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# Оцінка об'єктів нерухомості як предметів іпотеки в аграрному секторі економіки

*Стаття присвячена дослідженню методичних та практичних засад оцінки об'єктів нерухомості – цілісних майнових комплексів при кредитуванні в аграрному секторі економіки України. Здійснено експертну грошову оцінку будівель, споруд та аграрних підприємств як цілісних майнових комплексів з метою їх подальшого використання у якості застави. Виявлено, що чинні нормативно-правові акти, положення яких є обов'язковими при здійсненні експертної грошової оцінки земельних ділянок, а саме Закон України «Про оцінку земель», Національні стандарти оцінки та Методика експертної грошової оцінки земельних ділянок, потребують удосконалення в частині визначення чітких вимог до проведення оцінки з метою забезпечення її об'єктивності. Як свідчать результати дослідження, експертна грошова оцінка споруд здійснюється із застосуванням тих же методів, що й земельних ділянок (метод капіталізації доходу, зіставлення цін продажу, витратний метод), але з урахуванням однієї суттєвої особливості. На відміну від земельних ділянок споруди мають визначений термін свого економічного життя, що в обов'язковому порядку слід враховувати при застосуванні методу капіталізації доходу.*

**Ключові слова:** *експертна грошова оцінка, метод, об'єкти нерухомості, цілісний майновий комплекс, кредитування, аграрний сектор економіки, іпотека.*

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# Оценка объектов недвижимости как предметов ипотеки в аграрном секторе экономики

*Статья посвящена исследованию методических и практических основ оценки объектов недвижимости – целостных имущественных комплексов при кредитовании в аграрном секторе экономики Украины. Осуществлено экспертную денежную оценку зданий, сооружений и аграрных предприятий как целостных имущественных комплексов с целью их дальнейшего использования в качестве залога. Выявлено, что действующие нормативно-правовые акты, положения которых являются обязательными при осуществлении экспертной денежной оценки земельных участков, а именно Закон Украины «Об оценке земель», Национальные стандарты оценки и Методика экспертной денежной оценки земельных участков, требуют совершенствования в части определения четких требований к проведению оценки с целью обеспечения ее объективности. Как свидетельствуют результаты исследования, экспертная денежная оценка сооружений осуществляется с применением тех же методов, что и земельных участков (метод капитализации дохода, сопоставления цен продажи, затратный метод), но с учетом одной существенной особенности. В отличие от земельных участков сооружения имеют определенный срок своего экономической жизни, что в обязательном порядке следует учитывать при применении метода капитализации дохода.*

**Ключевые слова:** *экспертная денежная оценка, метод, объекты недвижимости, целостный имущественный комплекс, кредитование, аграрный сектор, ипотека.*

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# Assessment of Real Estate Units as Mortgage Subjects in Agricultural Sector of the Economy

*The article investigates methodological and practical bases of assessment of real estate units – integral property complexes in credit financing of agricultural sector of Ukraine's economy. Implemented expert assessment of buildings and agricultural enterprises as integral property complexes with a view to their subsequent use as collateral. It was revealed that the existing regulations, the provisions of which are indispensable for the implementation of the expert monetary evaluation of land plots, namely the Law of Ukraine 'About the evaluation of land', National standards of evaluation and Methodology of expert monetary evaluation of land, need to be improved in terms of determining the precise requirements for assessment to ensure its objectivity. As evidenced by the results of research, expert monetary assessment of structures is carried out using the same methods as for the land plots (income capitalization method, comparing the sale prices, cost plus method), but with one essential feature. Unlike land plots the buildings have a certain period of its economic life, what on a mandatory basis should be considered when applying the income capitalization method.*

**Keywords:** *expert monetary evaluation method, real estate units, integral property complex, credit financing, agricultural sector of the economy, mortgage.*

**Problem statement.** Availability of free market information on transactions on buildings and facilities has governed a powerful incentive to the development of its expert evaluation in Ukraine. The issues concerning the quality of mortgages expert evaluation improvement, including agriculture enterprises which act as commitments ensuring are the subject of constant study of the world Economics. However, one of the pressing issues of our time which requires detailed investigation and solving is a balanced evaluation of buildings and agriculture enterprises holistic property complexes used as mortgages.

