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METHODOLOGICAL FOUNDATIONS FOR IMPLEMENTATION OF EXPERT-MONETARY EVALUATION OF AGRICULTURAL ENTERPRISES: LAND AND MORTGAGE LENDING

Abstract

Introduction. *The development of the agricultural sector of the Ukrainian economy is impossible without attracting significant credit resources, which requires the creation of a number of prerequisites necessary for increasing the volume of lending to agricultural enterprises. First of all, such prerequisites should include the creation of a favorable investment climate at the macro level and the improvement of the creditworthiness of agricultural enterprises - potential borrowers of mortgage loans at the macro level. One of the components of creditworthiness is securing an obligation. And it is precisely when it comes to the agricultural sector, which has its own characteristics, that the question of an objective assessment of mortgage items arises, because this is one of the main elements of its security. Agricultural enterprises will be able to attract powerful investments only if they are in good financial condition and have sufficient security.*

Methods.*The scientific article used both general scientific and special methods of research on land mortgage lending when carrying out an expert monetary assessment of agricultural enterprises. Thus, the following methods used in the assessment: the direct capitalization method and the indirect income capitalization method are used when justifying the forecasting period; when forecasting gross income; when forecasting operating expenses; forecasting net operating income (rent income) by years, quarters or months within the relevant limits of the forecasted period; substantiation of the method of the valuation procedure for determining the discount rate and its calculation; determining the present value of the cash flow as the sum of the present value of net operating income (rent income); when forecasting the cost of reversion and calculating its present value; determining the value of the valuation object as the sum of the present value of the current cash flow and the current reversion value.)*

Results. *According to the results of the research, it can be stated that the essence of the application of various valuation methods, as evidenced by domestic practice, is the element-by-element assessment of the value of the enterprise, i.e. the assessed property complex is divided into constituent parts, each of them is assessed separately, and then the value of the entire property complex is determined by summation. Such valuation must be carried out in strict accordance with the International Valuation Standards (International Valuation Standards), MSO and National Valuation Standards (NSO).*

Discussion. *A review and analysis of international and national property valuation standards shows that there is a tendency to improve national standards in the valuation of integral complex real estate objects and projects. The analysis of methodical approaches to assessment made it possible to identify the differences between international and national approaches, the use of various assessment tools and the expediency of their application in the current state of development of the economy of Ukraine. It also became clear that the economic development of Ukraine does not allow to fully use the market and income approaches and abandon the property approach, as is done in other countries. It is also proposed to abandon the assessment methods prescribed in national standards and accept them as clarifications or recommendations, following the example of international standards. It is also proposed to change the existing term "integrated property complex" to "enterprise". The concept of "enterprise" is broader and more fully corresponds to the approach to assessment when using international standards.*

Keywords: *expert monetary assessment, mortgage, credit, mortgage bank lending, risk, mortgage market, banking sector, mortgage lending.*

Introduction.

In context of economic transformations, introduction of private land ownership and land payments, formation of the land market, and land and mortgage lending, need for monetary valuation and other real estate has become urgent. The results of land valuation should take into account the real state of the market, so the appraise should avoid unrealistic assumptions about changes in the market situation, especially in the conditions of economic instability, when there is a risk of overvaluation or undervaluation of land property.

Economic category “valuation” is inherent in market processes, which is unstable economic situation can be a difficult problem for the appraiser. However, this does not preclude using the so-called “market methods of valuation”, but, on the contrary, requires the appraiser to be more professional and responsible for attracting market data and justifying conclusion on the value of the land plot. In interpretation of foreign scholars, first to understand inability of mercantilist doctrines to both explain and justify new processes and phenomena due to rapid development of manufacturing and market relations in England was William Petty [10]. This English economist developed effective methods of land survey and proposed to determine the value of land by summing up a number of annual rents [10]. Next step were scientific achievements of Ricardo, who proposed his own theory of rent: “Methods are used when there is sufficient data to estimate income”. He noted: “earnings are stable or at least expected to be approximately equal to future cash flows or growth at moderate rate”. This applies, for example, to

businesses that are rent-based, have fixed customers' base and are expected to last for many years, as present value is very sensitive to changes in capitalization ratio. To apply direct capitalization method, through justification of capitalization ratio is required [13].

Analysis of recent research and publications.

Analysis of recent research and publications. The theoretical and informational basis of the study of the methodological bases of the implementation of the expert-monetary assessment of agricultural land-mortgage lending enterprises is the legislation of Ukraine, which regulates the operations of commercial banks in the real estate market, as well as the work of domestic and foreign researchers in this field. Considerable attention is paid to International Valuation Standards developed by The International Valuation Standards Council - an independent non-profit organization that updates and clarifies generally accepted standards for asset valuation around the world in the interests of the international community, MSO-2022. It is worth noting that the studied problem is in the field of attention of a wide range of researchers who study it from different angles. For example, the reformer of traditional views was R. Ratcliffe regarding the "real estate valuation" initiated by: Golden P. [5], Dixon J. [23], Copeland T. [17], Ricardo D. [25], Steven K. [11], Stoner J. [13], Harrison H. and. Hika J [15], Fisher E. [34], Sharpe W.F. [32, 33], Schwartz P. [31], Willians D.H. [35]. In his work "The term of economic life in estimation" (1938), he justified that the estimation of the residual economic life of improvements is not mandatory for the estimation according to the income approach, and also emphasized the importance of the adequacy of the estimation of only the expected income and the expected change in the value of object for the term of ownership. Continuing his research and highlighting their results in works of the 60s and 70s of the last century, he proposed a new concept of understanding the market value, which is used in the countries of the world. First, R. Ratcliffe argued that the assessment of the market value should still be necessarily aimed at predicting the price at which the asset will be sold in the market under certain conditions; secondly, the assessment of the market value involves determining not a certain price, but the most likely one, which is reflected in international valuation standards.

Purpose.

The purpose of the article is the methodical-theoretical substantiating of methods, rules, principles and evaluation regarding the implementation of expert monetary evaluation of agricultural enterprises as integral property complexes and the improvement of relevant evaluation methods according to the International Valuation Standards (IVS) of the Ministry of Education and Cultural and the National Valuation Standards (NSV).

