

DETERMINING THE MARKET VALUE FOR AGRICULTURAL AND LIVESTOCK PROPERTIES

Silvia CHIOREAN, Tudor SĂLĂGEAN, Ioana Delia POP, Florica MATEI,
Mircea VARGA, Mircea-Emil NAP

University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca, 3-5 Calea Mănăştur Street, Cluj-Napoca, Cluj County, Romania, E-mails: silvia.chiorean@usamvcluj.ro, tudor.salagean@usamvcluj.ro, popioana@usamvcluj.ro, faldea@usamvcluj.ro, mircea.varga@usamvcluj.ro, mircea.nap@usamvcluj.ro

Corresponding author: mircea.nap@usamvcluj.ro, mircea.varga@usamvcluj.ro

Abstract

Determining the market value for agricultural and livestock buildings involves considering various factors related to the structures, their functionality, and the overall agricultural market. The current trends and demand in the agricultural sector can influence property values. The geographical location of the property plays a significant role in determining its market value. The size and capacity of the buildings are also crucial factors. The impact of environmental factors, such as soil quality and climate conditions, on the property's productivity can influence its market value. The purpose of this work is to highlight the criteria that influence the market value for such a specialized property. In this study, nine plots of land, along with the agricultural and industrial buildings situated on them, located in Călărași County, Romania were the subject of valuation. For this, The Cost Approach was used. Also, within this method, a special importance is given to the estimation of the land's market value, in this regard The Direct Comparison Method was utilized. In conclusion, it was observed that the largest percentage of the market value of the subject property comes from the buildings situated on the land plots and not from the free land.

Key words: valuation, market value, agricultural and livestock properties

INTRODUCTION

The activity of estimating the value, materialized in a document, called "valuation report", carried out by an authorized property valuers (valuation surveyors) in accordance with the specific standards of this activity and with professional ethics, represents the definition of valuation in Romania according to Government Ordinance no. 24/2011, approved with amendments by Law no. 99/2013 [10].

Considering the fact that after the Revolution of 1989 Romania made the transition to a market economy, one of the basic notions in the case of transactions became "market value" and the first specialization available for Romanian property valuers was that of enterprise valuation [2].

The economic concept of "value" reflects the perspective of market participants, existing at the time of the valuation (appraisal), on the benefits generated by a certain property. From a conceptual point of view, value is created

and sustained by the interaction of four factors, which are associated with any product, service or commodity. These are utility, rarity, desire and purchasing power [3, 4].

In Valuation Basics [2], the National Association of Authorized Property Valuers from Romania (ANEVAR) defines the four factors as follows:

Utility is the ability of a good to satisfy a certain need, need or desire.

Rarity is the current or anticipated supply of a good relative to the demand for that good.

The desire (preference) expressed by the intensity of satisfaction that a good produces to the one who does not possess it, but who needs it.

Purchasing power expressed by the ability of an individual or group of individuals (market participants) to purchase the goods from the supply, by paying in cash or cash equivalents. Agricultural and livestock buildings play a vital role in sustaining food production and the economy. The significance of determining

their market value in order to ensure fair transactions and proper asset management within the agricultural sector must be highlighted also [9].

Agricultural and livestock buildings are integral components of the farming and animal husbandry industries, serving as the backbone of food production systems worldwide [9]. However, assessing their market value is not a straightforward task; rather, it involves navigating a complex landscape of variables and considerations. At the forefront of this complexity is the inherent diversity among agricultural and livestock buildings [5]. Unlike residential or commercial properties, which often share common features and characteristics, agricultural structures come in a wide array of types and purposes [5]. From traditional barns and silos to modern greenhouse facilities and specialized livestock shelters, each building is uniquely tailored to the specific needs of its agricultural operation. This diversity poses a challenge in establishing standardized valuation methodologies and benchmarks [5, 9].

Moreover, the valuation process must account for a multitude of factors that influence the market value of agricultural and livestock buildings. Location plays a critical role, with regional differences in land availability, climate conditions, and market demand affecting property values. Furthermore, the condition and functionality of agricultural and livestock buildings significantly impact their market value. In addition to these tangible factors, market trends and economic indicators also influence the valuation of agricultural and livestock buildings [6]. Fluctuations in commodity prices, government policies, and consumer preferences can create volatility in the agricultural real estate market, necessitating a dynamic approach to valuation that considers both short-term fluctuations and long-term trends [6].