**Analysis of resent researches and publications.** Issues related to improving the quality assessment of real estate, including agricultural enterprises as integral property complexes that act as ensuring commitments are subject to constant research of world economics. The great contribution to the improving of expert money assessment done such national and foreign scholars as: R.Y. Gulko, M.P. Denysenko, Yu.F. Dehtyarenko, A.I. Drapikovskyy, I.B. Ivanova, S.I. Kruchok, O.Ya. Mykula, A.S. Lyubun, M.G. Stupen, A.M. Tretiak, A.N. Shpychak, M. Fedorov and others.

However today there are number of issues related to the theoretical and practical aspects of expert money assessment of the mortgage in order to attract credit resources that are not solved.

**The article is the substantiation** of methodical approaches and practical recommendations for improvement expert money assessment of the mortgage loans in the agricultural sector in Ukraine.

*Research methodology* to complete the task during its conduct applied economic and statistical research methods, including monographic, spreadsheet.

**Research results.** There are three approaches to determining the value of buildings and facilities in the generally accepted evaluation practice: income, comparative and cost-based methods. State regulation of buildings and facilities evaluation is regulated by the law of Ukraine 'On the evaluation of property, property rights and professional evaluation activities in Ukraine' dated 09.09.2004, 'Methods of property valuation' dated 10.12.2003 and the national standards № 1, 2, 3 [7-9] and concerns mainly the evaluation which has an impact on revenues.

Buildings are construction system related to the ground created with construction materials, semi-products, machinery and equipment owing to various construction activities. Buildings are facilities which consist of carcass protecting or connected (carcass and protection) facilities that form the ground or underground facilities meant for people dwelling or staying, as well as equipment, animals, plants and objects placement.

In carrying out expert money evaluation of agrarian enterprises as holistic property complexes the necessity of evaluating individual buildings, both finished and unfinished, owned by these companies often arises. Facilities expert evaluation is carried out with income capitalization, sale prices comparison and cost-based methods but it considers an essential peculiarity. Unlike land areas, facilities have a fixed period of economic life (useful existence) that must be considered when applying the income capitalization method, i.e. in contrast to the land, which is evaluated with the income capitalization, the method of cash flow discounting earned from the facility use within its estimated economic life [3-5, 11]. Application of facilities expert money evaluation is illustrated with the sample of evaluating the warehouse buildings owned by 'Agro' Ltd. (company name changed) [3-5, 11, 14]. The building characteristics are presented in Table 1. This farm is located in the northern agriculture soil area of the Right-Bank Forest Steppe.

*Table 1*

**Warehouse Building Characteristics**

| Index | Index value |
|---|---|
| Internal parameters, m: | |
| Length | 68,3 |
| width | 12,0 |
| walls height | 4,3 |
| area, m | 819,6 |
| Basic facility elements: | Basic building materials, |
| Foundation | reinforced concrete blocks |
| Floor | concrete |
| Walls | acid brick |
| Roof | zinc-coated iron sheet |
| Technical condition | Good |
| Useful existence term, years | 50 |
| Year of Use | 32 |
| Primary value, thousand UAH | 3381,6 |
| Utilization value, thousand UAH | 338,2 |
| Depreciation character | uniform |
| Peculiarities | available approach line |

*Source: The author's calculation according to the 'Agro' Ltd. data*

Based on the Table 1 data, expert money evaluation of the buildings was held with all the basic methods: income capitalization, sales prices comparison and cost-based method. Warehouse building evaluation with the income capitalization (capitalization rent) method is shown in Table 2.