Research methodology.

In the methodology of scientific research in land and mortgage lending in developed sectors of the real estate market, expert appraisers use linear and nonlinear models of a complex type. This can also include the adjustment method, which includes relative comparative analysis. This type of analysis involves determining adjustments that are made based on a comparison of the degree of influence of each parameter on the value of similar real estate objects. Therefore, the use of such an analysis is necessary. The general grouping method is the pre-final one. This method is used in an active market, where a sufficient number of comparative sales can be found. The purpose of the final personal interview method is to survey professionals and knowledgeable individuals, as a result of which an information field is created, which is especially useful when making adjustments. The following methods have shown the effectiveness of their application in relation to the comparative method. If we clearly take into account all the factors specified in these methods, we will see that the appraiser, when conducting an assessment using a comparative approach, will assess the data of the enterprise with high accuracy.

The comparative unit method (unit cost method), in which the adjusted cost of a unit of measurement is multiplied by the number of units of the assessed object. The units of measurement can

be square or cubic meters, one place, etc.

The method of division into components, this method is based on determining the components of real estate and multiplying them by aggregated cost indicators. The quantitative survey method consists in compiling object and consolidated estimates for the construction of the assessed object under construction. This is the most labor-intensive method, but it is significantly simplified if there are old estimates of the assessed object, according to which it was built. In addition, the expert appraiser may resort to the services of a specialist estimator, who will develop an estimate of the assessed object using uniform norms and prices, price indices for construction and installation works, and other necessary documentation.

The following scientific methodological approaches are used to measure external wear and tear:

- pairwise analysis (when two comparable properties are sold on the real estate market, one of which has signs of external wear and tear, and the other does not).

- comparison of rental income of two properties similar to the one being assessed, one of which is subject to negative effects. Capitalization of income losses from comparing these two properties is characterized by the magnitude of the external effect.

Results.

The next step in the formation of methodological foundations for determining value was A. Marshall's work "Principle of Economic Science", in which he formulated principles of three currently accepted approaches to the value assessment, namely: comparative, income and cost [30]. His followers transformed elements of the economic theory, in particular, three approaches to valuation formulated by A. Marshall, which are reflected in modern property valuation standard. Thus, the valuation theory of the leader of neoclassical school for the first time divided into three approaches to the market value assessment, based on which valuation models were developed during the twentieth century including comparison of sales, replacement costs and income capitalization. The mathematician S. Stevin was a follower in the development of the "valuation" methodology, and he was the first who used formation of tables of compound interest as the basis of the income approach. Later, D. Berman and S. Schmidt [5; 17] laid the foundation of the modern understanding of risk and its measurement, which was the impetus for thoughts of W. Inwood, who first published tables of coefficients of the present and future value of the annuity.

Continuing development of the real estate valuation methods, E. Fischer in his work "The Nature of Capital and Income" also mathematically links value to income, defined it as the present value of future income from the object [34]. The concept of analysis developed by J. Williams based on discounting cash flows, which became the discounting method in the income approach, also occupies an important place in the scientific work of his predecessors [17]. The most reasonable methodological approach, according to J. Hicks [11], is the income approach to determining the market value. In contrast to the proposed methodological approaches of previous English classics, it is based on the formation of the cost of production processes as the result of the cost of its three main factors: labor, capital and land. According to the French economist of the first half of the nineteenth century, J. B. Say, each of these factors is part of value: "labor is wages, capital is interest, and land is rent". [11].

In accordance with current conditions of entering by Ukraine market relations in the expert monetary valuation, the Law of Ukraine "On Land Valuation" provides the most comprehensive interpretation of the "valuation" concept, which includes the use of a set of certain approaches, methods, techniques, valuation procedures that ensure collection and analysis of data, calculation and execution of results in the form of a report [18]. According to L. Vorotina, V. Vorotin, M. Demianenko, S. Kruchok, A. Tretiak, O. Shpychak [3; 12-16; 18, 26-29], the state and use of agricultural land, as well as its assessment using scientifically sound methods and techniques, largely determine the way out of the economic crisis and further development of our society.

The concept of "evaluation" is considered in many works of both domestic and foreign scholars.

The Glossary of Economic Terms defines "valuation" as a certain process of reflecting information that may be included in its financial statements in monetary terms. Valuation provides a generalized view of the diversity of business processes. These terms are both subjective and objective. They belong to the evaluation activity, which in turn determines the significance of certain phenomena in a certain way [2; 26].

The Financial Dictionary and Reference Manual edited by M. Demianenko interprets the concept of "expert assessment" as a substantiation of the characteristics of fixed assets, which are based on strict calculation by the method of exact sciences [6]. The research of scholars studying this definition and a number of economic literature sources indicate that the concept of "assessment" is inherent in a set of economic relations. In contrast to latter, financial and foreign financial and economic dictionaries treat "valuation" as a process of determining the value [6]. Thus, the study of literature sources on the problem of research indicates lack of a unified interpretation of the theory of "evaluation methods" and the concept of "evaluation" on certain issues. The above concepts are quite broad and reflect, first, the market value of professional asset valuation, and second, the tendency to use them in determining the value of assets for accounting and financial purposes [6].

The issue of what exactly is a market value is being worked out to clarify by G. Assaul, L. Vorotina, V. Vorotin, D. Hrydzhuk, Y. Dekhtiarenko, A. Mendrul, O. Pshenyshniuk, and others [1; 3; 4; 7; 12-14; 18, 21]. The valuation of land plot is a valuation of active capital, so it cannot be combined with property (passive) capital. This point of view is substantiated by A. Tretiak by distinguishing between approaches to land valuation in two areas: valuation of land plots and valuation of other real estate [27].

According to the Methodology for Expert Monetary Valuation, expert monetary valuation is the determination of the market (probable sale price in the market) or other type of value of an object of valuation (pledge, insurance for accounting purposes, etc.) for which it can be sols (purchased) or otherwise disposed of on the date of valuation in accordance with the terms of the agreement [38; 39; 40; 41; 44; 45]. The Law of Ukraine "On Land Valuation" provides the following definition of the concept: "The expert monetary valuation is the result of determining the value of the land plot and related rights by the appraiser (expert on land valuation) using a combination of approaches, methods and valuation procedures that ensure the collection and analysis of data, and the preparation of results in the form of the report" [42].

