Government of the Russian Federation transferred St. Isaac's Cathedral to St. Petersburg in October 2012. Three years later the St. Petersburg diocese of the ROC appealed to the city authorities for granting the right of free use of the building of St. Isaac's Cathedral, but was refused. The city government then decided to keep the cathedral in the operational management of the state museum–monument "St. Isaac's Cathedral".

In general, the seriousness of the problem was identified by the vice-governor of St. Petersburg, I.N. Albin (Албин И.Н.): "Once I happened to stand at the origins of the all-Russian Forum "Preservation of cultural heritage monuments". And the numbers that I encountered, they were frightening. Each year Russia loses about 360 architectural monuments. And at the same time, there will not be enough budgetary funds to tidy up our historical and cultural heritage. We need mechanisms to preserve and adapt architectural monuments for modern use [4].

In the community of real estate valuers a stereotyped view has emerged that the economic evaluation of *monument buildings* (MB) consists primarily of the valuation of their material condition [5]. Such an estimate is obtained by subtracting the physical depreciation of the Property from the full replacement value with the addition of the value of the land plot (hereinafter referred to as the *Plot*) without assessing the influence of time on the plot and without taking into account the belonging of the MB to the category of historical and cultural heritage, therefore, having historical and cultural value (*utility*), as one of the components of the market value of the MB, and the objectives that are pursued at the time of valuation.

What is, say, the main goal of the future use of St. Isaac's Cathedral after the likely transfer² of its ROC and giving it a special status of a patriarchal church (but with a double subordination), is not

yet fully clear. Will the cathedral preserve museum functions that bring monetary receipts to budgets of different levels, or will it be limited to divine services, the proper maintenance of which will require funding from urban sources, is the subject of discussion of the secular and ecclesiastical community of St. Petersburg. Here it should be clarified that the cathedral will be transferred to the gratuitous use of the ROC (despite the disagreement of the majority of St. Petersburg residents) for a period of 49 years, but without changing the legal status – the city remains its owner.

In 2016, the total income that brought St. Isaac's Cathedral as a museum, was, according to RBC, 466 million 813 thousand rubles. This is 60% of the total income of the museum complex, consisting of Isaac, *the Church of the Savior on the Blood* and *Sampsonievsky Cathedral* (now already, unfortunately, transferred to the ROC, previously transferred to *the Smolny Cathedral*). Expenditures of the same complex in 2016 amounted to more than 744 million rubles. To calculate expenses for Isaac property solely is difficult, since the directorate serves all the remaining temples of the museum complex. The most important item of expenditure is salaries to employees who are all employed in the museum (393). The costs under this item amounted to more than 358 million rubles. Some parameters of the successful, even impressive, economic activities of the cathedral as a museum over the past 10 years are shown in Table 1.

According to the head of the legal department of the Moscow Patriarchate – Mother Superior Xenia (Chernega), St. Isaac's Cathedral after the transfer to the ROC will gain the status of a patriarchal church [6]. Since all the key decisions concerning the temple will be taken by the patriarch, the administration of the cathedra will remain at the level of diocese. Moreover, the ROC will transfer to the St. Isaac's Cathedral an ark with particles of the relics of the apostles Peter, Paul and Andrew, as informed by a very well-informed source of RIA Novosti [7]. Representatives of the ROC also claim that the museum's functions of the cathedral will be developed, and the entrance to the cathedral will be free of charge.

¹ That is, the very fact of the cruel murder of Tsarevich – Prince Ivan Ivanovich – by Tsar Ivan IV in the next fit of rage, which is discussed in the domestic historical science.

² This probability increased in connection with the dismissal of the director of the State Museum–Monument prof. N.V. Burov – the staunch opponent of the transfer. But this probability did not become critical in connection with the appointment in June this year new director of the Museum of prof. Yu.V. Mudrov.

Table 1

Indicators of the museum activity of St. Isaac's Cathedral for 2008–2017

No in order	Years	Number of visitors, people	Revenues, rub.
1	2008	2 704 120	401 328 243
2	2009	2 525 455	395 972 328
3	2010	2 533 315	420 564 403
4	2011	2 642 039	492 099 076
5	2012	2 820 086	539 880 876
6	2013	3 019 760	584 243 186
7	2014	3 152 897	620 175 284
8	2015	3 686 428	737 574 405
9	2016	3 846 852	783 416 145
10	2017 (plan)	4 000 000	820 000 000

Source: own study.

The method involves determining the amount and time structure of the following characteristics:

- a) the costs necessary to include the site in commercial circulation in accordance with the option of its *the highest and best use* (H&BU);
- b) income from the H&BU of the site (for example, shown in Table 1) and the operating expenses necessary to extract the proper profit;
- c) determination of the discount rate corresponding to the level of investment risk in this assessed area and, finally;
- d) determining the market value of the site by discounting all revenues and expenses associated with the current use of the land.