*Table 2*

**Warehouse Building Value**

| Index | Code | Index value |
|---|---|---|
| Probable rent, a year | 01 | 319644 |
| Lessor expenditures, thousand UAH a year | 02 | 64650 |
| Net rent, thousand UAH a year | 03 (01-02) | 254994 |
| Building remaining life, yrs | 04 | 18 |
| Annuity current value coefficient (DR=15 %) | 05 | 7,0471 |
| Warehouse Building Value | 06 (03×05) | 1796968 |

*Source: Author's original work.*

Having done the relevant calculations, the average median value of the adjusted prices is calculated. The lowest (building 5) and the highest (building 3) prices shall not be considered. Average median price will be adjusted as follows:

$$\frac{2072{,}92 + 2013{,}65 + 2003{,}19}{3} = 2029{,}92 \text{ UAN/m}^2.$$

The construction value calculated with the method of income capitalization (in this case – with the future cash flows discounting) is determined with the usefulness of this building, that is, the ability to return interest (in this case – the rent). It is therefore logical that this is the basic method in expert money evaluation of revenue facilities. Other methods may be used in this case as additional ones including a widely used method of selling prices comparison. Actual selling prices of such storage buildings and amendments to these prices are shown in Table 3.

Thus, the estimated value of warehouse buildings is determined on the basis of the selling prices comparison equals: 2029.92 USD/m² × 819.6 m² = 1.663.722 UAH.

Thus, the cost of the warehouse building determined with the method of the selling price comparison is 92.6 % of the same building, evaluated with the income capitalization method (see Table 2), or vice versa – the value determined with this income capitalization method is 108.0 % of the cost, calculated with the selling price comparison method. In any case, the deviation does not exceed 10 %, which proves the relative proximity of the evaluation cost determined by the two methods. The accuracy and reliability of the evaluation calculated with the selling price comparison, is checked using statistical and mathematical techniques, including the use of fluctuation indicators.

*Table 3*

**Warehouses evaluating with the method of selling prices comparison**

| Index | Evaluated building | Compared buildings | | | | |
|---|---|---|---|---|---|---|
| | | № 1 | № 2 | № 3 | № 4 | № 5 |
| А | Б | 1 | 2 | 3 | 4 | 5 |
| Internal measure area, m² | 819.6 | 725.0 | 900.6 | 917.6 | 1050.0 | 732.6 |
| Sales price, thousand UAH | × | 508 | 930 | 1680 | 5630 | 950 |
| 1m² cost, UAH | × | 700.69 | 1032.64 | 1830.86 | 5361.90 | 1296.75 |
| Building characteristics: 1. city distance, | | | | | | |
| km | 22 | 18 | 59 | 21 | 5 | 18 |
| correction, % | × | -5 | +50 | 0 | -15 | -5 |
| The same, UAH/m² | × | -35.03 | +516.32 | 0 | -804.28 | -64.84 |
| Corrected price, m² UAH/m² | × | 665.66 | 1548.96 | 1830.86 | 4557.62 | 1231.96 |
| 2. residual use time, yrs | 18 | 7 | 17 | 23 | 49 | 18 |
| correction, % | × | +88 | 0 | +17 | -37 | 0 |
| The same, UAH/m² | × | +616.61 | 0 | +311.25 | -1983.90 | 0 |
| Corrected price, m² | | | | | | |
| UAH/m² | × | 1282.27 | 1548.96 | 214.11 | 2573.72 | 1231.96 |
| 3. Walls material | brick | metal plate | reinforced concrete | reinforced concrete | brick | brick |
| correction, % | × | +100 | 0 | 0 | 0 | 0 |
| The same, UAH/m² | × | +700,96 | 0 | 0 | 0 | 0 |
| Corrected price, m² | | | | | | |
| UAH/m² | × | 1983.23 | 1548.96 | 2142.11 | 2573.72 | 1231.96 |
| 4. Roofing material | metal plate | metal plate | slate | slate | tile | metal plate |
| correction, % | × | 0 | -5 | -5 | -7 | 0 |
| The same, UAH/m² | × | 0 | -51.63 | -91.54 | 375.33 | 0 |
| Corrected price, m² | | | | | | |
| UAH/m² | × | 1983.23 | 1497.33 | | 2198.39 | 1231.96 |
| 5. Operating conditions | good | satisfactory | good | good | excellent | good |
| correction, % | × | +10 | 0 | 0 | -5 | 0 |
| The same, UAH/m² | × | +70.07 | 0 | 0 | -268.10 | 0 |
| Corrected price, m² UAH/m² | × | 2053.30 | 1497.33 | 2050.57 | 1960.29 | 1231.96 |
| 6. Railroad access availability | available | available | available | available | available | no |
| correction, % | × | 0 | +50 | 0 | 0 | +50 |
| The same, UAH/m² | × | 0 | +516.32 | 0 | 0 | +648.38 |
| Corrected price, m² UAH/m² | × | 2053.30 | 2013.65 | 2050.57 | 1960.29 | 1880.29 |
| 7. Evaluation date (sales) | 25.01.12 | 11.10.11 | 24.01.12 | 10.08.11 | 22.12.11 | 26.10.12 |
| correction, % | × | +28 | 0 | +4,4 | +0,8 | +2.4 |
| The same, UAH/m² | × | +19,62 | 0 | +80,56 | +42,90 | +31.12 |
| Corrected price, m² | | | | | | |
| UAH/m² | 2029.92 | 2072.92 | 2013.65 | 2131.13 | 2003.19 | 1911.41 |

