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Valuing Agricultural Enterprise for Investment Purposes: Methodological Aspect

Abstract. *Introduction. The production cycle of agricultural enterprises and agribusiness management differs significantly from other sectors. Scientists emphasize significant differences of agrarian sphere from other ones, strong dependence on unpredictable weather changes inherent in it. Also, there is an increased risk of income instability, volatility of agricultural markets and variety of activities that can be conducted in one enterprise. Along with the presence of many risk factors, this area is also characterized by high profitability and it is always attractive to investors. Consequently, there is a need to improve the methodology of agricultural business valuation and the search for the most correct method and methodological approach to determine the value of agricultural business for investment purposes.*

Purpose. *The purpose of the study is to determine which of the methods of business valuation is the most suitable for objective agricultural business valuation for investment purposes.*

Conclusions. *The novelty of the article is it proves that a Build-up approach is appropriate for discount rate calculation (in agricultural business valuation for investment purposes). And justification of the fact that Cost of equity capital model (cash flow discounting-based method of business valuation) is acceptable for agrarian business valuation was further developed. As this model provides the most objective information for investors and business owners and is most often used by professionals for valuing a business when investment decisions are necessary. The results show that Income approach, Cash flow discounting method (Cash flow type - Equity cash flow) is the correct methodology for valuing agricultural business for investment purposes.*

Keywords: *agricultural enterprise valuation, specific company risk premium, cost of equity capital, capital assets pricing model, Build-up method, business valuation, discount rate.*

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Сівіцька Ю. О., здобувач ступеня доктора філософії зі спеціальності 051 «Економіка», Полтавська державна аграрна академія, Полтава, Україна

Оцінка сільськогосподарського підприємства для інвестиційних цілей: методологічний аспект

Анотація. *Виробничий цикл сільськогосподарського підприємства та управління агробізнесом істотно відрізняються від інших секторів економіки. Вчені підкреслюють значні відмінності аграрної сфери від інших, сильну залежність від непередбачуваних змін погоди, притаманну даній сфері діяльності. Крім того, існують: підвищений ризик нестабільності доходів, волатильності сільськогосподарських ринків та різноманітності видів діяльності, які можна проводити на одному підприємстві. Попри наявність багатьох факторів ризику дана галузь характеризується високою рентабельністю і є завжди привабливою для інвесторів. Отже, необхідно вдосконалити методологію оцінки вартості аграрного бізнесу та віднайти й обгрунтувати найбільш правильний методологічний підхід та метод для визначення вартості аграрного бізнесу в інвестиційних цілях. Метою дослідження є визначення того, який з методів оцінки вартості бізнесу є найбільш придатним для об'єктивної оцінки сільськогосподарського підприємства з метою інвестування у нього. Новизна статті полягає в тому, що в ній доведено: метод кумулятивної побудови є найбільш коректним для розрахунку ставки дисконтування (в оцінці вартості аграрного бізнесу для інвестиційних цілей). Дістало подальшого розвитку обгрунтування твердження, що модель оцінки вартості власного капіталу (з використанням методу дисконтування вільних грошових потоків) є прийнятною для оцінки аграрного бізнесу. Оскільки дана модель забезпечує найбільш об'єктивну інформацію для інвесторів і власників бізнесу, вона найчастіше використовується фахівцями для оцінки бізнесу коли необхідні інвестиційні рішення. Результати дослідження показали, що дохідний методичний підхід, метод дисконтування вільних грошових потоків (тип грошового потоку - вільний грошовий потік на власний капітал) є правильною методологією оцінки сільськогосподарського бізнесу для інвестиційних цілей.*

Ключові слова: *оцінка вартості сільськогосподарського підприємства; премія за специфічний ризик компанії; вартість власного капіталу; модель оцінки дохідності капітальних активів; метод кумулятивної побудови; оцінка вартості бізнесу; ставка дисконтування.*

Statement of the problem. The production cycle of agricultural enterprises and agribusiness management differs significantly from other sectors. This determines the availability of features assessing the value of this type of business. Thus, the need to justify the most appropriate method for assessing agrarian business and improving existing methodology is obvious.