The Business Dictionary explains that professional monetary valuation is assessment of the value of property (securities, property, equipment, etc.) based on the balance sheet of project of the company professionally trained to carry out this kind of assessment. Professional qualification of the expert must necessarily correspond to the type of property valuation [20; 21; 22; 23].

According to the Land Code of Ukraine, expert monetary valuation of property and property rights is a process of determining their values as of the date of valuation in accordance with the procedure established by regulatory legal acts and is the results of practical activities of the appraiser. This appraisal is used in civil law transactions involving land plots [24].

The most significant contribution to theoretical approaches to land valuation belongs to the following domestic scholars who have dealt with this issue, namely:

P. Vedenichev, S. Kruchok, N. Kruchok, V. Mesel-Veselyak, I. Liutii, L. Novakovskyi, P. Sabluk, N. Tanklevska, A. Chupis, A. Tretiak, O. Shpychak, and others. [14; 15; 18; 19; 21; 23], who focus on the role, functions and tasks of land services in the management of land resources in different countries. S. I. Kruchok notes the lack of clearly defined concepts in the field of valuation in Ukraine, so there is no distinction between the concepts of "technique", "method", "approach" and etc. In this regard, it is interesting to analyze the interpretation of the definition of these concepts in foreign practice [18]. When considering methods of the real estate valuation, it is important to clarify the essence of the definition of "real estate".

The Economic Dictionary defines real estate as immovable property, which includes land plots, it is directly related to the land, i.e. objects, which movement is impossible without causing significant damage to its value and purpose [21]. Some theorists believe that it is impossible to divide real estate by

origin, and therefore including land plots, subsoil plots and everything that is closely related to land, i.e. objects that cannot be moved without causing damage to their purpose, such as forests, perennial plantations, buildings, structures, construction in progress, etc. According to some researchers, in addition to real estate by descent, there is "real estate by law" in Ukraine. It includes exactly those objects that are subject to state registration: aircraft, ships, inland navigation, vessels, and space objects. According to the definition of the Anglo-Saxon legal system, "real estate" is divided into "real estate" – real estate as objects of the material world (buildings, structures, land plots, etc.) and real-estate property – property rights to real estate [21; 28].

Thus, the list of valuations methods cannot be considered exhaustive. Scholars believe that the income approach determines the "market value" [21; 28], other - "investment value combined with market value" [1; 9], and still others - "market value, liquidation value, appraisal or tax value, insurance value, value of the operating enterprise" [8; 9; 10].

Since Ukraine gained its independence. A new stage of society development has begun, where an important role is played by valuation activities, regulatory and expert monetary valuation of enterprises in the agricultural sector. It should be noted that development of appraisal activities in our country has gone through several historical periods. Thus, taking into account historical development of the evaluation activity in Ukraine, we can identify its most important stages.

The first stage of development of real estate appraisal has a long history, but as a scientific discipline and professional activity it began to take shape only the eighteenth century with the spread of commodity-money relations. Sales and purchases of land plots, leases, rents and taxation required the most accurate determination of value. It was during this period that a new branch of science, valuation statistics, was established, with land and other real estate as its subject matter and the main task of identifying the laws that determine their value. As a type of professional activity, real estate appraisal in Ukraine at the end of the nineteenth century was at the level that European and American countries reached only in the 60s and 70s of the twentieth century. This period was preceded by development of appraisal activities in the Russian Empire since the reign of Catherine the 2nd, and the Emperor Alexander the 3rd signed the Law on Appraisal [8; 9].

At the second stage - in the 80s and 90s - instructions on real estate valuation and methods for describing and determining profitability in valuation were developed at the highest expert level. According to Professor A. Rusov of Kyiv University, the most important achievement of this period was valuation of real estate of Kharkiv, which was carried out in 1892-1893. It actually determined the entire further development of the local real estate methodology in pre-revolutionary Russia [8; 9]. The history of the real estate valuation in pre-revolutionary russia can be considered to go back more than 50 years. A characteristic feature is that in this state of the early twentieth century, as new scientific discipline was formed, which was called "russian evaluative statistics" in the world at that time [17; 30; 31]. Unlike russia, in the USA, a profession of an appraiser emerged only during the sharp decline in property values during the Great Depression of the 1930s [5; 17; 34; 35]. In the former USSR in the 1970s, the profession of an appraiser did not exist, and appraisal activities had no practical application. The value of any property was set by the state once and for all. As a rule, the value was determined as book value and was measured at construction costs or purchase price.

The assessment was carried out in exceptional cases when joint projects with foreign countries or well-known companies were implemented. In most cases, there were large objects, namely: factories, aircrafts, missiles, ships and etc. For the first time in the Soviet Union, appraisal activities were put to practical use in a comprehensive assessment of the territory of our country. It was the structure and value indicators of the comprehensive assessment that became the basis for developing forms and amounts of payments for the use of local territories depending on the location [28].

The third stage of development of appraisal activities took place in 1991-1992, which was associated with the transition of the country's economy to market conditions. However, initial stages of the appraisal activity were not based on any regulatory framework, and it was carried out by researchers'

belief that an important impetus for emergence of the profession of an appraiser and development of appraisal activities in the Ukrainian state was the beginning of "small privatization", which legislative framework required valuation of buildings, various structures, integral property complexes of small state-owned enterprises, construction sites, and constructions [8; 9; 25].

Further development of appraisal activities was associated with privatization of large state-owned enterprises (especially with the introduction of the national currency), as there was a real need for expert monetary valuation of the business of operating enterprises, shares, stakes, land plots, in open and closed state structures, as well as intangible assets.

The final step of the newest period of development of the appraisal activity occurred in February 1995, when the Ukrainian Union of Appraisers ("UUA") was first united into a professional organization. In 1996, the Ukrainian Institute of Appraisal was founded, which united legal entities engaged in appraisal activities on a voluntary basis [7; 13].