** The authors calculations according to the evaluated enterprises data.*
*Source: Author's original work.*

If the fluctuation for corrected prices for building is significant compared to the uncorrected ones, it implies the usefulness of such correction and, thus, the reliability of the obtained evaluation. Standard deviation and variation coefficient indicators for root-mean-square are usually used for such comparisons.

The root-mean-square deviation is calculated according to the formula [1, 3]:

$$d = \sqrt{\frac{\sum (c - \overline{c})^2}{n}}, \quad (1)$$

with $d$ – root-mean-square unbalanced fluctuation;

$c$ – variants of warehouses buildings prices;

$\overline{c}$ – average arithmetic unbalanced warehouses buildings prices value;

$n$ – price variants number.

Variation index for root-mean-square fluctuation is calculated as followed:

$$V_d = \frac{d}{c} \times 100\%, \quad (2)$$

with $V_d$ – variation index for root-mean-square fluctuation.

Root-mean-square fluctuation is an absolute figure and it has the same unit in the same measure units as the studied parameter (warehouse buildings prices). Variation coefficient is a relative index measured as a percentage. Root-mean-square fluctuation and prices variation coefficient for warehouse buildings take the following values:

Uncorrected prices:

$$d = \sqrt{\frac{14439601}{5}} = 1699.39\ UAH/m^2;\ d = \frac{1699.39}{2044.57} \times 100\% = 83.1\%;$$

Corrected prices:

$$d = \sqrt{\frac{27056}{5}} = 164.49\ UAH/m^2;\ V_d = \frac{16449}{2026.46} \times 100\% = 8.12\%.$$

Thus, the warehouse buildings prices correction caused a significant decrease in their fluctuation. Taken into account the average median price for warehouse buildings is the most probable, but still random figure.

Under normal probability distribution the warehouse building price will range from, UAH / m²: 1861.97 – 2190.95 with the probability of P = 0.68; 1697.48 – 2356.44 with the probability of P = 0.95; 1532.99 – 2520.83 with the probability of P = 0.99. The density of the probability distribution indicates the reliability of the evaluation. In addition to the methods mentioned above (cash flows discounting and selling prices comparison) the cost-based method is used for buildings evaluation as well. The cost-based method is used in various types of structures cost evaluating – the reproduction or replacement, carrying and liquidation (utilization).

Determination of the house reconstruction value implies calculating the cost of its construction and equipment at current prices, including an investor interest and considering depreciation. If the materials the building or equipment are made of are not being produced at least partially and therefore are not available at the market, the replacement cost is used rather than the cost of reproduction. That is, there should be evaluated the cost of a building, similar in its utility to the evaluated one but built of modern materials and equipped with modern facilities, taking into account the investors interests and wear out adjustments.