The current Russian appraisal practice prefers the method of comparing sales (one of the methods of the comparative / market approach) and the residual method or the method of the intended use (from the group of methods of income approach) [11]. In the case of subject evaluation of real estate objects in the form of historical and cultural monuments, the valuation of sites is carried out according to a traditional procedure, with the exception of two significant points that should be clarified.

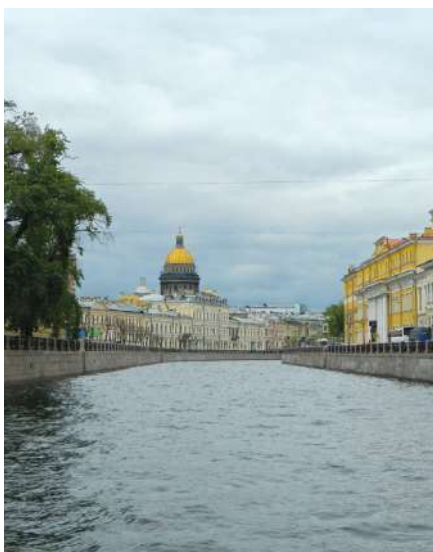
Legislative permission. When analyzing the H&BU of the site as conditionally free, it is necessary to pay attention to additional restrictions and encumbrances imposed by law and related, first of all, to the location of the site within the status historical building. Usually in this case the use of the site as conditionally free is limited by the construction of objects in the same constructive solutions and volumes as the existing object. However, most often this is due not so much to regulatory provisions—restrictions (only the high-level regulations of buildings in such zones are defined), but rather to the physical parameters of the site itself. Here we must understand that the security obligations imposed on improvements (*betterments*) can't be taken into account in the procedural analysis of the free land plot (*The Land Plot*).³

There are several cathedrals with the status of patriarchal in Russia, for example, the Naval Cathedral in Kronstadt. The Epiphany Cathedral (Elokhovsky) in Moscow, the Assumption Cathedral in the Moscow Kremlin, the Ascension Cathedral in Novocheerkassk (Rostov Region), etc. are among the patriarchal patriarchs. The Patriarchal church differs from the others in that it does not have a parish council [8]. In the matter of financing patriarchal churches, "there are no rules for the Moscow Patriarchate", Proto-deacon A. Kuraev explained to RBC: "Whatever decision the patriarch wishes to take, it will. But in general, from the point of view of financing, it is not possible to transfer money from the central patriarchal budget to the maintenance of a temple. From there, money can go only for the maintenance of patriarchal palace-residences." [9].

Statement of the problem, methodology of the study

On the basis of the sources and techniques of financing the future activities of the ROC Cathedral (modestly silent for obvious reasons), and according to the plan for the transfer of the ROC Cathedral, published by the Property Relations Committee of St. Petersburg on 12/01/2017, by 01.03.2017, it was necessary to determine the possibility of removing the cathedral from the museum's operational management without providing the institution with premises. But then, according to the information from the Ministry of Culture of the Russian Federation, the date for the transfer of the cathedral was postponed to July 12 – Saint Peter and Paul's Day. Uncertainty about the future use of the disputed BM, however, allows us to consider the accounting capabilities of the methodological toolkit for measuring the market value of the *Property Value* assessment, say, for insurance purposes [10].

Method of intended use. The method is used for valuation of built-up and undeveloped plots. The condition of applicability of the method is the possibility of using the land plot in a way that guarantees the extraction of profit.



St. Petersburg, view of St. Isaac's; Źródło: <http://pl.wikipedia.org>; Autor: Pavel Kirillov

³ The procedure for the owner to use the land plot belonging to him directly depends on his ownership of this or that category of land, which are established by Art. 7 of the Civil Code of the Russian Federation. These include: agricultural land; land settlements; special-purpose lands (including industrial, energy, transport, communication, radio broadcasting, television, informatics, land for space activities, defense, security and others); lands of specially protected territories (including lands of specially protected natural areas, including health resorts and resorts, nature protection purposes, recreational purposes, historical and cultural purposes and other especially valuable lands); lands of forest fund; lands of the water fund; reserve lands [12].

Security obligations are taken into account only when analyzing a land plot with existing improvements. In each specific case, the object of protection can be separate elements of decor (grilles, facade, stucco, etc.), or part of the building—monument, including the layout and interior decoration. In some cases, even the color of the interior walls, not to mention the mosaics of the nave and the dome of the temple, as in the case with St. Isaac's Cathedral, can be agreed upon. And here the objects of museum funds in the form of property (*Estate*) are inseparable from the BM itself as well as columns, mosaic icons, marble recesses, etc.

Based on the certificate submitted by the authorities of the cathedral to the Union of Museums in Russia, there are 26 459 items declared. The works are dated to XVIII–XXI century⁴. The collection consists of: paintings, icon paintings, graphics, sculptures, arts and crafts, numismatics, documents, rare books.

