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The Methods of Expert Valuation of Grounds in Ukraine

1. Legal Bases

The valuation of real estates in Ukraine is based on the following legal acts:

- The Law of Ukraine “On the valuation of grounds (plots)” in the amended text of 17/06/2004, №1808-IV (1808-15);
- The Resolution of the Council of the Ministers of Ukraine “On expert valuation of grounds” of 11/10/2002, №1531;
- The Enactment of the State Committee of Ukraine for the Earth Resources “On establishing the procedure of carrying the expert valuation of ground plots” of 09/01/2003, №2;
- The Resolution of the Council of Ministers of Ukraine of 10/09/2003, №1440 on establishing the State Standard №1 “On basic rules of the valuation of the property and property rights”;
- The Resolution of the Council of Ministers of Ukraine of 28/10/2004, №1442 on establishing the State Standard №2 “On the valuation of the real estate”;
- Instructive letter of the State Foundation of the Ukraine’s property of 09/03/2005 №10-36-2562 “Explanation referring to the application of the State Standard № 2 “On the valuation of real estates”, accepted by the Resolution of the Council of Ministers of Ukraine of 28/10/2004r. №1442”;
- The Land Code of Ukraine amended on 28/12/2007 №107-VI.

According to the law of the valuation of grounds, depending on the purpose and methods of carrying out the valuation, the following kinds of valuation can be differentiated:

- soil classification of grounds,
- economic assessment,
- financial assessment.

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The latter depending on the destination and procedure of carrying out can be:

- normative,
- expert.

2. Improvements on the Grounds (Plots)

The real estate [8] is the name for a ground plot without improvements or a ground plot with improvements, which are inseparable from it, i.e. buildings, technical objects, their parts, as well as other property, which according to the law, is classed as real estate.

The plot [7] is a part of the surface of the ground with the established borders, defined location and defined rights to it. During the valuation the plot is looked at as a part of the surface of the ground and the space over and/or under it, which is necessary to make the ground improvements.

Ground improvements are a result of any actions leading to the changes in the characteristics of the quality of the plot and its values. Ground improvements include material objects within the borders of the plot, the transfer of which is impossible without changing their valuation and their destination, as well as the results of economic activities or carrying out a certain kind of works (changing the relief, improving the soil or ground, distribution of sowings, years-lasting plantations, engineering infrastructure).

3. Expert Valuation

Expert valuation is the process of defining the value of the object for the date when the valuation takes place.

The objects of expert valuation are plots or their parts with a defined place where they are situated and defined by the laws.

The objects of expert valuation can be divided into:

- plots (their parts) not containing ground improvements,
- plots (their parts) containing ground improvements, but agreed to be considered as free from ground improvements.

Expert valuation assumes defining the market value (probably the price of selling on the market) or other kinds of values of the valuated object (deposit value, insurance value, value for the land and mortgage register and others), for which it can be sold (acquired) or in another way the rights to the object would be transferred, for a defined date of valuation, according to the terms of the agreement.

Expert valuation of plots is a result of defining the value of the plot and rights connected with this, by an expert (in the valuation of plots) with the application of the whole range of valuation methods and procedures, regarding data analysis, carrying out calculations and presenting the results in the form of the appraisal study.

Carrying out an expert valuation includes the following stages:

1. Examining the plots and recognizing the situation on the real estate market.
2. Defining the kind of plot values, respectively to the conditions of the agreement.
3. Submitting the request for the evaluation and making the agreement on carrying it out.
4. Collecting, processing and analysis of input data, necessary for the valuation.
5. Defining the most efficient way of land use in the plots.
6. Selection and definition of approaches.
7. Defining plot values with the selected methods and making the final conclusion.
8. Submitting the appraisal study.

Defining the plot values means applying one or several methods of valuation according to selected approaches.

Applying the comparative approach demands the method of comparing pairs or the method of a statistic market analysis. According to these methods the value of the evaluated object is determined on the level of the prices of the earlier sold similar objects, regarding the differences in the character of the agreement and attributes (features) of the plots, influencing their value.

Applying the revenue approach one should use the investment method or the method of the capitalization of ground rent (the profit method). The investment method means defining the values of the plots as capitalized pure operational profit due to renting the plot. The method of the capitalization of ground rent regards the capitalization of incomes coming from using the plot (different from renting) by the owner or user. The mentioned methods are applied using both simple and complex capitalization of the expected profits.

Applying the comparative approach combined with cost approach one should apply the economic method or the method of proportionality (transfer/projection). The economic method means the determination of the plot value as a difference between the expected selling price of the improved plot and the costs of ground improvements, regarding the investor's profit. The method of proportionality (transfer/projection) means assessing the value of the plot as a part of the total value of the improved plot.