Scholar point out [9; 10; 13; 15; 16; 37] that customers of appraisal works in Ukraine are banks, investment funds, companies and enterprises. Real estate appraisal is necessary for corporatization of enterprises or redistribution of shares, new additional share issue. To make an appropriate decision and to found out what potential belongs to the owners of companies, they often turn to the services of appraisers. Therefore, according to a number of scholars, it is extremely important to provide services of the experienced appraiser, whose opinion is a mandatory element in determining feasibility and efficiency of investing in certain objects.

International practice has developed the main methods (approaches) and techniques of expert monetary valuation of real estate used by some European countries and the International Valuation Standards Committee (Table 1). In this case, we are talking about three main valuation methods (in Poland - approaches to valuation), although their names differ slightly from country to country.

Martin A. substantiates the idea that in the process of further improvement of valuation activities in Ukraine, it is necessary to consider the practice of European countries. The current stage of transformation of agrarian relations in Ukraine is closely linked to the next stage of the land reform, which envisages the completion of privatization of agricultural land [19].

According to foreign practice and domestic experience, the income approach, unlike the market and cost approaches, is aimed at generating income from the property. This method is often considered to be the main one when conducting the assessment.

Since the value of an item is determined by capitalizing the potential income from it, this method is also called the capitalized income method or income approach. The capitalized income method is the principal method used to value assets created or acquired to ern a profit or rent. These objects include enterprises and their structural subdivisions as integral property complexes, as well as agricultural land intended for the production of marketable products; profitable land plots and profitable buildings.

Table 1. Main methods (approaches) of expert monetary valuation in European countries*

International Valuation Standards Committee	Country			
	Germany	Hungary	Poland	Ukraine
Method of capitalized income or discounted cash flow	Cost of income method	Method of valuation in terms of business development	Income approach (income approach)	Income approach
Cost method	Essential method	Estimation method based on expected costs	Cost-based (cost) approach or cost approach	Cost approach
Sales comparison method	Comparative cost method	Method of comparison with possible sale price	Comparison approach	Comparison approach

**Source: [22; 40-43].*

The vast majority of scholars, including J. Dixon, T. Galbraith, T. Copeland, J. Soros, W. Poll, K. Walsh, G. Harrison, J. Hick, H. Herbort consider this methodological approach to be the most

appropriate for assessing and determining the value of real estate of the income-producing property [4; 5; 25; 30; 31; 32; 33; 34; 35]. One of the features of this approach is that it takes into account principles of the most efficient use and expectations, according to which the value of the object of valuation is determined as the current value of the expected income from the most efficient use of the object of valuation, including income from its possible resale [11]. Thus, when calculating the price of the property using the income approach, the first step is to determine whether the income is lifetime or temporary. For example, a land plot will generate lifetime income because it does not have a fixed term of use. Perennial fruit plantations will generate temporary income because they have a defined period of use [5; 11].

Based on the list of valuation methods, let's try to evaluate the main methods of the income approach – direct income capitalization and indirect income capitalization.

The main feature is that the evaluation of the life income property is based on the ratio of possible annual income from the property to the relevant discount rate (capitalization rate). According to the scientist S. Kruchok, the method of direct capitalization of income is used to forecast a constant amount and equal intervals of the net operating income, the receipt of which is not limited in time [18]. Most types of real estate, as well as agricultural land, are considered to be a source of income, and the valuation of agricultural land will be determined by the expected income that can be obtained from the exploitation of the land resource [18].

The direct capitalization method, as noted by L. Vorotina and S. Kruchok, is used when constant or variable income is projected. This method is based on determining the capitalization rate, which is a capitalization ratio that takes into account both the net profit from operation of the property being valued and return on the capital spent on its acquisition [3; 18], and is determined by formula 1):

$$Vc = \frac{Ar}{Cr}, \qquad (1)$$

where, V – the value of the land plot determined by direct capitalization of net operating or rental income (UAH);

Ar – annual net operating or rental income (UAH);

Cr – capitalization rate (in the form of a decimal).

In the case of forecasting cash flows from the use of the land plot with unequal or non-constant values over a certain forecasting period, the method of indirect income capitalization is applied and is carried out according to the following formula [3; 18]:

$$Vc = \sum_{i=1}^{t} \frac{EN}{(1 + Cr_{к})^{i}}, \qquad (2)$$

where, Vc – estimated value of the land plot determined by indirect capitalization of net income (UAH);

EN – expected net income for the i-th year (UAH);

Cr – capitalization rate (ratio);

p – period (in years) taken into account for indirect capitalization of net income.

The method of indirect income capitalization (discounted cash flows) is used when the projected cash flows from using the property item, plant and equipment are of different amount and are constantly changing over a specified period.

The projected cash flows, including the cost of reversal, are discounting using a discount rate to calculate their present value.

The indirect capitalization method involves the following sequence of valuation procedures:

- justification of the forecasting period;
- forecasting gross income;
- forecasting operating expenses;
- forecasting net operating income (rental income) by year, quarter or month within relevant limits of the forecasted period;

- justification of the method of the valuation procedure for determining the discount rate and its calculation;

- determining the present value of cash flows as the sum of the present value of the net operating income (rental income)'

- forecasting the cost of reversal and calculating its current value;

- determining the value of the object of valuation as the sum of the present value of the current cash flow and the present value of the reversion.

Based on the above methods, other methods of calculating the capitalization rate are also used [3]:

1. Direct comparison method. Comparison of the object being valued with the analogue object. In this case, it is assumed that similar objects have the same capitalization rates.

2. The method of linked investments (equity and debt). It is used when both borrowed and equity capital is used to purchase property:

a) capitalization rate on borrowed funds (mortgage constant) is determined by the ratio of annual debt service payments to the principal amount of the mortgage loan;

b) capitalization rate on equity (equity capitalization rate) is determined by the ratio of net profit from the operation of the property attributable to equity to the equity amount.

The linked investment method (land and building) is used if it is possible to accurately calculate capitalization rates for each component of the property complex: building (structure) and land plot. The essence of this method is to determine weighted capitalization rates for land and real estate on it. Weighting of capitalization rates is based on the shares of these components in the total value of the property complex.

The Elwood method is a modified method of linked investments (debt and equity) that takes into account the length of the investment period and changes in the value of the property over time.