The section painting / icon painting includes, in the main, a collection of icons from the XVIII–XIX centuries. Sampsonievsky and St. Isaac's cathedrals. The icons of the Sampsonievsky Cathedral, some of which are signed (A. Kvashnin, A. Pospelov, T. Bazhenov) chronologically cover the period 1720–1761. They have great artistic and historical value, since Sampsonievsky Cathedral is one of the few almost completely preserved temple complexes of the first half of the 18th century. The museum's funds hold unique pictorial icons of Timoleon von Neff's brush from the 1st tier of the main iconostasis of St. Isaac's Cathedral with an area of 10.3 m² each, which were later replaced by a mosaic.

The icons of St. Isaac's Cathedral in niches of pylons, altar barriers, main and small iconostases were created by artists K. Shteiben, C. Mussini, H. Douzi, F. Bryullov, K. Moldavsky, K. Dorner, T. Neff, S. Zhivago in the first half of XIX century. In 2014, the collections were replenished with a collection of drawings by the artist K. Dorner, donated to the museum by the Senate of the city of Bremen. The museum stores sketches and drawings of masters who worked on the decoration of cathedrals – K. Briullov, N. Maykov, E. Plushar, A. Ryabushkin and other authors.

Of significant value are the albums of graphics by O. Montferrand, including the hand-written dedication of the

architect, and part of his graphic heritage, reflecting the design and construction stages of the St. Isaac's Cathedral. The history of the design of the cathedral is also represented by the works of the architects A. Voronikhin, A. Melnikov, the brothers Mikhailov, I. Wilster and V. Beretti [13].

An interesting block of materials is dedicated to the Church of the Savior on the Spilled Blood and its creators: two picturesque and photographic portraits of architect A. Parland, sketches by N. Bruni for the mosaics of the church, the large Coronation album of Emperor Alexander II, etc. The rare collection of drawings by architect A. Aplaxin reflects the stages of restoration of the Sampsonievsky cathedral for the anniversary of 1909. In 1997, the museum acquired the True Little Gospel of Sampsonievsky Cathedral in 1703.

The collection of the museum contains a unique exhibit – *The panorama of Nevsky Prospekt* of V. Sadovnikov in 1835, 15.6 m long, made in lithography technique and illuminated with watercolor. The theme of St. Petersburg is also represented by the graphics of the greatest masters of the 19th century – A. Durand, I.J. Meyer etc. Along with the mosaics located in the interior of St. Isaac's Cathedral, the funds hold objects of decorative and applied art in the technique of the Florentine and Venetian mosaic.

The museum has an extensive photographic library and a scientific and technical archive containing materials dedicated to restoration and repair work at museum sites and the history of the museum. During the planned inspection of the Ministry of Culture in December 2016, there were no violations of the rules for registering and storing museum valuables. All listed on full grounds can be called a museum encumbrance.

All these encumbrances differently affect the complex market and insurance value of the facility, producing, for example, additional costs that should be taken into account when measuring cash flows, additional types of wear, the transition of corrective wear to the state of incorrigible, etc. The impact of the

obligations taken on market and other costs is subject to special economic, technical and technological and expert analysis.

Another point is connected with the differentiation of the contribution to the total value of the real estate object of the location of the land plot and the return on capital, which this section, say, in the "golden triangle" of the urban territory allows to receive. The delineation of the influence of these factors takes on special significance for historical and cultural monuments with their location within the historical status of the territory. Taking into account most of these moments implies solving independent issues at the discretion of the assessor.

In particular, it is important to define the costs of reconstruction of land improvements. And here the first stage in determining the costs of reconstruction of improvements is to find out which particular value is more appropriate to establish – the restoration or replacement, and maybe even a combination / composition of these values.

Result

It appears to the author of this article that the cost of restoration is the cost of the estimate for new construction at current prices as of the date⁵ of the evaluation of the exact copy of the object under valuation and the use of identical building materials, standards and design solutions [14].

The replacement cost is the estimated cost of construction at current prices as of the valuation date of the object of the same utility as the appraised object, but using modern building materials, machinery, equipment, standards, design, and technological solutions. Obviously, in most cases, for objects that are historical and cultural monuments, it is more expedient to calculate the cost of replacement due to the difficulties in calculating the cost of building materials and technologies that are out-of-date. Substantially and methodologically the cost of substitution is calculated on the principle of the so-called substitution.

⁴ By 01.06.2017, it was required to provide information about all the items in the collection that are part of the Museum Fund of the Russian Federation. The key point concerns the conclusion of an agreement on the transfer to the use of the ROC of some of the artifacts that are included in this fund. It is about the so-called indivisible museum facilities, i.e. those that can't be removed from the cathedral. The implementation of this paragraph is given 24 months from the date of issuance of the order of the property relations committee.

⁵ To assess the cost of new construction by free or so-called contractual prices, as a rule, the base-index and resource (resource-index) methods of estimation that have proved themselves quite positively apply.