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Analysis of recent research and publications. The study of the methodology of agricultural business valuation is devoted to the work of such scholars as Marques-Perez, I.; Guaita-Pradas, I.; Pérez-Salas, J. L., Franc-Dąbrowska, Madra-Sawicka, Bereżnicka and others.

The scientists such as Marques-Perez I. [1], Stasytyt e, Viktorija and Dužinskyt ˙ e Viktorija [2], Santeramo [3] also confirm the fact that agrarian sphere differs from others and there is a high risk and income instability. But in spite of many risk factors it is a sphere of high profitability and it is always interesting for investors.

Moreover, Schaffnit-Chatterjee [4], Clapp and Martin [5], Schneider [6] emphasize on volatility in agricultural sector which is expected to increase in the future.

In particular, Marques-Perez I. et al. [1] proved that the definition of the discount rate is one of the most important issues in the assessment of this type of business. They proposed a new methodology of the discount rate calculation when assessing the value of the agro-industrial complex in their article. Franc-Dąbrowska, et al. [7], proposed a new empirical model of the agricultural company valuation. Their study justifies that there are specific factors inherent in agricultural sector.

Many modern researchers: Chawla et al. [8], Meinhart [9], Câmara et al. [10], Habib [11], consider the Cost of equity capital model the most appropriate in business valuation for investment purposes. Franc-Dąbrowska et al. [7] consider this model acceptable for the agrarian business valuation.

But the issue is still not fully disclosed, what caused the continuation of our research.

Setting objectives. The purpose of the study is to determine which method of business valuation is the most appropriate for objective agricultural business valuation for investment purposes.

Methodology. Used methods: scientific abstraction, method of analysis and synthesis, method of analogy and comparisons, development of tables.

The main part. The agro-industrial complex is formed by companies, as emphasized in the academic literature present a series of outstanding characteristics as a result of adapting to today's economic reality.

These characteristics include:

a) adapting to extending the economic environment and the sector's internationalization;

b) adapting to changes in consumption and commercial structures;

c) influx of foreign-owned capital and risk capital.

As a result, the agro-industrial companies has built some business models that have been adapted to consumer demands and to customers in general The European food industry has witnessed significant and rapid changes towards the formation of a more concentrated internationalized structure. Some countries and food sectors have undergone this trend to a greater extent than others, but no country or industry sector has remained unaffected. The new stage of the world economy, which stems from the effects of the global economic crisis that began in 2008, has brought new implications for the food industry, although it is impossible to predict its mid-long-term impact. Due to the nature of many AIC companies (see Table 1), it is not possible to identify a single reference price. Some companies produce more than one product, and with different volumes and selling prices. So it is not easy for companies to estimate and decide on one reference price to estimate the activity risk [1, p.3].