In this context, the purpose of the paper is to set up a study case regarding the evaluation of an agricultural real estate property located in Călărași County, Romania. This assessment is

made for estimating the market and liquidation value of the assets.

MATERIALS AND METHODS

The agricultural real estate property is located in Călărași County, Romania.

This research presents an evaluation of its market value and the value of its assets before liquidation.

The subject property consists of several plots of land presented in Table 1.

Table 1. The lands subject to valuation

Crt. No.	Type of property	Area [sqm]	Unit of Measurement	Urban Area (U) (Outside of Urban Area (O))
1	Land	8,125	Sqm	O (agricultural land)
2	Land	27,029	Sqm	O (agricultural land)
3	Land	8,984	Sqm	O (agricultural land)
4	Land	12,274	Sqm	O (agricultural land)
5	Land	15,098	Sqm	U (agricultural land)
6	Land	30,579	Sqm	U (agricultural land)
7	Land	536	Sqm	O (industrial land)
8	Land	553	Sqm	U (residential land)
9	Land	10,278	Sqm	U (residential land)

Source: Documents provided to the authors by the owner.

Several types of industrial and agricultural buildings are built on these lands, all of them being part of the process of current valuation.

Also, specialized equipment and installations are present in the mentioned buildings.

One of the most important phases of determining the value of an asset is the identification of that asset and the verification of the correspondence between the documents and the real situation on the ground [12]. In this case, such an inspection was carried out.

The complete list of assets identified on the 9 lands can be seen in Table 2.

In the present case, considering the type of assets that are the subject of the valuation, it was considered that the liquidation value in the case of an orderly sale was equal to the market value.

Regarding the delimitation of the market for this property, this was done mostly from the land point of view and then of the property as a whole.

From the special characteristics of agricultural land it is mentioned the possibility of merging the parcels that is rendered by an estimated percentage that represents a level of

closeness/proximity between the parcels of land that form the traded property, in this case being rather lower than higher.

Table 2. The construction subject to valuation

Crt. No.	Construction Type	Built Area [sqm]
1	Pal Barrac	277
2	Material Warehouse (Metal Shed)	275
3	Concreted Driveways	3,000
4	Official Room	193
5	Concrete Platform	4,500
6	Building (BCA Building)	66
7	Grain Store	304
8	Grain Store B	521
9	Septic Tank (Dry Latrine)	128
10	Canteen + Prep. Hall	138
11	Grain Store A	110
12	Dry Latrine	96
13	Material Warehouse (Metal Shed)	204
14	Grain Store C	505
15	Storage Building (Fuel Storage Building)	28
16	BCA Building (BCA Room + Stable)	35
17	Building + Platform (Bca Building + Pale Shack Annex)	36
18	Grain Store	120
19	Pal Barrac	88
20	Store Gradistea	2,075
21	Grain Store	728
22	Office Building	464
23	Office Building	161
24	Workshop	820
25	Workshop	490
26	Workshop	922
27	The Thermal Plant	118
28	Washer	60
29	Toilets	27
30	The Gate Cabin	24
31	Grain Store	3,759
32	Silage Cell	22
33	Silage Cell	167
34	Silage Cell	167
35	Silage Cell	167
36	Silage Cell	167
37	The Command Room	21
38	Dryer	7
39	Dryer	7
40	Silage Cell	36
41	Unloading Hall	146
42	Farm Annex	12
43	Bridge	72
44	Laboratory	87
45	LPG Tank	85
46	Pump Chamber	28
47	Water Tank	65
48	Drilled Well	16
Total of Listed Constructions		
1	Grain Hall (Store)	4,000
2	Car Wash	150
Total of Unlisted Constructions (which do not appear in any document)		

Source: Documents provided to the authors by the owner.

The topography of the land is is represented by the landform of the location of the plots that make up the property submitted to

valuation, in this case the property being considered as plain.

In order to determine the needs, desires, purchasing power and preferences of consumers in Calarasi County, Romania, a demand analysis was carried out identifying potential users (buyers) for the subject property. Two types of potential buyers were identified:

- Local companies / agricultural associations - which usually exploit the land. They have already bought medium and large areas of land and want to increase the degree of merging by buying adjacent plots of different areas. In addition to the owned lands, this category of buyers leases other large areas of land, from owners who do not work the land. This category is interested in buying or renting neighboring lands;

- Investors (mostly foreigners) - this category mainly buys large and very large areas of land, but they do not always work the purchased land, the final goal being that of accumulating and combining large areas of land that can later be resold.