In case the accounting in the company owning the assessed building is established well, the evaluator can use the building account book value. Finally, in the event of the estimated object liquidation or failure in its market value evaluation, at least an approximate one, due to t its uniqueness, its liquidation (utilization) value is determined as the difference between the liquidation proceeds ( future earnings include the materials, facilities and scrap metal market value, which can still be used), and the liquidation costs. In the case under consideration the types of value like the cost-based method, the reproduction cost or account book value should be considered. There is no reason in identifying other values, as all materials and equipment necessary for warehouse buildings construction valued are available at the market, and its utilization is not expected. The warehouse building reproduction cost calculation is shown in Table 4.

*Table 4*

**'Agro' Ltd. warehouse building reproduction cost calculation**

| Index | Primary cost | Wear | Residual value |
|---|---|---|---|
| Land plot, UAH: Projecting and maintenance | 3250 | × | 3250 |
| Cost | 1224 | × | 1224 |
| Total | 4474 | × | 4474 |
| Building: Construction | 4769100 | 3223908 | 1545192 |
| Equipment | 4800 | 2280 | 2520 |
| Total | 4773900 | 3226188 | 1547712 |

*Source: Author's original work.*

The balance sheet value of the warehouse building, UAH, is: primary – 3.381.600 UAN, residual – 1.433.798 UAN.

Thus, four expert evaluation of warehouse buildings are defined in this example: one was defined with cash flows discount method; the second one – with the selling price comparison; the third and fourth ones – with the cost-based method (reproduction and balance methods correspondingly).

The evaluation defined with the first two methods is higher than with the cost one, indicating the presence of goodwill due to the business use of the warehouse building. However, the appraiser shall explain only one evaluation of the warehouse building. For this purpose, it is advisable to rely on S.I. Kruchok recommendations [4,

p. 31-33], which propose to evaluate the object in two ways: main and auxiliary. Income capitalization method (cash flow discount is applied for buildings) is the main one for all profitable buildings. Selling prices comparison method is auxiliary in this case; if there are no reliable data on such facilities transactions –the cost-based method is the auxiliary.

The key measurement method in unprofitable buildings appraisal is the selling prices comparison method, and the auxiliary one is the cost-based method. The cost-based method is the only method of 'Agro' Ltd. unprofitable buildings evaluation in calculating the warehouse building restructure cost under the absence of reliable data on their transactions. In proximate evaluation obtained by the two methods (deviation within 10 %), appraiser's further action are as follows:

If the cash flow discount method is the main one in facilities evaluation and the evaluation value obtained by this method is lower than the evaluation calculated on the basis of the complementary method and the main method is taken into account in the evaluation. If the evaluation received by the main method is higher than that of the auxiliary one, the average of the two evaluations is calculated.

If selling prices comparison method is the primary one, the evaluation determined by this method is taken into account; the auxiliary method just directs potential buyers in choosing his best option - to buy a building or to construct and thus save money and spend time on its construction. Significant deviations in evaluations obtained with the two methods (> 10 %) require additional scrutiny evaluation results checking. The final evaluation is carried out in the manner described above [4, p. 31-33].

Thus, in this example, the main method of warehouse building evaluation is cash flow discount method and the auxiliary one is represented with selling prices comparison method. The estimated cost of the building will be as follows, UAH: (1796968 + 1663722) : 2 = 1730345. The cost-based method is widely used in the real estate evaluation, i.e., unfinished buildings, regardless of their complete readiness degree. There is a set of methods applied in Ukraine, which can facilitate buildings precise.

The existing methods of agriculture lands and facilities expert money evaluation review has created prerequisites for the study of existing approaches to expert money evaluation as an holistic property complexes for their further use as mortgage units. Thus, to calculate the monetary evaluation of an 'Agro' Ltd. building we give the general characteristics shown in Table 5.