Table 1 **Specific features of agribusiness according to modern reseachers**

Author	Quotation
Franc-Dąbrowska et al., 2018	«…the measurement of equity capital and its cost by agricultural entrepreneurs requires a unique approach which makes allowance for certain variables that are different from those applicable to other sectors, and therefore specific to agricultural activities…These activities depend on weather conditions, live organisms management, specific work factors and production factors risk» [7, p.1]
Marques-Perez et al., 2017	«The AIC is formed by industries that add value to farming production. This sector's economic success demands financial management techniques that assess risk. The conventional method responds neither to the heterogeneity of the economic activities that make up the AIC, nor to differentiating risk by groups» [1, p.1]
Stasytyt ˙ e & Dužinskyt ˙ e, 2016	«Agriculture sector is characterized by a particular specificity that is not considered in other fields and because of that agriculture sector is defined as highly risky sector. Response to risk is still very important and responsible activity in this field» [2, p.211]
Clapp & Martin, 2015	«The recent volatility on agricultural markets can be seen in this context, and it is unclear whether private financial actors will remain interested in the sector given the high degree of risk and uncertainty …» [5, p.12]
Hall et al., 2014	«Agribusiness companies have a greater impact on the cost of debt to the capital structure but have better returns than other firms» [12, p.1]
Santeramo et al., 2014	«The nature of agriculture, dependent on climate conditions, exposes the sector to production risks … which determine unexpected bad harvests are also relevant risks in developing agricultures and, in particular, affect field crops. Price risks challenge the production side of free marketed crops; losses in products' quality and decreases in final price are the main risks faced by wholesalers and sellers. Finally, financial (e.g. the inability to access credit market) and institutional risks (e.g. risks of unexpected changes in the policy framework) are relevant to farmers' decisions» [3, p.24]

Continuation of Table 1

Szekely & Palinkas, 2009.	«Every country that considers agriculture a strategically important economic sector strives for effective risk management in agriculture» [13, p.55]
Schaffnit-Chatterjee, 2010.	«Volatility in agriculture is expected to increase – production volatility, mostly driven by climate change as well as price volatility, due to higher production volatility, a tight supply/demand balance, volatile energy prices, and other factors» [4, p.1]
Schneider, 2010.	«Volatility and the resulting risk in agriculture are therefore costly» [4, p.8]

Source: [1-5, 7, 12, 13]

The scientists cited in Table 1 emphasize significant differences of the agrarian sphere from others, strong dependence on unpredictable weather changes inherent in it. Also, there is an increased risk of income instability, volatility of agricultural markets and variety of activities that can be conducted in one enterprise. Along with the presence of many risk factors, this area is also characterized by high profitability and it is always attractive to investors. Thus, the need to justify the most appropriate method for assessing the agrarian business and improving existing methodology is obvious.

Several methods can be used when we have to valuate any asset or company: firstly, those based on accounting information; secondly, those based on investment analysis; thirdly, econometric techniques, etc. Company valuation methods that use data from Accountancy have their roots in calculating the patrimonial value as a difference between Assets and Liabilities. However, we must remember that this accounting value is not a good estimator of market value. We can underline valuation methods based on analogical-stock exchange information among the last ones Methods based on investment analysis (capitalization value, present value or yield value) can be good estimators of the market value if we locate the decision making process about investments in an efficient market environment [14, p.17].

In a Table 2 we present describing Cost of equity capital (in particular CAPM) as a suitable approach for investment valuation of agricultural business.

Table 2 **Arguments in favor of Cost of equity capital (cash flow discounting-based method of business valuation)**

Author	Quotation
Franc-Dąbrowska et al., 2018	«The issue of the cost of equity capital for an enterprise may be viewed from multiple perspectives, given its application in accounting as well as in financial research. The cost of equity capital is the basis for determining the premium for capital risk, valuation of businesses, and investment decisions» [7, p.1]
Dzuriˇcková et all., 2015	«Based on our research we can conclude that the best way how to calculate the opportunity cost of equity capital is calculation by Build-up model. This method reflected not only external risks but also internal risks of companies which is very important factor» [15, p.1497]
Mohendroo, 2014	«Each stream of cash flow has a specific risk structure. For instance, if the cash flows are distributable to equity holders only, cost of equity should be considered (not WACC)» [16, p.41] «Essentially, the cost of equity consists of a risk free rate of return and a premium assumed for owning a business and can be determined based on a Build-up approach or Capital Assets Pricing Model (CAPM). While both these approaches should theoretically result in the same discount rate, in practice the estimated discount rates will differ between companies, markets and geographical areas due to judgments by different valuators around some of the key components of the discount rate» [16, p.38]
Chawla et all., 2014	«The Sharpe–Lintner capital assets pricing model (CAPM) model as the most common model equalizes the cost of capital with systematic risk, assuming that the cost of equity equals the sum of risk-free rate of return and market risk premium adjusted by the beta factor» [8, p.103]
Meinhart, 2008	«The CAPM (and each other cost of equity model) is wellsuited to estimate the required return on investment for this valuation purpose» [9, p.21]
Câmara et al., 2008	«The estimation of the cost of equity capital (COE) is an important issue for both practi-tioners and academics. The COE is widely used in applications such as the valuation of an investment project of a firm and the estimation of equity risk premiums» [10, p.2]
Habib, 2005	«One of the fundamental decisions that every business needs to make is to assess where to invest its funds and to re-evaluate, at regular intervals, the quality of its existing investments . The cost of capital is the most important yardstick to evaluate such decisions. Not only the hurdle rate for investment projects but the composition of the firm's capital structure is also determined by this variable» [11, p.3]