On the other hand, the offer that would represent the competition consists of:

- Families or small owners: Individuals who own land generally own quite small areas of land, some of them taking possession of the land following the retrocessions carried out after the Revolution of 1989. They operate on the private market of agricultural land, mainly in as sellers, since either they do not have the financial capacity and the necessary equipment to exploit these lands, or they own them in excess of their own needs.

- Private commercial companies: The offers from private commercial companies are generally properties that they own in excess of their current needs, or that are not in the company's areas of interest, they being purchased in order to carry out real estate exchanges with other lands in their area of interest.

- Investors on the real estate market: they offer for sale larger areas of land. They purchase land directly from farmers or from intermediaries, combine them and later sell them to foreign investors who come to invest in Romania.

According to official data centralized at European level, the cost of one hectare of land, whether it is arable land or pasture, in various regions of the country and in other member states, according to the latest information centralized by Eurostat indicates that, in the previous year, the average price for a hectare of arable land in Romania was 39,704 lei, equivalent to 8,000 euros per hectare. This data provides crucial insight into the value of farmland in various regions and is of significant importance to understanding the agricultural market and trends in land prices. [1].

According to the data provided by the National Institute of Statistics (INS), the price of a hectare of agricultural land in Romania, according to the methodology agreed at the European level, has been updated for the year 2022. According to the information cited by the INS-National Institute of Statistics, the average price for a hectare of arable land in Romania is 39,704 Ron/ha, which represents 7,990.49 Eur/ha [1].

In the North-East Region of Romania, agricultural land is the most affordable, with an average price of 34,743 Ron/ha, i.e. 6,991.92 Eur/ha. In contrast, in the Bucharest-Ilfov Region, the price is the highest, reaching a value of 59,263 Ron/ha, equivalent to 11,926.59 Eur/ha [1].

In 2022, compared to the previous year, there was an approximately 6.1% increase in the average price for arable land in Romania, with the most significant increase observed in the North-West Region of the country (+23.5%).

At the same time, the average price of permanent pastures registered an increase of approximately 6% in 2022 compared to the previous year, throughout the country, with the highest increase recorded in the North-East Region (+14.9%) [1].

The sale price offers for agricultural land in the subject area are between 7,000 and 11,000 Eur/ha, depending on several factors, for example location, surface, the possibility of merging plots, etc.

The sale price offers for urban land in the subject area are between 10 and 30 Eur/sqm in the area of interest, depending on some different factors like location, surface, the

proximity to utilities, the possibility of building etc.

According to [10], in the period 2018-2023 the inflation in the field of constructions in Romania was 160%, this study including data from the National Institute of Statistics.

Regarding the methods of calculating the replacement cost, several cost catalogues are available in Romania, the most important of which are Reconstruction costs - Replacement costs published by IROVAL [7], the technical guide for the immediate valuation, at the price of the day, of the costs of housing elements and constructions in percentage and value published by MatrixROM and Catalogues (1964) drawn up by the Central Commission for the inventory and revaluation of fixed funds according to the provisions of H.C.M. no. 116/1963 (reissued by MATRIX ROM), respectively, the ERC Collection (Rapid Construction Evaluation). Although all three variants are accepted by the market, the most used and most updated are the catalogues published by IROVAL, and in the same study a statistic was presented regarding the increase in replacement costs of approximately 116% in the period 2018-2023, thus as with the increase in land prices, construction costs have kept the same trend in the last period of time [8].

Another mandatory component in the process of estimating the market value for agricultural properties is represented by the determination of the "best use".

The valuation of properties starts from the concept of "best use" which represents the alternative use of the property selected from different possible options that should constitute the starting point and generate the working hypotheses necessary for the evaluation process.

The analysis can be carried out in two cases: the best use of the land considered free and the best use of the built property (testing the continuation/modification of the existing use of the property as built and/or testing the demolition of the property and redevelopment).

The best use of vacant land or built-up property must be:

- legally permitted,

- physically possible,
- financially feasible and
- maximum productivity.

For each mentioned aspect, a test is applied, ultimately resulting in the best use of the property, and there are quite a few cases when this does not coincide with the current use.

For the subject property all the “best use” tests have been applied.

As is well known, in valuation there are three main approaches (Market Approach, Income Approach, Cost Approach) which can be applied to estimate the market value of an asset (a real estate property) and several other methods that derive from them which can be applied to estimate the market value of land on its own [3].

In this scientific work, the Cost Approach was used for the valuation of the real estate property.