Applying the revenue approach combined with cost approach one should apply the rest method for the plot or the method of revenue division. According to the rest method the value of the plot is determined as a difference between the current value of the capitalization of pure operational revenue (or rent revenue) from the improved plot and the values of ground improvements.

The method of revenue division means the determination of the plot values as capitalized value, using the rate determined for the plot – the difference between the pure operational revenue of the improved plot given to rent and the expected revenue from the capital invested in ground improvements. The expected revenue from ground improvements is determined as a product of their values and the rate of capitalization for ground improvements.

The method of development (potential use) combines the application of all the three approaches. In this case the plot value is calculated as a difference between the profits from the predicted use and the costs connected with this use.

Making the final conclusion on the values of the object is based on the comparative analysis from the obtained results and market data.

4. Approaches and Methods of Expert Valuation of the Plots

The expert valuation of the plots is carried out with the application of the following approaches:

1. *Comparative*, based on comparison of the prices of selling similar plots.
2. *Revenue*, based on capitalization (simple and complex) of pure operational or rent revenue.
3. *Cost*, based on taking into account the costs of ground improvements.

According to the law the combination of approaches can be also applied for the objects.

Ad 1. According to the approach based on the comparison of selling prices for similar plots, the plot value is assessed according to the level of market prices. The value of the plot is established by introducing corrections to sale prices of similar plots, calculated based on the difference in the conditions of agreements and in attributes influencing this value. The corrections are determined based on pair comparison or statistical analysis of market data.

The corrected sale price of a similar plot is determined from the formula:

$$C_{sa} = C_a + \sum_{i=1}^a \Delta C_{aj} \quad (1)$$

where:

- C_{sa} – corrected sale price a -j of a similar plot in hryvnias,
- C_a – actual sale price a -j of a similar plot in hryvnias,
- n – number of compared features (attributes),
- ΔC_{aj} – difference (correction) in sale price (+, -) a -j of a plot similar to the plot, assessed according to j th comparison attribute.

Thus one should define the value, for which the compared plot would be sold, if it had identical features (attributes) as the valuated plot. If the features (attributes) of the compared plot are better than the respective parameters of the valuated plot, its actual price should be diminished, and if they are worse, the price of the valuated plot should be increased.

The comparison of the object of valuation and compared objects is carried out according to indicators such as, the price of the object of comparison, price of the surface unit.

The basis for the definition of the plot values by comparing the sale prices of similar plots, consists of sale prices of these plots, which according to their attributes, influence their value, and are satisfactorily similar to the evaluated plot.

To determine the market value of the real estate applying the comparative approach, the information on similar real estate should meet the following criteria:

- the conditions of buying-selling agreement or the conditions of the offers of making such agreements are not different from the conditions responding the requirements used in defining the market value;
- selling similar real estates was carried out meeting typical payment conditions;
- the conditions on the market of similar real estates, which influences the formation of sale prices or offers, on the date of the valuation did not change significantly or the changes could be taken into account in the calculations.

The main attributes of comparison are: place where the plot is situated, physical and functional characteristics, conditions of sale and other.

If the number of the sales of similar plots on the market is high, to determine the values by comparison of sale prices, the methods of mathematical statistics.

Ad 2. According to the approach based on capitalization of pure operational or rent revenue (actual or expected), the valuation is carried out by defining plot values at most effective use of the plot, regarding the established charges and restrictions.

The investment method assumes the determination of the plot values as capitalized pure operational revenue coming from giving the plot to rent. The method

of the capitalization of ground rent assumes the capitalization of revenues from using the plot (different than a rent) by the owner or user.

The pure operational revenue is determined based on the analysis of market rates of the rent payment for the plot. Rent revenue (ground rent) is calculated as the difference between the expected revenue from the plot-obtained production (actual or agreed) and the costs of production and the producer's revenue.

Simple capitalization is based on assumption that the money stream coming from using the plot is continuous and does not change. The plot value is determined as the ratio between the pure operational or rent revenue and the capitalization rate, according to the formula:

$$C_k = \frac{D_o}{r_k} \quad (2)$$

where:

- C_k – plot value, determined by simple capitalization,
- D_o – annual pure operational or rent revenue,
- r_k – capitalization rate as a decimal fraction.

Pure operational revenue is a difference between the revenue from the rents paid for the plot and/or its improvements, defined by the market demand, and the annual costs of maintenance and exploitation of the plot and its improvements.

Using the rate of the capitalization of the rent revenue or pure operational revenue is calculated into the current value of the object.