The principle of substitution, which is widely used in the cost approach to valuation, means that if there is a certain number of homogeneous (in terms of utility or profitability) real estate, the objects with the lowest price will boast the highest demand. This principle is based on the possibility of an alternative choice for the acquirer, i.e. the value of the property depends on whether there are similar or substituting facilities on the market.

The principle of substitution is most fully realized in new construction, in areas of mass residential or dacha development, when similar types of land prevail and the level of standardization of architectural and town-planning projects of buildings is high. Its use is difficult when evaluating unique, exclusive objects, in the form of, for example the entire BM of architecture, but it can be useful in evaluating construction and other elements of an object.

And yet, the definition of the cost of substitution does not give an exact value of the costs, because when calculating it, the costs of architectural decoration, for the development of an individual architectural project, for the use of unique building materials, etc. will not be taken into account. Such accounting problems arose when the cathedral church of Christ the Savior was being rebuilt in Moscow up to 1990 with the mass use of modern building and finishing materials. To overcome this financial discourse, it is easiest to start from the available methods of calculating the cost of reproduction of improvements, which strictly determine what kind of value will be received when applying the method.

As for methods of calculating the cost of reproduction, one can divide them into the following typological groups:

- *The comparative unit method* assumes the calculation of the construction cost of a comparative unit (1 m² of total or useful area, 1 m³ of construction volume, 1 running meter of the facade, etc.) of a similar facility. The cost of the comparative unit of the analogue in these cases is adjusted for the existing differences in the compared objects. To determine the value of a comparative unit, information is used in compilations of *enlarged replacement value indicators* (ERVI) of 1970, compiled in 1969 prices (here the indices of the transition from the prices of 1969

to the prices of 1984 and the territorial coefficients to the indices by branches of the national economy, industry and directions in the composition of industries that takes into account the specifics of the changes in the estimated cost of construction and installation works for various regions of the Russian Federation were determined by Annexes No. 1 and No. 2 to the USSR Gosstroj Resolution No. 94 of 11.05.1983) or the "stump indicators of the base cost of construction by analogical objects", i.e. ERVI-2001, the compilation of 2000 prices [15].

But according to ERVI-2001, only the cost of substitution can be calculated, and, with a significant error, not only because of the "loss" of the above costs, but also because of the significant difference in the quality standards of materials used and planning decisions (often the coefficient of useful areas of the estimated objects in this case is lower than the average market coefficient for new construction). Collections ERVI, however, although they also allow only to calculate replacement cost, give in some cases a more accurate option, especially for monuments of industrial architecture of the '30-'40s of 20th century.

It is most expedient for calculating the replacement cost in the comparative unit method to use in such cases the information "Compendium of enlarged indicators of the estimated cost of restoration and restoration works on historical and cultural monuments (SUPS-87)", effective from 01.05.1987 to the present. This collection contains estimates of the prices for a list of analogical objects in 1984. Despite the uniqueness of each such object, as well as of the evaluation object, at the moment such a method gives the most accurate result of the calculation, since it takes into account many specific features of such objects.

- *The method of breakdown by components* involves the calculation of the value of the entire building as a sum of the values of its individual components – structural elements. The components can be foundations, walls and partitions, overlapping (roofing), roofing, floors, openings, finishing works, engineering equipment, labor compensation, etc. The enlarged indicators can be calculated for 1 m², 1 m³, 1 running m, 1 standard-hour, etc. For the calculation, single quotations are nor-

mally used to compile estimates for different regions or on the country level. Here, depending on the complexity of the architectural execution of BM and the age of the object, you can get a fairly accurate calculation of the cost of restoration. For complex and old objects, the error value will increase.

- *The quantitative survey method* is based on the use of a detailed quantitative calculation of costs for the installation of individual components, equipment and construction of the building as a whole. In addition to calculating direct costs, it is necessary to take into account overhead costs and other costs, i.e. a full estimate of the reconstruction of the evaluated object is compiled. Here the same considerations are pursued that determine the counting technique of the previous method, namely: depending on the complexity of the architectural execution and the age of the object, a reliable quantitative estimate of the cost of restoration can be obtained.

In St. Petersburg, there is a more or less tolerable methodology for determining the market value of the BM of history and culture. It is given in Appendix 4 to the "Methodology for assessing the value of property and determining the level of rent for non-residential premises to buildings – monuments of history and culture" [16]. This document has lost its validity only with respect to the calculation of rent. With respect to the calculation of the value of historical and cultural monuments, it provides a fairly acceptable methodology for constructing a conversion factor for the residual value of a building as a replacement cost.

For practical measurements, this coefficient can be used with small corrections to recalculate the calculated cost of substitution into replacement cost. The cost of substitution can be calculated by any possible method based on recommendations [17, 18].