To calculate the total capitalization rate, Elwood proposed the formula [3; 18]:

$$R = Y - M \times Mk + dep \times ZSFF - app \times ZSFF, \quad (3)$$

where, *R* – total capitalization rate;

Y– rate of return on equity (ultimate return on equity);

M – ratio of the mortgage loan to its value (mortgage debt ratio);

Mk – mortgage coefficient;

dep, app – decrease and increase in the value of property over the forecast period;

SFF – the fundamental factor of the return on equity for the forecast period.

The cumulative method takes into account in the capitalization rate the adjustments for risks associated with investments, inefficient management, and low liquidity of funds. In addition to earning a profit in the form of interest on the invested capital, you can also take into account the time of reimbursement (return) of the invested capital, i.e., you need to add the arête of return on capital to the rate you receive. It is calculated as the ration of a unit to the number of years of its use.

The income capitalization rate is based on the premise that income from the use of the property and proceeds from its sale are converted into its current value, which will be the cost of property. The formula for determining the value of the property using the direct capitalization method is [3; 18]:

$$Mk = \frac{Vp}{C}, \quad (4)$$

It should be noted that the value of the property (Mk) when using the direct capitalization method, can be equated to the value of lease payments over the years of its operation. In this case, the method of calculating the value of the property value is determined by direct capitalization of the annual rent.

Capitalization of annual rents depends on individual assessment and the risk of the rent:

$$Vc = \frac{NP}{Rc} \times P = \frac{NP}{NP/Vrp} \times P = Vrp \times P \text{,} \quad (5)$$

where, *Vc* – value of the object being calculated using the income approach;
NP – net profit;
P – number of years of the object rent;
Rc – rent capitalization ratio calculated as the ratio of net income (NI) to the amount of annual rent (Vrp.).

The income capitalization method defines the necessary criteria, which are determined by a certain necessity of application in the valuation procedure, namely forecasting gross income. It is carried out based on the results of collected information on leases of the similar real estate to analyze the lease terms and (or) information on the use of this real estate; forecasting of operating expenses and net operating income (rental income) is usually carried out from a year from the valuation date. Net operating income is calculated ass the difference between gross income and operating expenses, rental income, in turn, as the difference between the expected gross income from the sale of products to be obtained on the land plot and production costs and profit of the produce for determining the capitalization rate and its calculation; calculation of the object value under assessment by dividing the net operating income or rental income by the capitalization rate.

Net operating income is calculated as the difference between gross income and operating expenses, rental income, in turn, as the difference between the expected gross income from the sale of products to be obtained on the land plot and the producer's production costs and profit; justification of the valuation procedure for determining the capitalization rate and its calculation; calculation of the value of the object under valuation by dividing the net operating or rental income by the capitalization rate; analyzing alternative types of investment and determining the risks of investing in the object of valuation compared to investments with minimal risk, as well as by available investments with minimal risk, and is other additional investment risks are available and which are associated with the object of valuation; other valuation procedures that characterize the return on invested capital and are justified in the property valuation report.

It should be noted that capitalization rate and the disclosure rate are determined by analyzing information on income from the use of similar property and its market prices or by comparing the yield on investment in alternative objects (deposits, securities, property, etc.). The justification for the choice of the valuation procedure and the calculation of rates shall be indicated in the property valuation report [9; 18]. The above criteria revealed the existence of necessary costs associated with comparing the consumer's characteristics of the valuation object in accordance with the consumer's characteristics of similar real estate, which income was considered by forecasting the net operating income of the valuation object. Therefore, they can be taken into account when applying direct and indirect methods of the revenue capitalization.

The direct capitalization method involves reducing the value of the valuation object determined in accordance with the requirements of clause 12 of the National Standard №2 by the amount of the current value of necessary costs of calculation. According to this method, they are added to operating expenses in respective periods of occurrence within the forecast period. Technical and economic feasibility of eliminating signs of physical and functional wear and tear are also taken into account when calculating the amount of the required expenditures. At the same time, the calculation of the object value is accompanied by calculation of the necessary expenses that are taken into account during valuation. Operating expenses are projected at prices effective as of the valuation date. The owner's expenses related to the generalization of gross income are also taken into account, as well as, if necessary, the expenses, specified in para. 16 of the National Standard №2.

Thus, the above features determine different types of expenses incurred when performing a valuation using the income capitalization. It is worth noting that the choice of valuation methods depends

on available information on the expected (projected) income from the use of the valuation object, their stable receipt, the purpose of valuation, and the type of the value to be determined. The appraiser's task is to forecast and justify the amount of income and expenses from current use of the appraised property, if it is the most efficient use, or from possible use, but the most efficient use, if it is different from the current use. As noted above, the income approach, unlike the market and cost approaches, is aimed at obtaining data on the property to meet the needs of the investor. In this case, the property is treated as a source of income. The disadvantages of this approach are that all calculations are based on projected data and preliminary expert opinions. The economic essence of the income approach is to transfer future income streams into their present value. The general calculation algorithm when using the income approach to valuation involves five operations (Fig. 1).

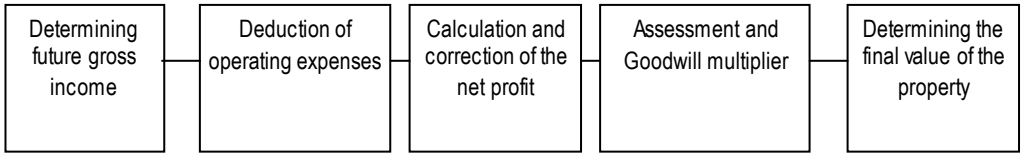

Fig. 1. General algorithm for calculating within profit approach*

**Source: [3; 18].*

Assessment and Goodwill multiplier. The Oxford English Dictionary defines goodwill as privileges transferred by the seller or by the business entity to the buyer; a list of customers or clients that is defines as a separate element of the business value. The International Accounting Standards Board defines goodwill as "the difference between the value of a business as a whole and the market price of its assets". Both definition describe the additional value obtained as a result of individual business characteristics and added to the value of the property being assessed.

