

The Analysis of Constructions in the Evaluation Activity

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The estimation of value through the cost method is based on comparison, and namely the construction cost of a propriety is compared to the value of an existing propriety or to a similar one that is being built. The method reflects the fact that the participants on the market recognize a relation between value and cost, it is important for the estimation of the market value of new or relatively new buildings as, in this cases, the cost and the market value are usually relatively close. New or relatively new constructions represent the best usage of the terrain. Replacement cost is the estimated cost for building, given the current prices at the moment of the evaluation of a building with an equivalent utility to the one of the evaluated building.

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JEL Classification: G32; G33; C39

Introduction

In order to reach the estimated value through the cost method, we must pass over the following stages:

- ✚ The estimation of the value of the terrain considering that it is free and available for the best usage;
- ✚ The estimation of the total reconstruction or replacement cost of the constructions at the moment of the evaluation;
- ✚ The estimation of the constructions depreciation;
- ✚ The removal of the cumulated depreciation from the total reconstruction or replacement cost in order to reach to net cost;
- ✚ The adding of the terrain's value in order to reach the total value of the real estate propriety.

The principle which stands at the basis of the constructions' evaluation consists of:

- ✚ The setting of the new construction's value (the replacement or the reconstruction value);
- ✚ The estimation of the cumulated depreciation.

1. The replacement cost

The setting of the new construction's value aims at setting the **reconstruction cost** or the **replacement cost**. The **reconstruction cost** is the estimated cost of building, given the prices at the data of the evaluation, a copy, an accurate reproduction of the evaluated building, using the same materials, the construction standards, architecture, plans, quality, labor and including all the deficiencies, the oversizing and the depreciation of the evaluated building.

The **replacement cost** is the estimated cost in order to build, at the prices at the evaluation data of a building with equivalent utility to the one of the evaluated building, by using modern materials, standards, architecture and updated plans. Three cost estimation methods are known:

- The replacement costs method;
- The segregated costs method;
- The currencies method;

The **estimation of the cumulated depreciation** – depreciation is a loss of value of the real estate propriety compared to the reconstruction or the replacement cost of the building, which

can result from physical, functional or external causes. The estimation methods of depreciation are:

- The economic life method;
- The modified economic life method;
- The comparison method.

2. The estimation of the replacement value of the building. The replacement Costs' Value Method

The estimation of the market value through the cost method is based on the comparison between the construction cost of a propriety and the existing value of the propriety. The method reflects the fact that the participants on the market admit the relation between the cost and the value.

The substitution principle is fundamental to the cost method, showing that no prudent buyer would pay for a real estate propriety no more than the needed cost in order to gain the immediate ownership of a surface and build proprieties with similar utilities, destinations and attractiveness.

The main estimation method is the “**unitary cost method**”, based on the reevaluation catalogues issued in 1965 by the Central Committee for Fixed Funds Inventory.

The method uses unitary prices and the correction coefficients provided by these catalogues, according to the technical-construction features regarding the inventory compared to the standard ones.

The scale prices consider the generic dimensions of the object, its usage, the individual features, the normal and special inventory. The accuracy of the reached value is conditioned by the accuracy through which the “model” (the copy) corresponds to the real situation of the building.

According to the “**replacement value method**”, the remaining value of the buildings is evaluated as an adjusted unitary replacement value of the surface, depreciated by the evaluated attrition, which can be foreseen.

The unitary replacement value is evaluated through the actualization of a basic corrected (catalogue) value, through a methodology approved by the MLPAT Order no. 32/1995. Both the basic value and the actualization coefficients present the following official sources:

- Catalogues for inventory and reevaluation of the fixed assets (1965 prices)
- Actualization indexes set recommended by INCERC and the Technical Experts' Committee

In the current Report, the unitary replacement value has been established through the usage of the scale prices and the corrections in **Catalogues no. 124/ file 4B and no 124/ file 11**.

The total replacement value (for the whole surface) is updated using a coefficient (correlated to the application field in the used catalogue) set by the CET and published in the “Expertizatehnica” no 94/ November 2005 periodical and is corrected using the total estimated cumulated depreciation.

Depreciation represents the loss of value reported to the replacement/reconstruction cost due to some physical, functional, external causes. Theoretically, depreciation can begin accumulating from the finalization of the building, even if it represents “the best usage”.