On the basis of the table of conversion factors of the residual value into the recovery one taking into account the architectural complexity, the construction time and the results of the author's correction of the estimated indices up to 2050, conversion parameters presented in Table 2 are achieved. In the table, objects constructed according to the building standards that are closest to the ones applied in modern buildings are accepted as the measurement base.

Table 2*Indices of cost replacement (in the cost of restoration)*

№ in order	Complexity of architectural and decorative design	Periods of erection of BM, years						
		1700–1750	1751–1800	1801–1850	1851–1900	1901–1950	1951–2000	2000–2050
1	<i>Simple design</i>	2,3179	2,0626	1,8440	1,6895	1,5577	1,3912	1,0000
2	<i>Medium difficulty</i>	3,4642	2,8379	2,2958	1,9286	1,5633	1,4672	1,2768
3	<i>Complex design</i>	4,4405	3,6609	2,9591	2,4930	2,0071	1,8925	1,5329

Data source: authorial adjustment of value indexes.

In view of the technical complexity of verifying the economic validity of these coefficients, the application of the latter is possible only in the absence of other options for calculating the replacement cost. And then the full replacement cost (the total cost of replacement) is calculated, that is, the replacement cost taking into account the size of the possible generated entrepreneurial profit.

Calculation of the depreciation value of improvements to the Land Plot. Wear means a decrease in the utility of the property, its consumer properties and is expressed in a decrease in the value of the object. As the operation of the facility progressively deteriorates, the parameters characterizing the structural reliability of buildings, structures, the land plot itself (the calculation of the land plot value under the object is shown in Table 3), as well as their functional correspondence to the current use of the facility. In addition, the value of the property is influenced by external factors caused by changes in the market environment, macroeconomic or even natural conditions. The dynamics of factors is estimated by the corresponding simple and analytical indices.

Depending on the reasons causing a drop in the value of the object, they distinguish between physical, functional and external wear. Depending on the possibility of eliminating physical and functional wear⁶, distinguishable removable and unrecoverable wear. External wear can only be irrecoverable. The sum of the values of all types of wear is the aggregate wear of the object. In value terms, cumulative depreciation represents the difference between the replacement value and the market value (fixed price) of the evaluated object. At the same time, physical wear and tear is understood as the gradual deterioration of the object, originally built during the construction, in the form of a BM.

Table 3*Calculation of the value of freehold land*

№ in order	Indicator name	Indicator unit	Indicator level
1	Residual value of BM	\$	1 261 563 562
2	Net operating income (NOI)	\$ / per annum	9 326 069
3	Coefficient of capitalization for improvements	%	14,16
4	Coefficient of capitalization for land plot*	%	14,76
5	Income attributable to improvements	\$ / per annum	8 184 558
6	Income attributable to land	\$ / per annum	1 141 511
7	Cost of the land plot	\$	77 369 335
8	The dollar exchange rate on the valuation date**	\$1 / ruble	60,1482
9	The cost of land on the right of ownership	rubles	4 653 626 089

* As the coefficient of capitalization of income from the land, the rate of return on capital for a single real estate object is used (discount rate).⁷

** The exchange rate of the Central Bank of the Russian Federation as of December 05, 2017.

Source: compiled by the author.

There are several methods of calculating physical wear:

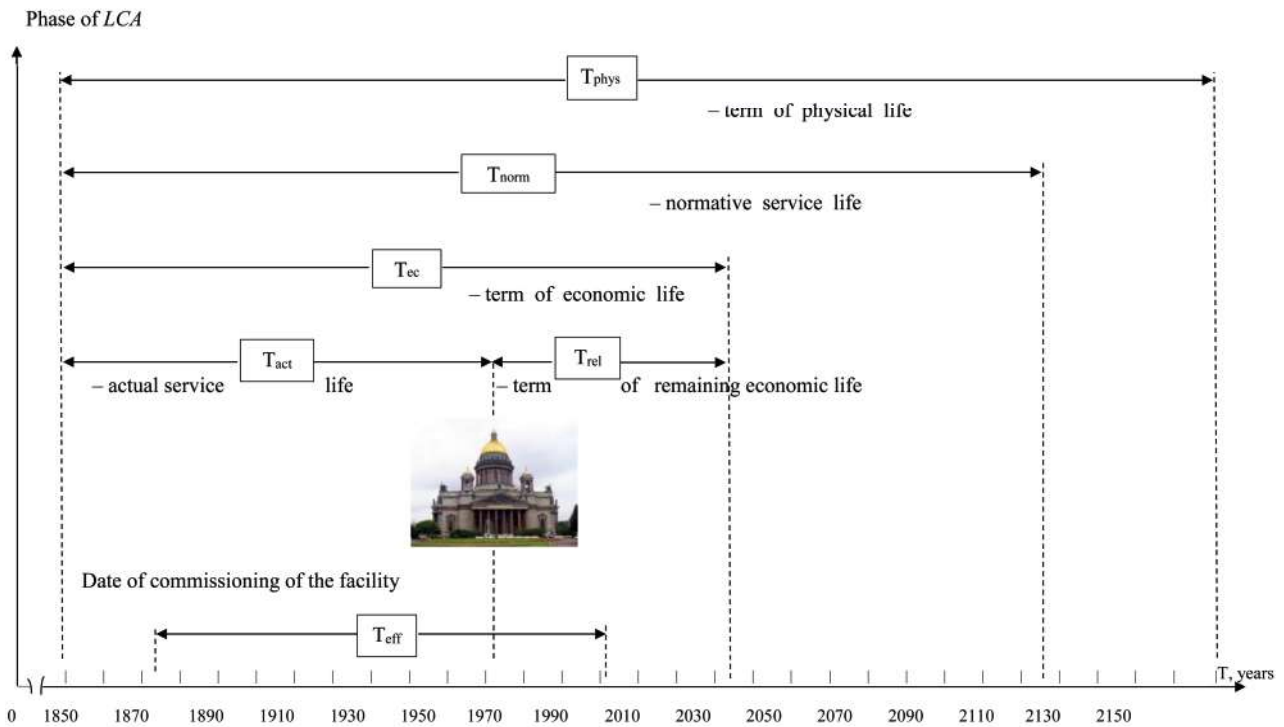
- *A normative method* that involves the use of instructions from various inter-industry or departmental organizations. An example of such useful instructions is the rather widespread VSN 53–86 "Rules for assessing the physical wear and tear of residential buildings" of the State Committee for Civil Construction and Architecture under Gosstroï (Госстрой) USSR. The rules represent a collection of wear tables by types in percentage terms for various structural elements of buildings, depending on the use of building materials and the technical state of such elements [20]:
- *The method of life expectancy* involves the definition of physical deterioration as a ratio of the remaining life of the building and the period of its economic life. The economic life of a building means that period of operation of the facility during which it can generate revenue. And the effective age is estimated by the period, which is determined by the time that has elapsed since the construction of the building, taking into account its technical condition and the values of economic factors that have influenced the value at the date of valuation. The remaining lifetime is the difference between the economic life of an object and its effective age, as shown in Figure 2.

⁶ Removing wear is understood as such a physically possible correction, in which the costs do not exceed the amount by which the cost of the object will increase as a result.

⁷ That is, as a capitalization factor for a land plot, the discount rate calculated in the framework of the income approach in calculating the market value of the valuation object at market rental rates is accepted, and for improvements, the specified rate reduced by the estimated rate of return [19].

Figure 2

Approximate time characteristics of the life cycle (LCA) of the real estate object in the form of an analyzed BM



T_{eff} – effective service life before major repairs of structures; T_{act} – Actual Life of BM (compiled by the author).

Source: compiled by the author.

- The method of splitting into components involves the separation of structural elements of the BM architecture into short-lived and long-lived elements. The values of removable and permanent physical depreciation are calculated for each element type.

Elimination of wear is defined as the costs necessary to bring the object to the "original" state. Unrecoverable deprecia-

tion is calculated either by the method of the lifetime for individual groups of elements, or as the difference between the replacement cost and the amount of disposable wear, multiplied by the ratio of the chronological age and the lifetime of these elements.

Functional depreciation is the loss of value due to the discrepancy between the spatial planning solution, the building structures and the engineering equipment

of the building or structure, the quality of the construction and installation works performed by the modern market standards, the norms and rules imposed on this type of buildings and structures. It is usually caused by the appearance of more advanced technologies, unsatisfactory layout, non-compliance with technical and functional requirements for parameters such as size, style, durability, design, etc.



The panoramic photo of the interior of Saint Isaac's Cathedral, St. Petersburg; Źródło: <http://pl.wikipedia.org>; Autor: Ximeg

Depending on the source of occurrence, functional wear can be of three types:

1. Functional wear (FW) caused by the lack of necessary elements, without which the object can't meet modern operating standards. This type of disposable functional wear is calculated as follows:

- For the cost of restoration –

$$FW = FRC \times (K_m \times K_{tr} - 1) \quad \text{– for a completely missing item,}$$

$$FW = FRC \times K_{ob} \times \frac{K_m \times K_{tr} - 1}{1 - K_{tr}} \quad \text{– for a partially missing element;}$$

- For replacement cost –

$$FW = TCR \times \left(K_m - \frac{1}{K_{tr}} + 1 \right) \quad \text{– for a completely missing item,}$$

$$FW = TCR \times K_{ob} \times \frac{K_m \times K_{tr} - 1 + K_{tr}}{1 - K_{tr} + K_{ob} \times K_{tr}} \quad \text{– for a partially missing element,}$$

where FRC is the complete replacement cost of the element; TCR – the total cost of replacing the element; K_m – coefficient of transition from the cost of new construction of the element to the cost of its device during the reconstruction (modernization) of the facility; K_{tr} – the coefficient of transition from the FRC of the element to the TCR of the replacement element; K_{ob} – the specific weight of the volume of the obsolete part of the element in the total volume of the BM.