*Table 5*

**'Agro' Ltd. building characteristics**

| № | Index | Establishment cost, UAH | Readiness, % | Future costs, UAH | Considered in calculation, UAH |
|---|---|---|---|---|---|
| 1 | Designing and land parceling out | 10520 | 100,0 | - | 10520 |
| 2 | engineering preparation and improvement | 3820 | 100,0 | - | 3820 |
| 3 | Ground plot cost | 1719 | 6,3 | 4900604 | 329496 |
| 4 | Construction | 5230100 | × | × | 1719 |
| 5 | Financial maintenance | 320600 | × | 314460 | 6140 |
| 6 | Management and marketing | 22100 | × | 20000 | 2100 |
| 7 | Local taxes | - | × | - | - |
| | Total | 5588859 | × | 5235064 | 353795 |
| 8 | hardware | × | × | × | 6320 |
| 9 | Missing equipment | × | × | × | - |
| 10 | Accounts receivable | × | × | × | 12300 |
| 11 | Accounts payable | × | × | × | 10600 |
| Total | | × | × | × | 361815 |

**The authors calculations according to the 'Agro' Ltd. Data*
*Source: Author's original work.*

S.I. Kruchok has developed methods of expert money evaluation of agricultural enterprise as a holistic property complex with the method of income capitalization [4, p. 42-44]. The latest version of the methodology involves a preliminary calculation of the rent earned by the company ownership for agricultural land and the value of the land lease right, which is defined as the difference between the rent earned with the leased agricultural land, and its actual rent pay. If a company is assessed with the actual profit reported in the financial statements, land rent and lease rights value are subtracted from the income value. Further, the received profits amount should be divided into two parts, one of which reflects the income received from the objects without defined useful

existence, the other one corresponds to the earnings received from the objects with the estimated useful existence (perennial plants, mills, processing shops, stores etc.).

In order to eliminate the effects of climatic factors change, it is advisable to consider the profit which could be gained under the average environmental conditions typical for the area rather than the actual profits. The items that do not have a defined use term (tillage, open soil horticulture, cattle breeding, pigs breeding etc.) are estimated with direct capitalization income that they bring (could bring). Facilities with estimated useful existence are estimated by cash are received over the remaining term of these objects existence flows discounting (income and amortization) method, considering the income gained from the facilities liquidation (utilization).

The discount rate for capital $DR_C$ is its average value for the estimated enterprise. The value of agricultural land and other land areas owned by an enterprise is added to the calculated rate.

The total cost of lease rights is determined by discounting its annual amounts over the remaining term of the lease. It uses a discount rate for ground $DR_G$ (calculated $DR_G$ =6.9 %). Total estimated cost of all the income gaining facilities (profits, rents, cost of lease rights) is a basic evaluation of the agricultural enterprise as holistic property complex obtained with the income capitalization method. Thus, the amount of the estimated objects value is determined according to the formula 3:

$$V_{BE} = V_R + V_L + V_{RR}, \qquad (3)$$

with $V_{BE}$ - the base value of the enterprise, UAH/unit;

$V_R$ – the value of revenue objects with undetermined and estimated useful existence, except for land, UAH/unit;

$V_L$ - the value of land, owned by the enterprise UAH/unit;

$V_{RR}$ – total value of the land lease right , thousand UAH.

The final enterprise evaluation provides applying corrections for the basic evaluation that take into account the enterprise provision with non-negotiable and current assets and its debt.

Therefore, the enterprise value is calculated as follows to the formula 4:

$$E_V = V_{BE} + C_{FA} \pm C_{ONA} \pm C_{CA} \pm C_D, \qquad (4)$$

with $E_V$ – enterprise value UAH/unit;

$C_{FA}$ – correction for availability of fixed assets at their depreciated cost, UAH/unit;

$C_{ONA}$ – correction for availability of other non-negotiable assets (non-negotiable biological assets are assessed on their residual (just) value), UAH/unit;

$C_{CA}$ – correction for availability of current assets UAH/unit;

$C_D$ – debt correction UAH/unit.