To determine the value of the potential owner's goodwill, the appraiser must carry out a number of mandatory procedures (Fig. 2):

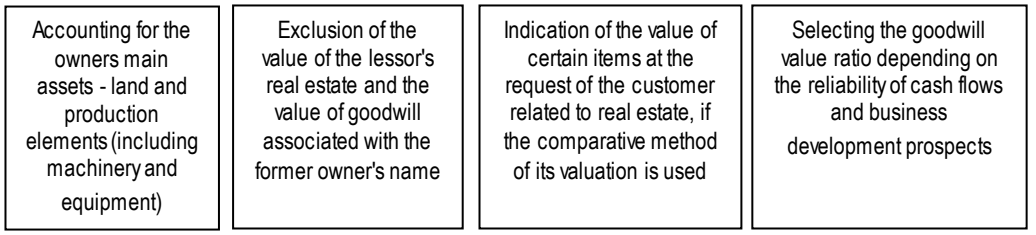

Fig. 2. Procedure for determining the value of the potential owner's goodwill*

**Source: [3; 18].*

Determining the final value of the property. For these methods they include: income capitalization (direct capitalization method); disconnected cash flows and the residual technique, the above problems lead to the search for other alternative approaches to the valuation using this method. Some researchers believe that valuation should necessarily include compound interest functions. To better understand the essence of the valuation methods of the income property, let us consider these functions that characterize quantitative changes in the value of money over time. It is worth that in the market economy, the comparative approach, unlike the income approach, is based on the analysis of the market sales and is used to value most real estate. Therefore, the main features is the use of the comparative method for unprofitable objects or objects which profitability is not crucial, i.e.: individual residential houses and

private apartments; household plots; land plots allocated for individual residential development; country houses, etc. The use of the comparative cost method is possible if there is evidence and sufficient information about actual market prices for objects similar to the object being measured, which have developed in the conditions of fair competition [40-45].

The comparative value method, according to some researchers [37-39], is the only method of valuation of unprofitable plots that can be used as the auxiliary method in the valuation of profitable objects. If the primary valuation technique is the comparative approach, the cost approach is used as a secondary valuation technique. The next feature of the comparative approach, which makes it possible to form a reasonable idea of the price for the property that is based on market information readily available to the appraiser [3]. It is important to take into account a peculiarity of the comparative approach, which is based on the principles of supply and demand substitution, and involves the analysis of sale and offer prices for the property with appropriate adjustment of differences between the objects of comparison and the object of valuation. The above features determine the criterion of necessary conditions for the valuation of real estate, in particular agricultural enterprises, as an integral property complex. In the market environment, special approaches to valuation are being developed that are based on general approaches. The main significance of the transactions carried out under the market approach is that the buyer of the property will not pay a price for it higher that the price at which the property similar in all respects can be acquired.

At the same time, when using the comparative (market) approach, the property similar to the one being valued is first selected, with its market price already known. After comparing their technical and economic parameters, the differences are recorded and corresponding amendments are made to the cost reflection that determine the underlying value. Since there are no two properties that are exactly the same in all these respects, it becomes necessary to adjust the sale prices of comparison properties [3].

Accordingly, the value of the property determined by this method is equal to the weighted average price of the similar property with adjustments to take into account its difference from the property being valued [3; 18]:

$$V = Ps \pm \sum Aac, \qquad (6)$$

where, *Ps* – selling price of the similar item (a set of homogeneous analogues);

Aac – the amount of corrective adjustments.

It should be noted that the general algorithm for using the comparative method in the valuation of real estate differs from the previously discussed algorithm of the income approach (Fig. 3).

The sequence of basic calculation operations under this method is determined by the following criteria: collecting comparative data, studying the deals, temporary adjustments, adjustments for differences in comparable properties, decision-making on the property value, and the payments are carried out by this method. The basic rule of adjustment should be followed this way: only the value of the comparable item is adjusted based on the contribution principle. The basic rule of adjustment should be followed, namely: only the value of the comparable item on the contribution basis should be adjusted. The units of comparison are the units of measurement of the property being compared and the property being valued [3, 18]. It should be noted that if the price adjustment parameters of comparable items are reflected in hryvnias or conventional monetary units, it does not matter in what sequence they are made. If they are expressed as a percentage, then the sequence of their introduction will affect the final result of their value of the object being valued.

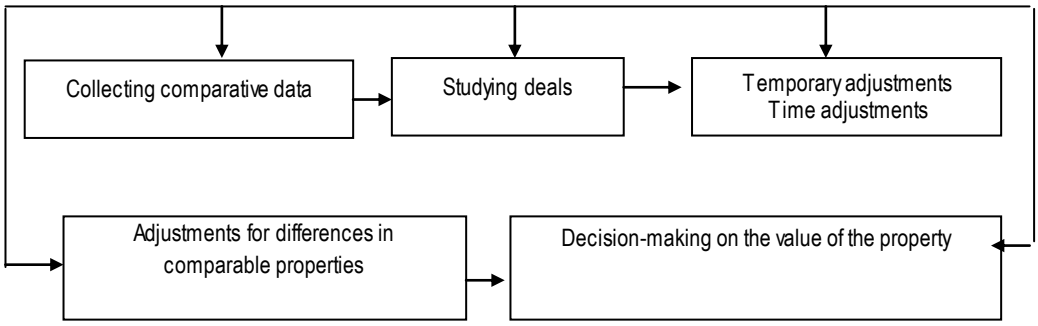

Fig. 3. Procedure for determining the value of the potential owner's good will*
**Source: [3, 18].*

Formula for determining the amount of the adjustment [3; 18]:

$$B_{ac} = k_{oc} \times \chi , \quad (7)$$

where, *Bac* – the amount of the adjustment to be calculated to the property value;
koc – the coefficient obtained for the unit of comparison;
x – measured data for the property being valued.

It should be noted that in the developed sectors of the real estate market, expert appraisers use linear and non-linear models of the complex type, defined by the formula [3; 18]:

$$Y_c = \sum_{i=1}^{u} \Sigma \varepsilon i \times \varphi_i , \quad (8)$$

Where, ε_i – regression coefficient;

φ_i – various variables that characterize certain factors on which the property value and the amount of adjustment depend.