Source: [7, 8-11, 15, 16]

Analysing Table 2, it can be concluded that many modern researchers consider the Cost of equity capital model the most suitable for business valuation for investment purposes. Scientists such as Franc-Dąbrowska

et al. consider this model acceptable for the agrarian business valuation. This model provides the most objective information for investors and business owners and is most often used in assessing the value of a business when investment decisions are necessary. In the studies cited below, scientists propose using the Build-up approach or Capital Assets Pricing Model (CAPM) to evaluate business for investment purposes.

It is important to know the key areas of judgment, use the appropriate approach based on the information available and investment objectives, and cross-check the reasonability of the discount rate using alternative approaches such as average industry discount rates and the implied multiple [16, p.8].

The methods for valuing companies can be classified in six groups: balance sheet-based methods, income statement-based methods, mixed methods, cash flow discounting-based methods, value creation methods and options. According to professor Fernandez there are three basic cash flows: the free cash flow, the equity cash flow and the debt cash flow. When we are we are valuing the company's equity, the appropriate discount rate will be the required return to equity [17, p. 4,21].

The discount rate is applied to determine the present value of future cash flows and represents the investor's appetite for risk and the underlying uncertainties in the cash flows. The higher the implied risk the higher the discount rate is and the lower the value, and vice versa. The discount rate is an investor's desired rate of return, generally considered to be the investor's opportunity cost of capital. The discount rate is an essential component of the DCF-based valuation, which can be tricky to get right [16, p.3,5,6].

Determining the discount rate is one of the most important tasks and takes into account the risk, historic volatilities; in practice, the minimum discount rate is often set by the interested parties (the buyers or sellers are not prepared to invest or sell for less than a certain return, etc.). The equity's value depends on expected future flows and the required return to equity. In turn, the growth of future flows depends on the return on investments and the company's growth. However, the required return to equity depends on a variable over which the company has no control, the risk-free interest rate, and on the equity's risk which, in turn, we can divide into operating risk and financial risk. It is very important that a company identify the fundamental parameters that have most influence on the value of its shares and on value creation. Obviously, each factor's importance will vary for the different business units [17, p.27,28].

Essentially, the Cost of equity consists of a risk free rate of return and a premium assumed for owning a business and can be determined based on a Build-up approach or Capital Assets Pricing Model (CAPM). While both these approaches should theoretically result in the same discount rate, in practice the estimated discount rates will differ between companies, markets and geographical areas due to judgments by different valuators around some of the key components of the discount rate [16, p.3].

While some courts and some business valuators treat the Build-up method as if it is different from the CAPM, they are in fact very similar. Under the CAPM, the Discount Rate consists of the RFR (Risk free rate), plus the ERP (Equity risk premium) multiplied by firm Beta. Theorists have suggested that Industry Betas are more reliable than firm Betas, and that the Beta of the industry in which the firm is located should be substituted for firm Beta. Ibbotson and others note that the CAPM is too high for large cap stocks and too low for small cap stocks. Ibbotson suggests adding a Size Premium to the Build-Up Discount Rate. So a modified CAPM would consists of the RFR, plus the ERP multiplied by the Industry Beta, plus a Size Premium [18, p.38].