The unavoidable form of functional wear is calculated as follows:

- For the cost of restoring an item –

$$FW = FRC \times K_{ob} \times \frac{K_m \times K_{tr} - 1}{1 - K_{ob}} = NLI - FRC \quad \text{– for a completely missing item,}$$

$$FW = NLI - \frac{FRC \times K_{ob}}{1 - K_{ob}} \quad \text{– for a partially missing element;}$$

- For replacement cost –

$$FW = NLI - FRC \times \frac{1 - K_{tr}}{K_{tr}} \quad \text{– for a completely missing item,}$$

$$FW = NLI - TCR \times K_{ob} \times \frac{1 - K_{tr}}{1 - K_{ob} + K_{ob} \times K_{tr}} \quad \text{– for a partially missing element,}$$

where NLI is the net loss of income due to functional wear and tear.

2. Functional wear caused by the need to replace or upgrade elements. This type of disposable functional wear is calculated as follows:

- For the cost of restoring an item –

$$FW = FRC \times K_{ob} \times \frac{K_m \times K_{tr} - 1}{1 - K_{tr}} = RRC + FRC \times (0,85 \times K_r + K_m \times K_{tr}) \quad \text{– for a fully upgradeable element,}$$

$$FW = FRC \times K_{ob} \times \frac{K_m \times K_{tr} - 1}{1 - K_{tr}} = RRC + FRC \times K_y \times (0,85 \times K_r + K_m \times K_{tr}) \quad \text{– for a partially modernized element;}$$

- For the replacement cost of an element –

$$FW = RCR + TCR \times \left(0,85 \times \frac{K_r}{K_{tr}} + K_m \right) \quad \text{– for a fully upgradeable element,}$$

$$FW = RCR + TCR \times K_{ob} \times \frac{0,85 \times K_r + K_m \times K_{tr}}{1 - K_{ob} + K_{ob} \times K_{tr}} \quad \text{– to assess the partially modernized element,}$$

where RRC – residual replacement value of the element (minus physical depreciation); RCR – the residual cost of replacing the element (minus physical depreciation); K_r – coefficient of transition from the cost of new construction of the element to the cost of its dismantling during the reconstruction (modernization) of the facility.

The unavoidable form of functional wear is calculated as follows:

- For the cost of restoring an item –

$$FW = NLI + RRC \times (1 - K_{tr}) \quad \text{– for a fully upgradeable element,}$$

$$FW = NLI + RRC \times K_{ob} \times (1 - K_{tr}) \quad \text{– for a partially modernized element;}$$

- For the replacement cost of an element –

$$FW = NLI \quad \text{– for the evaluation of the fully modernized element.}$$

3. Functional wear caused by *over-amelioration*. The over-amelioration are formed by the elements of the object, currently interpreted, in accordance with modern standards, as conventionally superfluous [15]. This type of disposable functional wear is calculated as follows:

- For the cost of restoration of the so-called "extra" element –

$$FW = RRC + 0,85 \times FRC \times K_r \quad \text{– to evaluate 100% of the extra element,}$$

$$FW = RRC + 0,85 \times FRC \times K_{ob} \times K_r \quad \text{– to evaluate the part of the extra element;}$$

- For replacement cost –

$$FW = RCR + 0,85 \times TCR \times K_r \times \frac{K_{ob}}{1 - K_{ob}} \quad \text{– to evaluate the part of the extra element.}$$

The unavoidable form of functional wear is calculated as follows:

- For the cost of restoration of the so-called extra element –

$$FW = RRC + AOC - CIV \quad \text{– to evaluate the part of the extra element,}$$

$$FW = AOC - CIV \quad \text{– for a partially missing element;}$$

- For replacement cost of the so-called extra element –

$$FW = RRC \times K_{ob} + AOC - CIV \quad \text{– to evaluate the part of the extra element,}$$

$$FW = AOC - CIV \quad \text{– for a partially missing element,}$$

where *AOC* – additional operating costs for extra elements (volumes); *CIV* – contribution to the improvement of the market value of the object.

Also, this type of functional depreciation can be calculated through economic losses, related, for example, to the inability to rationally use the volumes and areas allocated to such over-amelioration. In the case of historical and cultural monuments, one should take into account the fact that often functional wear, which is removable for a similar object without a security status, becomes irreparable for an object with a conservation status, depending on what the specified status extends [21].

For example, design flaws that can be easily solved for "ordinary" objects can be unrecoverable for a historical and cultural monument because of the prohibition of redevelopment or the inevitability of damage to architectural or decorative details of an object during such re-planning. In addition, any changes will require a sufficiently long agreement with KGIOP (*rus. – КГИОП*), etc., and may also involve additional costs, for example, because of the need to use a selection of non-standard materials. In this regard, you need to clearly monitor the transition of removable wear to the unrecoverable, since this will require changes in the very formula for calculating wear.