According to S.I. Kruchok's method, corrections are defined as follows [4, p. 43-44], to the formula 5:

$$C_{BA} = RV_{FA} - 0.5IC_{FA} \qquad (5)$$

with $RV_{FA}$ - fixed assets residual value at the evaluation date, UAH/unit;

$IC_{FA}$ – average initial cost of fixed assets within the evaluation period (year) UAH/unit, to the formula 6:

$$C_{ONA} = ONA - \overline{ONA}, \qquad (6)$$

with $ONA$ – correction for availability of other non-negotiable assets (non-negotiable biological assets are assessed on their residual (just) value), UAH/unit;

$\overline{ONA}$ – average initial cost of fixed assets within the evaluation period (year) UAH/unit, to the formula 7:

$$C_{CA} = V_{CA} - \overline{V_{CA}} \qquad (7)$$

with $V_{CA}$ – current assets balance sheet value at the evaluation date, UAH/unit;

$\overline{V_{CA}}$ – average balance sheet cost of current assets within the evaluation period (year) UAH/unit;

Correction for the enterprise debts is calculated in two methods [3]. One of them is based on determining the upper limit of the company debt and its further comparing with the company actual obligations, to the formula 8:

$$C_{TB} = B - 2X(O_L - O_C), \qquad (8)$$

with $C_{TD}$ - correction for total debt (long-term and current) at the evaluation date, UAH/unit;

$B$ – balance at the evaluation date, UAH/unit;

$O_L$– long-term obligations at the evaluation date, UAH/unit;

$O_C$– current obligations at the evaluation date, UAH/unit;

Another method involves the calculation of corrections for debt as the sum of two corrections - the long-term debt and current debt ones.

The first correction $C_L$ is defined as follows, to the formula 9:

$$C_L = \frac{900}{D} \times (I_U + DC) - O_L, \qquad (9)$$

with $D$ – evaluation period duration, days (year – 360);

$I_U$– undivided income within the evaluation period (year) UAH/unit;

$DC$– depreciation charge within the evaluation period (year) UAH/unit;

The second correction is calculated according to the formula 10:

$$C_C = V_{CA} - 2X \times O_C, \qquad (10)$$

Among the corrections calculated with the two methods, the less significant should be taken into account as it meets all the requirements set to the maximum allowable debt of the company. Calculation of enterprises value according to the income capitalization method is shown in Table 6.

*Table 6*

**Enterprise value calculation according to the enterprise income capitalization method, thousand UAH**

| Enterprise code | Basic value | | | |
|---|---|---|---|---|
| | revenue objects value $V_R$ | land value $V_L$ | total value of the land lease right $V_{RR}$ | Total |
| **A** | **1** | **2** | **3** | **4** |
| **1** | 10485 | 0 | 0 | 10485 |
| **2** | 6289 | 0 | 1592 | 7881 |
| **3** | 4707 | 0 | 635 | 5342 |
| **4** | 6188 | 0 | 828 | 7016 |
| **5** | 15410 | 0 | 2157 | 17567 |

*Source: Author's original work.*

Consideration of the above described methods shows that Ukraine mostly has a tool of farms expert money evaluation. Approaches to assessing farms as holistic property complexes make particular scientific and practical tool [4, p. 160-180]. According to the calculations presented in Table 6 we have made corrections for enterprise value according to income capitalization method. The results are shown in Table 7.