Within this method, a special importance is given to the determination of the market value of the land.

In this regard, a method derived from the Market Approach was used, namely the "Direct comparison method". In this way, five calculation sheets were created in which the lands were classified according to certain parameters similar to those previously mentioned, such as positioning, surface or destination, thus unit market values (Eur/sqm) being determined.

- Similar comparison elements between files are represented by:
- The margin of negotiation;
- Transferred ownership;
- Financing conditions;
- Conditions of sale;
- Expenses required immediately after purchase;
- Market conditions;
- Location;
- The surface of the property;
- The frontage;
- Access;
- Topography;
- The differences consisted in the fact that for agricultural lands the degree of merging of plots, zoning and soil fertility class were taken into account, and for the lands that are located

in urban areas, utilities were considered very important.

The estimation of the market value per unit (Eur/sqm) was therefore carried out by comparing the subject properties with offers available on the market at the valuation date and not using data from previous transactions. In the calculation grids, the negotiation margins for the available offers were between 10-15% depending on the price and the discussions held by the evaluator with the representatives of the offers.

For both calculation options, the comparison elements, “Transferred ownership”, “Financing conditions”, “Conditions of sale”, “Expenses required immediately after the purchase”, “Market conditions” were not adjusted, being considered similar to those of the subject properties.

Considering the type of real estate property, more precisely a property composed of many specialized assets, its evaluation was carried out by components.

The estimation of the market value of the constructions was carried out according to the principles of the Cost Approach, calculating the replacement costs.

In this regard, 22 cost sheets were drawn up using the cost catalogues published by IROVAL [7].

The types of constructions for which cost sheets were drawn up were: Pal Barrac, Material, Warehouse (Metal Shed), Concreted Driveways, Official Room, Building (BCA Building), Grain Store, Septic Tank (Dry Latrine), Canteen + Prep. Hall, Storage Building (Fuel Storage Building), Office Building, Workshop, The Thermal Plant, Washer, The Gate Cabin, Silage Cell, Dryer, Unloading Hall, Farm Annex, LPG, Tank, Pump Chamber, Water Tank, Drilled Well.

Following the calculations made according to the indications in the catalogues, the cost of every construction as new was practically determined. Considering that the catalogues used do not contain updated prices of construction materials and workmanship, annually, IROVAL determines and makes available updated indices in accordance with the evolution of the market. Using these update indices, which were applied to the

values obtained with the help of the cost catalogues, the cost of each construction as new that is the object of this project was determined.

A final step in determining the market value of such a specialized property is represented by the application of estimated depreciation according to several principles.

Among the three methods of estimating depreciations, which can be physical, functional and external, in this paper the "Segregation Method" was used, because in the case of this specialized property, sufficient information was not identified so that one of the other two estimation methods of depreciations ("Market method" and "Age-Economic life method") can be put into practice adequately [3].

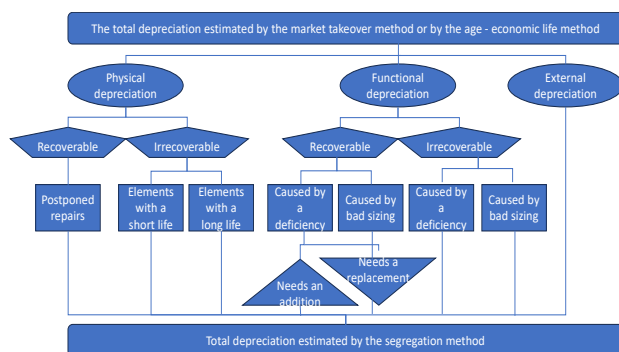


Fig. 1. Total depreciation estimated by the segregation method
 Source: [3].

Applying exclusively the segregation method, each form of depreciation was estimated, and their summation led to the total depreciation (in Figure 1 - from bottom to top) of every building.

It is also mentioned that no external (or economic) depreciation was identified on the market.

RESULTS AND DISCUSSIONS

Following the application of the "direct comparison method", the values per unit (sqm) of the land parcels were obtained after applying several adjustments for comparables, but the most significant role in their differentiation was played by the possibility of combining the parcels.

For agricultural land with a high possibility of merging, a market value of approximately 1 Eur/sqm (10,000 Eur/ha) resulted. The lands located outside the urbanized areas, with agricultural destination, but with reduced possibility of merging, the market value per unit (sqm) was estimated at approximately 0.7 Eur/sqm (7,000 Eur/ha).