Depreciation represents the difference between the reconstruction or replacement cost of the construction (building) and the market value.

The estimation of the depreciation is made using the segregation method, which assumes the separated analysis of each cause of depreciation.

The evaluation through the “**replacement value method**” was made for a catalogue model with the following features:

Height regime – ground floor, with wall of bricks, with a 33 cm high socket, wooden framing, tile roofing, wooden floors, average finish level;

The calculation of the replacement value at the level of 01.01.1965

THE HOUSEAd = 208,89m²

Unitary value (catalogue 124/file nr. 4B)

- Construction 705 lei/m² Ad- Electric equipment 23 lei/m² Ad- Sanitary equipment 72 lei/m² AdTotal construction + equipment 800 lei/m² Ad

Total basic value for construction and equipment :

208,89m² x 800 lei/m² Ad = 167.112 lei**Adjustments :**

- For heights more than 2,80 ml, we add 4% of the value

167.112 lei x 4% = + 6.684 lei

- Tinplate roofing : 252 mp x 15 lei/mp/Ad = + 3.780 lei

- Gaswarming for tilestovesla: 77,79 mp x 28 lei/mp/Ad = + 2.178 lei

TOTAL ADJUSTMENT = + 12.642 lei

Total adjusted basic value: 167.112 lei + 12.642 lei = 179.754 lei**Actualization coefficient: 28.771,957**, according to “Expertiza Tehnica” 107/ May 2019, periodical, of which we remove the VAT;

179.754 lei x 28.771,957 / 10.000 / 1,19 = 434.611 lei

Total replacement value for house: 434.611 leiThe basic unitary value according to the catalogue no 124, file no. 11 is 530 lei/m² Ad for brick buildings and 65 lei/m² Ad for wooden constructions.36,35 mp x 530 lei/m² Ad = + 19.266 lei6,76 mp x 365 lei/m² Ad = + 2.467 lei

Total basic value: 21.733 lei

Adjustments :

- For heights lower than 2,80 ml, minus 4% of the value

21.733 lei x 14% = - 3.043 lei

- for lack of finish, minus 90 lei/m²

(36,35 + 6,76) x 90 lei/mp = - 3.880 lei

Total corrections = - 6.923 lei

Total adjusted basic value: 21.733 lei – 6.923 lei = 11.354 lei**Actualization coefficient: 28.771,957**, according to “Expertiza Tehnica” 107/ May 2019, periodical, minus TVA ;

Total replacement value: 11.354 lei x 28.771,957 / 10.000 / 1,19 = 27.452 lei

Total replacement value is : 27.452 leiTotal value without depreciation of the **building** :: 434.611 lei + 27.452 lei = **462.063 lei** “the new value”, which is set on the free market for similar buildings, with special equipment, without depreciation, calculated for the three currencies is:**462.063 LEI****97.687 EUR****3. The estimation of the replacement value of the building through the estimation method**

According to the “Technical guide for the immediate evaluation of the spot price, of the costs of the elements and the house constructions – percentage and value”, issued by MATRIX ROM, the evaluated building was classified as “Individual house in the urban environment, increased comfort, having all facilities, gas stoves, tin roofing, wooden floor”.