The next adjustment method is relative comparative an analysis. This type of analysis involves determining adjustments based on the comparison of the degree of influence of each parameter on the value of similar properties. Therefore, the use of this analysis is necessary. The method of general grouping is the pre-final one. This is the method used in the active market where a sufficient number of comparable sales can be found. If the price spread is small, for example, about 1%, then it is safe to assume that the property value is the average value relative to the highest and lowest values in this group of comparable sales. The purpose of the final method of personal interviews is to interview professionals and knowledgeable individuals, resulting in the information field that is particularly useful for making adjustments.

The following methods have been shown to be effective in relation to the comparative method. If all factors specified in these methods are clarly taken into account, we will see that the appraiser will evaluate the company's data with high accuracy when conducting the comparative approach.

As noted earlier, information about market prices prevailing at the location of the item is used to value the item. However, if there is no such data, information on market prices prevailing in another location similar in characteristics to the location of the object being valued is taken into account. Determining the essence of this method in relation to agricultural assets depends on the analogy of comparable objects. It is when comparing identical objects that analogy takes center stage. I this case, the average actual market price is assumed to be the price of the object being valued. Therefore, the incomplete analogy occurs when comparing similar objects with similar purposes that differ in certain

respects.

The existing signs can be divided into both internal and external. Internal land plots include land plots that may differ in fertility, environmental conditions, topography and configuration. External signs are related to the availability or absence of encumbrances, different conditions of placement, use or sale of objects. Where the analogy is incomplete, the appropriate adjustment to actual market prices is required.

If the analogy is incomplete, the appropriate adjustment to actual market prices is required. [3]:

1. Property rights.
2. Financial conditions.
3. Terms of sale.
4. Time. Place of location.
5. Physical characteristics.

Analogous to the previous methods, one of the main methods used in determining the valuation of the real estate is the cost-based comparative value method or cost approach, as interpreted in foreign practice (in particular, in Poland). An important and challenging aspects of the cost approach is determining the depreciation. The valuation of real estate objects using the cost approach of agricultural enterprises depends on understanding the category of "depreciation". The following definitions of the essence of "depreciation" are known: it is loss of utility and value of the real estate object regardless the reasons it caused it [40-45]; it is depreciation, loss of property value compared to the cost of new property [42; 43; 44]; any loss of value relative to the cost of new construction [42; 44; 45].

In this case, the term "depreciation" is used in both valuation and accounting, and this can lead to misunderstandings. However, to avoid this, appraisers applying replacement cost methods use the term "accumulated depreciation", meaning any loss of value relative to the cost of new construction. Such losses can be attributed to physical wear and tear, functional wear and external wear and tear. The market value of the land plot as undeveloped is added to the resulting value. Based on the presented understanding of the category of "depreciation" and existing methods of assessing the market value of land plots and methods of assessing depreciation of real estate objects, let us consider the general algorithm of calculations using the cost method (Fig. 4):

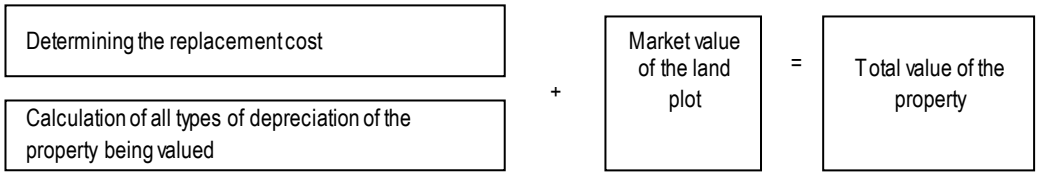

Fig. 4. General algorithm of calculations using the cost method*

**Source: [3; 18].*

Below are the methods for determining the replacement cost of the property [3]:

The method of comparative unit (unit cost method), in which the adjusted cost of the unit of measurement is multiplied by the number of units of the object being measured. Units of measurement can be square or cubic meters, one place, etc. This is the easiest way.

The disaggregation method based on identifying the components of real estate and multiplying them by aggregate values. The following components can act as the following ones: foundation, walls and ceilings, roof, floor, openings, finishing works, engineering equipment, labor payment. The aggregate indicators can be calculated per 1 m^3, 1m^2, 1running meter, 1 labor hour and others.

The quantitative survey method involves the preparation of object and consolidated construction estimates for the object under construction. This is the most labor-intensive method, but it is greatly simplified if there are old estimates of the object being valued, according to which it was built. In addition,

the expert appraiser may use the services of a specialist estimator who will develop an estimate of the object being valued using uniform standards and rates, price indices for construction and installation works, and other documentation. Typically, indirect costs account for 10-15% of the regional construction cost.

Determining depreciation of the property. In valuation activities, depreciation is considered to be the main factor affecting the value of the property when applying the cost approach. Depreciation is used to account for differences in the characteristics of the new and the appraised items.

Along with the category of "depreciation", the category of "accounting for depreciation of the object" is used, which determines the adjustment of the value of the reconstructed building (using this approach) to determine the current value of the object being valued. The concept of "depreciation" used in valuation activities should also be distinguished from the concept of "amortization" used in accounting. Thus, these categories divide wear and tear into three types: physical, functional, and external (economic) (see Fig. 4).

Physical depreciation reflects the change in physical properties of the property over time (e.g. defects in structural elements) due to operational and natural factors as is taken into account in depreciation rates. The main methods of calculating physical deterioration of buildings are as follows: expert, cost, regulatory, accounting and life cycle calculation. Physical wear and tear can be repairable and irreparable. At the same time, any defect of the object can be corrected, but the cost of correction should not exceed the expected benefit. To determine irreversible physical deterioration, building elements are divided into two categories: long-lasting and short-lived. It should be noted that deterioration of long-lasting elements (i.e., foundations, walls, floors, etc.) can be calculated by groups by determining their service life and remaining physical life in real conditions. Therefore, the degree of physical deterioration of the property is determined by inspecting technical condition of the building as a whole or its individual structural elements.