Conclusions

The calculation formulas given above allowed the author to carry out in practice various measurements of the value of the evaluated object on elements of different types. The resulting calculations are based on actual empirical material. Such a measurement tool can, to some extent, enrich the methodological basis of a professional valuation of an object for insurance purposes.

Paragraph 2 of Art. 947 of the Civil Code of the Russian Federation clearly defines the insurance value as "... the actual value of the property at the place of its location on the day of conclusion of the insurance contract". According to Art. 7 "The assumption of establishing the market value of the valuation object" of the Federal Law "On Appraisal Activities in the Russian Federation", in the event that a specific legal act containing a requirement to perform an assessment of an object or a contract for

the valuation of an evaluation object does not specify a specific form of the value of the object, the market value of the object is subject to establishment.

This rule is also applicable in the case of the use in the regulatory legal act of terms that are not provided for by this Federal Law or standards to determine the type of value of the valuation object, including the terms *actual value*, *reasonable cost*, *equivalent value*, *real value*, etc. Thus, from the standpoint of the current legislation, the insurance value for property insurance is its *market value*, which is not a fully correct provision of the legislative norm.

The proposed instruments of measurement, indeed, are necessary for those territories of Russia where the objects of historical and cultural real estate are located in the form of BM. According to the current legislation, the insurance value of cultural heritage objects must be reliably determined and known to the relevant state structures, regardless of the organizational and legal form of owner-

ship of these objects and, naturally, to the owners themselves. In practice, such *insurance value* is simply not established.

Further perspectives of the research are related to the indispensable solution of such an important scientific and practical problem as the development of methodological recommendations, the formation of an instrumental basis for measuring and finalizing the insurance



Saint Isaac's Cathedral. Źródło: <http://pl.wikipedia.org>; Autor: Florstein

value of immovable cultural heritage objects as a BM as a specific and unique object in the real estate market. It should be noted that in Russia there was a practice of understating the insurance value when concluding real estate insurance contracts.

In addition, the results of this research conducted by the author will make it possible to formulate a set of understandable issues that will allow solving the main problem of assessing monument buildings in the foreseeable future – the development of the Federal Valuation

Standard (FVS) of immovable cultural heritage objects on the basis of integration with the International Valuation Standards (IVS) domestic professional appraisal practice and economic life. The nature of the final results of the study assumes their use in the development of normative documents, which determine the validity of assessing the different types of value of cultural heritage sites that are monuments of history and culture and in some cases contribute to the preservation of their historical value.



St.Petersburg, view of St.Isaac's; Źródło: <http://pl.wikipedia.org>; Autor: Moneycantbuy

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WYCENA BUDYNKÓW ZABYTKOWYCH. WARTOŚĆ UBEZPIECZENIOWA OBIEKTÓW

Streszczenie

W najbliższej przyszłości Katedra św. Izaaka w Sankt–Petersburgu, budynek–pomnik Światowego Dziedzictwa Historycznego i Dziedzictwa Kulturowego, chroniony przez UNESCO, zostanie przekazany pod jurysdykcję Rosyjskiego Kościoła Prawosławnego. Obecnie obiekt ma charakter mienia państwowego, a póki co zarządza nim Miasto Sankt–Petersburg. Zapowiedzi rychłej zmiany władztwa wywołują liczne i godne odnotowania dyskusje w rosyjskim społeczeństwie. Katedra jest częścią Państwowego Kompleksu Muzealnego, jest perłą światowej ikonicznej architektury, jest najczęściej odwiedzanym muzeum Sankt–Petersburga po Ermitażu, ma wybitny potencjał wystawienniczy, a także regularnie realizowane są w niej kościelne nabożeństwa i rytuały. Zbiory muzealne przekraczają dwadzieścia cztery tysiące artefaktów i nadal są uzupełniane o odnalezione, rzadkie przedmioty, również nowo odrestaurowane, mające status relikwii chronionych prawem.

Powszechnie przyjmuje się, że przy ochronie zbiorów muzealnych i konserwacji zabytków sytuacja w Rosji jest wyjątkowo niezadowolająca. W tym przypadku nie ma nawet przybliżonych szacunków wartości rynkowej przedmiotu badań w postaci budynku–pomnika Katedry św. Izaaka wraz z gruntem, nie wspominając już o wiarygodnej wartości ubezpieczeniowej ocenianego obiektu, a więc informacji niezbędnej do realizacji ewentualnego odszkodowania za szkody i straty w razie katastrofy, pożaru czy innego niespodziewanego wydarzenia.

Artykuł poświęcony jest profesjonalnej ocenie wartości ubezpieczeniowej obiektu badawczego i nawiązuje do serii wydanych wcześniej autorskich publikacji.

Słowa kluczowe

budynek–pomnik, działka, rozwój nieruchomości, wartość nieruchomości, element konstrukcyjny, zużycie funkcjonalne, wartość ubezpieczeniowa