*Table 7*

**Corrections for enterprise value according to income capitalization method, thousand UAH**

| Enterprise code | Corrections | | | | | Total |
|---|---|---|---|---|---|---|
| | for availability of fixed assets $C_{FA}$ | for availability of other non-negotiable assets $C_{ONA}$ | for availability of current assets $C_{CA}$ | debt, total $C_D$ | total | |
| A | 5 | 6 | 7 | 8 | 9 | 10 |
| 1 | -1033 | -309 | -312 | -806 | -2460 | 8025 |
| 2 | -271 | -51 | +106 | -644 | -860 | 7021 |
| 3 | -127 | -21 | +512 | +2140 | +2504 | 7846 |
| 4 | -603 | +98 | -97 | -2065 | -2667 | 4349 |
| 5 | +767 | +192 | +1416 | +8721 | +11093 | 28660 |

*Source: Author's original work.*

Having analyzed the methodological approaches to buildings, facilities and farms as evaluation holistic property complexes for their further use as mortgages, we have to note that the agricultural sector of our country requires constant changes and methods improvement, accompanied by a systematic analysis of the existing rules as well as timely changes aimed at market operation regulating, and the consequent providing agricultural sector with credit resources.

**Conclusions.** Practice shows on the existing problems of mortgages price uncertainty by overstating its current value over the amount of credit emitted which may seem natural at first glance, but in practice it turns out to be poorly implemented, since in this case, the demand for loans decrease which is equivalent to 'narrowing' credit market and disrupts a bank financial position. It is impossible to determine the real cost of production and price as well as efficient use of land resources without agricultural enterprises evaluation as holistic property complexes for their further use as a mortgage.

Thus, consideration of the available agricultural land and buildings expert monetary evaluation methods after the example of 'Agro' Ltd. located in the northern agrarian soil area of the Right-Bank Forest-Steppe created the necessary conditions for the study of existing approaches to agricultural enterprises expert money evaluation for their further use as mortgaged. Evaluation of buildings and agricultural enterprises should be carried out by income capitalization, selling prices comparing and cost-based methods. But these approaches are quite controversial when assessing is carried out under modern farming conditions. Having considered S.I. Kruchok and other researchers' [3-5] recommendations we suggest that it is necessary to evaluate the object in two methods: basic and auxiliary ones. Income capitalization method (for buildings - cash flow discounting) is the basic for all income-gaining buildings. Selling prices comparison method is an auxiliary in this case; if there are no reliable data on transactions on such structures, the cost-based method serves as auxiliary one, but we propose to evaluate the storage facilities with three evaluation

methods: one basic and two auxiliary ones, namely with the income capitalization method (cash flow), the second method - selling prices comparing; and finally – with the cost-based method (reproduction and balance correspondingly). Since the expert evaluation will be made more accurately and transparently including the three methods of storage buildings evaluation, some buildings can gain income while others are not profitable, it is important to apply the right methodological approaches for determining expert money evaluation for both buildings and agriculture enterprises.

Calculation with the income capitalization method (in this case – cash flow method) is 2029.92 *UAH/m*$^2$ which reveals the usefulness of the building, which means that the building is able to bring in returns and it can be used in the lending process. It is only logical that this methodological approach is used as the basic one in expert money evaluation. It should be noted that the cost of warehouse building determined by the selling price comparing method is 92.6 % of the building cost estimated by income capitalization method. That is, deviation is no more than 10 %, indicating the relative proximity of the two assessments conducted by the two methods. Cost-based method is used to evaluate various types of buildings costs - the reproduction or replacement, carrying and liquidation (utilization). And this method is used as an auxiliary, since the cost of the building is lower in price, but mandatory during this evaluation as determining the cost of facilities reproduction is calculating the cost of its construction and equipping at current prices and includes investor interest which is important in this operation considering depreciation. The calculations we made on expert money evaluation on 'Agro' Ltd. indicate mandatory use of the three methods for evaluation: first - the discounted cash flow method (basic method); second - the method of selling prices comparing; third – cost-based method (reproduction and balance correspondingly). The need for cost-based method arises there, as this method of evaluation for unfinished constructions is determined irrespective of their readiness degree.

Therefore, there is a certain set of methods that currently exist in Ukraine and their applying would contribute to high-precision expert money evaluation of buildings and agriculture enterprises. This is the impetus to create the necessary preconditions for studying the existing approaches to enterprises expert money evaluation as holistic property complexes for their further use as mortgaged.

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