The following formula can be used to determine the proportion of the building depreciation. In general, it is defined as a weighted arithmetic average derived from the share of deterioration of individual structural elements in the total cost of restoration [3; 18]:

$$kИ_{ц} = \frac{\sum_{i=1}^{n} \gamma_{i_{ке}} \times И_{ке}}{100}, \qquad (9)$$

where, $k_{и\,ц}$ - percentage of wear and tear on the building as a whole, weighted arithmetic mean, %;

$\gamma_{i\,ке}$ – share of costs of the structural element in the total cost of the building's restoration, %;

$u_{ке}$ – wear and tear of the structural element, established based on the inspection of its actual technical condition, %:

$$И_{ке} = \frac{T_{ф}}{T_{н}} \times 100\,\%, \qquad (10)$$

where, $T_{ф}$, $T_{н}$ - respectively, the actual and standard service life of the structural element, years.

If physical deterioration is calculated for long-lived elements, the method of determining the cost of reproducing building elements (cost method) can be used. In the more precise adjusted cost method, the proportion of deterioration of building elements is determined as a weighted value. It should be noted that wearing elements of a building include elements, which service life is shorter than the estimated economic life of the building, including roofing, decorative finishes, painting, i.e. elements than can be repaired (restored) during routine maintenance. And functional obsolescence (functional deterioration) of the property means that the property does not meet modern standards in terms of the functional utility. This type of deterioration is manifested in the building's outdated architecture, layout and engineering. In domestic practices, it is called moral deterioration and, just like physical deterioration, can be eliminable and irreplaceable.

For example, you can troubleshoot water and gas meters, plumbing, restore built-in cabinets, flooring, etc. The criterion of eliminable wear and tear is a comparison of repair costs with the value of the additional value received: if the latter exceeds the cost of restoration, the functional wear and tear is eliminable. The amount of eliminable functional depreciation is defined as the difference between the potential value of the building at the time of its valuation with the updated elements and at the same time – the valuation date without the updated elements. As for irreversible functional deterioration, it is associated with the decrease in the value of the building and is caused by its access or its quality characteristics. The valuation of the market value of the land plot on which the property is located includes the following: ownership rights to the land plot; physical characteristics of the land plot; data of the relationship between the land plot and the environment; and economic factors that characterize the land plot being valued.

Thus, the sources of this information may include municipal district land committees and bodies that register land transactions; mortgage lending institutions, appraisers and real estate companies specializing in land transactions. According to statistics on the relative cost approach in market economies, when valuating commercial real estate, the cost of land is on average 20% of the total value [8; 9; 10]. Even though this average is approximate, it can be used for land valuation in our country. However, under this approach, the market value of the land plot is assessed only if there is a legally registered property right to the plot. And in if there are no rights to the land plot, the market value of improvements (buildings, structures, premises, etc.) may increase significantly if the land use is not actually prohibited by law and is in line with the customs of trade used in practice. In contrast to removable deterioration, irremediable functional deterioration is associated with the decrease in the value of the building and is caused by its excess or quality characteristics. This deterioration is marked by the decrease in the value of the building as the result of the shortage or excess of quality factors. [8; 9; 10].

The next type of wear and tear is economic wear and tear (wear and tear caused by external influences), which is the decrease in the value of the building due to negative influences on its environment caused by economic, political or other factors. It should be noted that the reasons for external deterioration may include as follows: general decline of the area in which the facility is located; actions of the government or local administration regarding taxation, insurance; other changes in the employment, leisure and recreation markets, etc. Therefore, the amount of external wear and tear is significantly affected by the proximity to "low-use natural or artificial objects": sewage treatment plants of restaurants, dance floors, petrol stations, railway stations, hospital, schools, and industrial enterprises. Environmental pollution is associated with the decrease in the value of the object, which is determined using the methods for determining the depreciation. For example, the cost of toxic waste disposal may be related to the cost of repairing the facility e.i. the costs for eliminating the defects.

Two methodological approaches are most often used to measure external wear [22; 23; 40]:

- Analysis of paired sales (when two comparable properties are sold on the real estate market, one of which shows signs of external wear and tear, and the other doesn't do this). The difference in prices allows us to draw a conclusion about the magnitude of the external impact on the object being valued.

- Comparison of rental income from two properties similar to the other one being valued, one of which is subject to adverse effects. The capitalization of income losses from the comparison of these two objects will characterize the magnitude of the external effect.

The essence of applying different valuation methods, as evidenced by Ukrainian practice, is to assess the value of the enterprise in elements, i.e. the property complex being valued into its component parts, each of them is assessed separately, and then the value of the entire property complex is determined by summing them up. Such assessment should be conducted in strict compliance with international and national valuation standards. [8; 9; 10].

Conclusions and perspectives.

So, from here, with the help of modern methods of scientific research, the nature of expert monetary valuation of real estate was revealed, as well as the peculiarities of the evaluation of agricultural enterprises were revealed. Based on the results of the systematic analysis, the contents of real estate valuation methods are revealed, namely: the capitalized income method, the sales comparison method, and the cost method:

1. By using modern methods of scientific research, the nature of expert monetary valuation of real estate was revealed, as well as the peculiarities of the valuation of agricultural enterprises were revealed. Based on the results of the systematic analysis, the contents of real estate valuation methods are revealed, namely: the capitalized income method, the sales comparison method, and the cost method.

2. The peculiarities of the application of each method in the process of evaluating real estate objects, in particular agricultural enterprises as integral property complexes, as well as the importance of applying International and National standards of real estate evaluation are determined.

3. It has been proven that the expert monetary valuation of real estate objects and rights to it, acting as collateral for credit obligations, must be carried out in strict accordance with the requirements of the International Committee of Valuation Standards and the National Standards of Ukraine.

4. Peculiarities of the assessment of agricultural enterprises as integral property complexes were identified, among which the following were identified: the influence of changing climatic factors on the results of agricultural enterprises, as well as the use of land by agricultural enterprises as the main means of production. Therefore, in the process of evaluating agricultural enterprises for the purpose of attracting credit resources, considerable attention should be paid to the expert monetary evaluation of agricultural land plots, as well as the right to lease such lands.

5. A clear formulation and definition of the expert monetary valuation of real estate objects, taking into account and summarizing theoretical research and practical work of experts from many countries of the world, is a process of determining their value, as close as possible to the possible sale price of the specified object or the rights to it on valuation date or prospectively under certain, clearly defined conditions and if the seller and the buyer act without coercion, competently and each to their own benefit.

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