This consideration is also based on the fact that the agricultural land market does not recognize as particularly important the location of the land, or their opening to an European or National road. Considering the modern machines used in agriculture at the moment, even the topography of the place no longer plays such an important role in the attractiveness of a plot of land on the market. The attractiveness is influenced instead by national factors, more precisely by legislation, by regional factors, i.e. by the climate and the proximity to irrigation networks and systems (if they exist) and by localized/specific productivity factors such as soil quality, slope or the drainage. The latter can also be rectified by investing in soil improvement solutions as long as the forecasted income could create profit.

Table 3 presents a centralization of the results obtained regarding the market value/square meter corresponding to each plot of land (from Urban Area or from Outside of Urban Area).

Table 3. Market value/sqm for every plot

Crt. No.	Type of property	Area [sqm]	Eur/sqm	Urban Area (U) (Outside of Urban Area (O))
1	Land	8,125	0,70	O (agricultural land)
2	Land	27,029	1,00	O (agricultural land)
3	Land	8,984	1,00	O (agricultural land)
4	Land	12,274	1,00	O (agricultural land)
5	Land	15,098	1,00	U (agricultural land)
6	Land	30,579	1,00	U (agricultural land)
7	Land	536	30	O (industrial land)
8	Land	553	15	U (residential land)
9	Land	10,278	15	U (residential land)

Source: Centralization of the results obtained - made by the authors.

Since cost sheets were not made for each construction, but for each class of construction, the gross replacement costs were determined later by multiplying the market value per unit of measurement (sqm) obtained with the surface area of each building.

After the gross replacement cost of each building built on the considered sites was determined, the previously mentioned depreciations were applied.

It is mentioned that for some of the buildings identified on the sites, an advanced state of degradation was found. In this sense, the decision was taken to consider them as demolishable buildings, as a result they are not included in the calculations, the market value being estimated as 0. This is because it was considered that the cost of demolition is relatively similar to the income obtained from the recovery of the remaining materials.

The buildings that are part of this category are, according to the serial numbers in Table 2, the following: 1 - Pal Barrac, 7 - Grain Store, 8 - Grain Store B, 9 - Septic Tank (Dry Latrine), 11 - Grain Store A, 12 - Dry Latrine, 19 - Pal Barrac, 25 - Workshop, 27 - The Thermal Plant, 28 - Washer, 29 - Toilets, 30 - The Gate Cabin, 37 - The Command Room, 38 - Dryer, 39 - Dryer, 42 - Farm Annex.

Also, an important fact is that approximately 73% of the total market value of the buildings identified on the site is given by only four constructions, more precisely:

- Grain Hall (Store), identified at position 1 in Table 2, from the list of buildings without documents, with an area of 4,000 sqm and an estimated market value of 1,162,507 Euros;
- Grain Store, identified at position 3 in Table 2, from the list of buildings that appear in the documents, with an area of 3,759 sqm and an estimated market value of 1,092,938 Euros;
- Office Building, identified at position 22 of Table 2, from the list of buildings that appear in the documents, with an area of 464 square meters and an estimated market value of 405,000 Euros;
- Store Gradistea, identified at position 20 in Table 2, from the list of buildings that appear in the documents, with an area of 2,075 sqm and an estimated market value of 391,700 Euros.

The total value of the buildings, both agricultural and administrative, that were the subject of the study was 4,185,000 Euros.

It can be observed that most of the market value of the subject property results from the

existing constructions on the plots of land and not necessarily from the free land.

CONCLUSIONS

The market value of the entire property consisting of land and buildings (the vast majority being specialized) was estimated at 4,470,700 Euros.

Various factors must be considered when determining the market value of agricultural buildings or agricultural properties in general. Current trends and requirements in the agricultural sector can also affect the real estate value of this type of specialized property.

Increased market values show properties that are located in areas with high demand for agricultural activities or with easy access to markets and infrastructure.

Environmental factors such as the quality of the soil or the climatic conditions regarding the nearby area also play an important role in determining the market value.

The possibility or impossibility of merging the plots of land and the opportunities or obstacles that appear with the identification of this element remains perhaps the most important aspect in order to estimate the market value of agricultural land.

In terms of buildings, those with increased capacity are of greater interest to the big players in the market, especially if they are well maintained and in good condition.

An important idea stands out and this is that the more specialized and developed a property is in a certain direction, the less the opportunities for liquidation. This aspect can be taken into account and should be taken into account when a valuation report is made for such a property.

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