Complex capitalization (discounted from money streams) is based on assumption that the limitation and variability of the money stream coming from the use of the plot during certain period, and then its sale on the market. In this case the plot value is determined as the current value of future revenues from its use and sale, according to the formula:

$$C_D = \sum_{i=1}^t \frac{D_{oi}}{(1+r_D)^i} + R_b \quad (3)$$

where:

- C_D – plot value, determined by complex capitalization,
- D_{oi} – expected pure operational or rent revenue for i th year,
- R_b – current value of reversion (residual value) (reversion – expected plot value for the period following the forecast),
- r_D – discount rate,
- t – the period (in years) that is considered while complex capitalization of pure operational or rent revenue.

Usually the rate of capitalization consists of two elements:

- 1) rate of the revenue from the investment (discount rate);
- 2) rate of the capital return, applied to the real estate, which gradually loses its value in time:

$$r_k = Y + H \quad (4)$$

where:

- r_k – capitalization rate,
- Y – the rate of the revenue from the investment (discount rate),
- H – the rate of the capital return.

Because the revenue from the exploitation of the plot is unlimited in time (perpetual), and the plot does not lose its value in time, from the above formula (4) the following formula is derived:

$$r_k = Y = r_D \quad (5)$$

where:

- r_k – rate of capitalization,
- Y – rate revenue from the investment (discount rate),
- r_D – discount rate.

Thus the rate of capitalization for then plot equals the discount rate.

The rate of capitalization is defined as the ratio between the pure operational revenue and the price of selling a similar plot, or calculation based on the discount of the capital invested in the plot, regarding the changes of the value of money. The rate of the capitalization for the plot can be also determined as the difference between the general capitalization rate for the improved plot and the rate of capital return, regarding the weight of the values of the ground improvements.

If we received the satisfactory information on the revenues from using similar real estates and prices of similar real estates, for defining the capitalization rate and discount rate, the priority method is based on the comparison of the forecasted annual pure operational revenue (rent revenue) and sale prices (offer prices) for similar real estate.

Ad 3. The approach based on taking into account the costs of ground improvements is applied in the valuation of the improved plots or plots, for which the improvements are planned, provided it is used in the most efficient way (actual or agreed).

The plot value is defined as the difference between the expected revenue from selling the improved plot (or capitalized pure operational revenue or rent revenue from its use) and the costs of the ground improvements, according to the general formula:

$$C = C_o - K \quad (6)$$

where:

- C – plot value, determined by the calculation of the costs of ground improvements,
- C_o – expected revenue from selling the plots or capitalized pure operational or rent revenue from its use,
- K – costs of ground improvements.

To define the current value of the future revenues and costs, unequally distributed in time, the discount of proper money streams are used.

For the improved plot, the plot value can be determined by establishing the characteristic ratio between the market value of the plot and the ground improvements in the region of the valuated object.

The economic method means the determination of the plot value as the difference between the expected sale price of the improved plot and the costs of ground improvements, taking into account the investor's profit:

$$W_d = W_{ud} - W_{ug} \quad (7)$$

where:

- W_d – plot value,
- W_{ud} – value of improved plot,
- W_{ug} – value of ground improvements.

The proportionality (transfer) method means the determination of the plot value as the part of the total value of the improved plot:

$$W_d = W_{ud} \times d \quad (8)$$

where:

- W_d – plot value,
- W_{ud} – value of the improved plot,
- d – the plot part of total value of the improved plot (the ratio of the plot value to the total values of the improved plot), which is defined from the tables of situation classes.

The tables of situation classes are the values of the area expressed in coefficients and the plot expressed in percentage.

According to the rest method the plot value W_d is determined as the difference between the current capitalization value and pure operational revenue (or rent revenue) from the improved plot and the value of ground improvements:

$$W_d = \frac{W_{ud}}{r_{ud}} - W_{ug} \quad (9)$$

where:

W_d – plot value,

W_{ud} – value of the improved plot,

r_{ud} – the rate of the capitalization for the improved plot,

W_{ug} – value of ground improvements.

The method of the revenue division means defining the plot values as the capitalized with rate of determined for plot – difference between the pure operational revenue from the improved plot let to the usufruct and the expected revenue from the invested capital in the ground improvements. The expected revenue from ground improvements is determined as the product of their values and capitalization rate for ground improvements:

$$W_d = \frac{D_{ud} - W_{ug} \times r_{ug}}{r_d} \quad (10)$$

where:

W_d – plot value,

D_{ud} – revenue from the improved plot,

W_{ug} – value of ground improvements,

r_{ug} – capitalization rate for ground improvements,

r_d – capitalization rate for the plot.

The development method (potential use) combines the application of all the three approaches. The plot value is determined as the difference between the revenues from the predicted use and the costs connected with the transformation to this use.