4. Estimation of the building –Table no:1

Nr. crt	Name of the process	UM	Quant /mp/Ad	Unit cost in lei			Percentage of total
				UM	Mp Ad	Mp Au	
1	Excavation	Mc	0,5030	342000	172026	274764	0,8908
2	Filling and compacting	Mc	0,1640	131600	21582	34471	0,1118
3	Hydrois and similar work	Mp	0,3490	976000	340624	544052	1,7638
4	Reinforced concrete	Mc	0,2100	938300	197043	314721	10,2030
5	Concrete	Mc	0,3900	237200	925080	147755	4,7901
6	Masonry	Mc	0,6860	436550	299473	478325	15,5069
7	Closings Segmentation..	Mp	0,650	529000	34385	54920	0,1780
8	Metal works	Kg	1,8500	75000	138750	221615	0,7185
9	Thermois .attic protection	Mp	0,9230	405000	373815	597066	1,9356
10	Thermoispipes	Mp	0,0150	389000	5835	9320	0,0302
11	Woodwork	Mp	0,2300	570850	131295	209708	6,7986
12	PVC work	Mp	0,1280	301300	385664	615991	1,9970
13	Metalwork	Kg	2,0000	90000	180000	287500	0,9321
14	Simple windows	Mp	0,0240	253600	6086	8721	0,0315
15	Double insulated windows	Mp	0,2560	167300	428288	684071	2,2177
16	Reinforced windows	Mp	0,0260	488000	12688	20266	0,0657
17	Mosaic flooring	Mp	0,0430	116300	50009	79875	0,2589
18	Concrete flooring	Mp	0,1700	408000	69360	110783	0,3591
19	Tile flooring	Mp	0,2000	919000	183800	293569	0,9517
20	Parquet flooring	Mp	0,3830	943000	361169	576867	1,8702
21	Internal stucco	Mp	4,300	384000	165120	263733	8,5500
22	Interior paint job	Mp	3,4600	89600	310016	495164	1,6053
23	Wall tiles job	Mp	0,2460	912700	224524	358615	1,1626
24	Interior paintings	Mp	0,4200	139000	58380	93246	0,3023
25	external stucco	Mp	0,8210	717700	589232	941134	3,0511
26	External tilling	Mp	0,6160	136500	840840	134300	4,3539
27	Concrete sidewalk	Mp	0,2670	342000	91314	145849	0,4728
28	Framing	Mp	0,9230	428000	395044	630973	2,0456
29	Roofing, sheathing	Mp	1,1350	666000	755910	120735	3,9142
30	Gutters and drainpipes	Ml	0,2670	424000	113208	180818	0,5862
31	Clogged eave	Mp	0,1330	427000	56791	90708	0,2941

32	Snuff boxes and ventilation	Mp	0,0240	923000	18460	29485	0,0956
33	Stoves	Cahle	3,0000	168900	506700	809313	2,6237
34	Other works and constructions	%	3,0000	0	471976	753851	2,4201
32	Water branching	Lei	1,0000	506100	506100	808354	2,6206
33	Sanitary pipes and joints	Ml	0,5130	342300	175600	280472	0,9093
34	Sanitary equip. and reinforcement	Lei	1,0000	536800	536800	857389	2,7796
35	Electric boiler	Lei	1,0000	144900	144900	231438	0,7503
36	Electricity branching	Lei	1,0000	106000	106000	169306	0,5489
37	Electric cable, cond, pipes	Ml	3,0500	70000	213500	341007	1,1055
38	Electric equipment	Lei	1,0000	172200	172200	275042	0,8917
39	Lighting devices	Lei	1,0000	117200	117200	187194	0,6059
40	Gas branching	Lei	1,0000	305700	305700	488271	1,5829
41	Other common equipment	%	3,0000	0	68340	109154	0,3539
42	Various, organization,	%	5,0000	0	919630	1458853	4,7619
	Total lei/mp				19312235	30845930	100
	TOTAL EUR/mp				568,01 EUR/mp	907,23 EUR/mp	

Table no.2 Evaluation (outbuildings)

Nr. crt	Process name	MU	Quantit y/mp/ Ad	Unit costs in lei per			% of total
				MU	Mp Ad	Mp Au	
1	Easy foundation	Mc	0,2600	1327000	345020	0	9,1418
2	Brick constructions	Mc	0,3500	3267500	1143625	0	30,3021
3	windows	Mp	0,1000	227000	22700	0	0,6015
4	Internal stucco	Mp	1,9000	170000	323000	0	8,5584
5	External stucco	Mp	2,8000	11900	33320	0	0,8829
6	External smattering	Mp	1,5000	11900	17850	0	0,4730
7	Carpentry painting	Mp	0,8000	78500	62800	0	1,6640
8	External plaster	Mp	1,5000	268000	402000	0	106516
9	Simple windows	Mp	0,1000	999000	99900	0	2,6470
10	Simple doors	Mp	0,2000	1224500	244900	0	6,4890
11	Ceiling finish	Mp	1,0000	264000	264000	0	6,9951
12	framing	Mp	1,2000	294000	352800	0	9,3480
13	Tin roofing	Mp	1,2000	216000	259200	0	6,8679
14	Wooden sheathing	Mp	1,2000	138000	165600	0	4,3878
15	Various	%	1,0000	0	37367	0	0,9901

	TOTAL lei/mp				3.774.082		100
	TOTAL EUR/mp				121,00		

The reconstruction cost in EUR is :