5. Valuation of the Rights to the Usufruct of the Plot and the Rights of the Limited use of Someone Else's Plot

For the valuation of the rights to the usufruct of the plot the following approach is applied:

1. Comparative approach, based the on comparison of sale prices.
2. Revenue based on the capitalization of additional revenue from the rented plot.

Ad 1. In the approach based on the comparison of sale prices, the value of the usufruct rights is determined on the level of the prices of selling the rights for the usufruct of similar plots regarding the differences, influencing their price – the conditions and date of selling; situation; physical properties; existence of limitations in the use of the plot; the duration of the usufruct.

Ad 2. Applying the approach is based on revenue capitalization, value of the usufruct right is determined as the current value of future additional revenue for the user, according to the formula:

$$C = \sum_{i=1}^t \frac{D_{oi}}{(1+r_D)^i} \quad (11)$$

where:

- C – the value of the usufruct right, determined by complex capitalisation of pure revenue in hryvnias,
- D_{oi} – additional revenue of the usufructer for the i^{th} year in hryvnias,
- r_D – discount rate,
- t – the period of the usufruct in years.

Additional revenue is calculated as the difference between pure operational revenue or rent and the rent determined in the usufruct agreement. While determining the values of the renting of the plot for the built-up plot, it is useful to apply the rest method for plot. This method assumes the division of the additional revenue between physical components – the plot and ground improvements. Valuation of usufruct right of the limited use of someone else's plot is carried out regarding the influence on the defined use of the plot (its functional comprehensiveness, buildings, the possibility of the best use and others). In this case the valuation of these usufruct right can be carried out in the relation to the defined plots, and the plots charged with those usufruct right. The value of such usufruct right is determined as the difference between the market value of the plot before and establishing them. The value of the right for the limited use of someone else's plot can be also defined by the comparison of sale prices of similar plots, the difference of which means the presence (or absence) of such usufruct rights.

While defining the value of the perpetual usufruct rights the simple capitalization method of the expected additional revenue is used.

6. Conclusions

In the law on the valuation of plots there is the trend to single out the activities referring to the valuation of plots, rather than integrate them in the whole system of the valuation real estates.

The market value of the plot can be directly defined by comparison of sale prices of plots without improvements, or by the capitalization of the revenue because letting them to usufruct, regardless ground improvements or – in particular, strictly defined cases – by the capitalization of ground rent. In practice it is rather difficult to achieve for several reasons. Firstly, most plots being sold have ground improvements. Even in agricultural grounds, the only ones falling into the category of not improved are (and only with certain approximation) the ones with naturally sawn trees, grasslands and uncultivated land. All the remaining plots, including agricultural plantations, are treated as improved. Secondly, mainly not improved plots, being the state or municipal property, are let to usufruct, which means that the rent payment is decided based on the normative valuation, which excludes the possibility of defining the market values of the available plot. This makes the valuation of not improved plots more difficult, but does not exclude the possibilities of defining its market value. The plots without improvements have never been and will never be numerous.

There is one more question, connected with the application of the method of the capitalization of the ground rent: this method in fact allows the valuation of the plot by the subjects of economic activities, but this only refers to the initial sector; i.e. the capitalization of the ground rent is only acceptable with the valuation of the plots of agricultural land, forest land and open cast exploitation of minerals.

The approach of comparative methods and revenue approach in the valuation of real estate are always directed into the valuation of either not improved or improved plots. The problem is that the market does not divide the price of sale or rent according to the physical components of real estates, but the latter is seen as the whole object. The additive model of the value of real estate is only acceptable in the cost approach and only on the condition that the value of each component – plot and ground improvements – is derived from the market value for the whole object. The market value of the plot can also be defined with comparative or revenue approach, but the market value of ground improvements will always be determined by the rest value of the replacement (restoration) of ground improvements. Otherwise the cost approach will be of non-market character.

The rest value of the replacement (restoration) of ground improvements is the value of the replacement (restoration) of all the kinds of improvements. Thus the valuation of plots is carried out with the application of comparative approach and revenue approach based on the analysis of the information on the value of selling prices (offer prices) and rent payments for similar plots, and – if necessary – regarding costs of ground improvements within the plot, using the cost approach. There are however situations when it is impossible to define the market value of the improved plot, for instance of a special real estate the value of which is calculated as the rest replacement value. In a given example for the plot valuation the

development method (potential use) is applied, which is based on the assumption on the possibility of achieving the most efficient use by selling or letting to the usufruct the plots made as a result of the division (or combining) the valuated plot. In the framework of this method, the plot value is determined as the difference between the current value of the revenues from the assumed use and current value of costs connected with the transition to such use.

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