Hous :

208,89mp x 568,01 EUR/mpAd= **118.652 EUR**

The reconstruction value in LEI at the date of the evaluation(1 EUR = 4,73 LEI) is :

118.652EUR x 4,73 LEI/EUR = **561.223 LEI**

43,11 mp x 121,00 EUR = **5.216 EUR**, The reconstruction value in lei at the date of the evaluation: 5.216 EUR x 4,73 LEI/EUR = 24.671 LEI

Total value: 561.223 LEI + 24.671 LEI = 585.894 LEI

The unitarycomparisonmethod – the unit scale (catalogue) cost and the estimation method has allowed the reaching of close results for the construction that made the subject of evaluation:

Table no .3 Resulted values

Appliedmethods	Resulted values	
	LEI	EUR
The catalogue value method	462.063	97.687
Estimation method	585.894	123.868

Conclusions

Considering that the estimation methodis the most complete and accurate method, the result reached through this methodis the closest one to the market value, namely: **462.063 LEI**; respectively **97.687 EUR** ;

5. Segregation method

This method assumes that the evaluator is to individually analyze each cause of depreciation, to quantify it and to calculate a global amount.

The five types of depreciation, which can influence a building, are:

The recoverable physical attrition – only refers to the elements that must be repaired at the moment of evaluation and is quantified through the cost of bringing the product to the status of new. The attrition is seen as recoverable when the cost for the correcting of its technical status plus a reasonable profit is lower than the resulted value growth.

Unrecoverable physical attrition – aims at the physically damaged elements which cannot be currently repaired due to practical or economic reasons. Unrecoverable physical attrition applies on the difference between the reconstruction or replacement cost and the removal cost of the recoverable physical attrition. The elements of the unrecoverable physical attrition are qualified as having a short or a long life.

A short life element is the one with a remaining economic life span lower than the remaining economic life span of the whole building.

A long life element is a component of the building which is expected to have the same remaining life span as the whole building.

The functional recoverable inadequacy – represents a value loss due to the deficiencies in the conception or projecting of the building. In order to be recoverable, the replacement cost of an outmoded or unacceptable issue must be lower than the anticipated value growth.

The functional unrecoverable inadequacy – can be caused by a deficiency or by oversizing.

Two types of deficiencies can be applied: an element that is not included in the new cost, but which must be included or an element that is included in the new cost, but which shouldn't have been included.

The external (economic) causes depreciation – is the diminished utility of a building due to some negative influences from the external environment of the building. It can be caused by a series of factors, such as: the decrease of the proximity, the location of the propriety in the locality, region or province, the conditions of the local market.

Physical attrition

- PIF – 1920
- 83 years old
- Good technical condition– attrition coefficient according. **P 13 – 199.**
- According to the data and observations in the field, of the fact that the building has been repaired subsequently to every earthquake through time, of the improvements and the modernization of the comfort degree, the value of the depreciation degree is estimated at:

Table no:4

Subassembly name	percentage	Estimated attrition	Average attrition
Protective structure	40%	75%	30%
envelope	17%	65%	11,50%
Finish	25%	60%	15,50%
equipment	18%	40%	7,20%
Total	100%		64,20%

Considering the presented data, I assume that the depreciation degree is **64,20%**, according to the standards and the observations in the field, at the moment of the inspection, as being the real depreciation degree; given, the **Cumulated Depreciation** will reach $462.063 \times 0,6420 = 296.644$ LEI. **The value of the constructions, depreciated, will be : $462.063 \text{LEI} - 296.644 \text{LEI} = 165.419 \text{LEI}$**

The value of the case building (**terrain and construction**) determined through the cost method is equal to the amount of the evaluated values for:

- **terrain :** **331.664 LEI**
 - **construction :** **165.419 LEI**
TOTAL : **497.083 LEI**

The value of the building, reached through the « cost method », without VAT is:
= 417.717 LEI
= 88.312 EUR

Conclusions

The evaluator must not mistake the depreciation concept from the perspective of the evaluation for the accounting depreciation concept, which refers to the amortisation of the tangible assets. The estimation method of the new cost and of the depreciation must be presented in the evaluation report, alongside the arguments that lay at the basis of its calculus. The use of other depreciation forms is forbidden, if their estimation method cannot be presented.

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