Many business valuators use the CAPM as the starting point for determining the appropriate Discount Rate to apply to the projected future cash flows of a closely held business in order to determine a value for the business. The CAPM claims to capture the risk associated with investing in a publicly-held company through the company's Beta coefficient. The theory goes that, if selected publicly-traded companies are comparable to the privately-owned business being valued, then by taking the value suggested by the CAPM for those publicly-traded comparables, after adjusting for differences, and adding risk premium to account for risks associated with the subject company that are not reflected in Beta and cannot be diversified away, the CAPM can be used to establish a Discount Rate to use to value a privately-held company [16, p.35-36].

Another popular approach to determining an appropriate Discount Rate for the income approach to valuing a business is the "Build Up Method." Using the Build Up Method, the Discount Rate for use in discounting projected future cash flows of a business is determined by adding together various components (see Figure 1), as follows: risk free rate, equity risk premium, industry risk premium, specific company risk premium [16, p.36].

Figure 1 – **Components of the discount rate**

Source: [16]

The Build Up Method is an additive model in which the required rate of return on an investment–what would be sufficient to attract a buyer-is estimated by taking the Risk Free Rate and adding to that the Equity Risk Premium and other risk premium that reflect the various risks associated with buying an interest in a privately owned company. These additional risk premium include the Firm Size Premium, the Industry Premium, and the Specific Company Risk Premium [16, p. 36-44].

The risk premium is a fundamental and critical component in portfolio management, corporate finance and valuation. Given its importance, it is surprising that more attention has not been paid in practical terms to estimation issues. The premiums we estimate can vary widely across approaches [19, p.363].

Portfolio analysis and the theory of risk in the capital markets consider total risk and systematic risk. Total risk is related to the variability of the rate of return. This variability can be measured in different ways using classical measures of risk, for example variance, semi-variance or lower partial moments. Systematic risk is related to the influence of the rate of return of a market portfolio and to the rate of return of a given security [20, p.57].

Though various studies have quantified marketability discounts and discounts for lack of control, the appraiser must utilize experience in conjunction with the empirical data to determine the appropriate marketability discount for a specific company. The most obvious example of the art involved in business appraisal centers on the specific company risk premium. Given that errors in the specific company risk premium may have a significant impact upon the value indication, it is crucial that business appraisers be keenly aware of the ramifications their selection of this risk premium may have upon the valuation process [21, p.1].

For valuation purposes, the firm-specific risk or unsystematic risk associated with a privately-owned company is represented in large part by the specific company risk premium. Once estimated by the appraiser, the specific company risk premium is added to the risk-free rate and the estimate of systematic risk to yield the company's required return or cost of equity. Specific risk is an integral part of the company's total risk. It is generally considered as a premium for specific risks in the company's return on equity, which is a key component of a company, investment or project valuation. The purpose of the company specific risk premium calculation is to consider the non-diversified risk of the company, which significantly distinguishes this company from others similar to it [21, p.2].

"Specific Company Risk" (SCR) has been defined to be "an unsystemic risk specific to a certain company's operations and reputation". The Specific Company Risk Premium (SCRP) is central to business valuations of closely-held companies, because the SCRP represents the risks inherent in investing in a privately-owned business that has lower sales and thinner capitalization and a more vulnerable market position and less management depth than the smallest companies traded on the national stock exchanges. Ownership interests in a private company cannot be valued objectively by comparison to a stock price on a liquid national exchange. The challenge, then, about the SCRP is that, by necessity, it is unique to the company being valued, and thus cannot be standardized or subjected to statistical analysis [18, p.38].

Orsinger in his workpaper marks the main factors (see Figure 2) which contribute to Specific Company Risk Premium. These factors should be taken into consideration in the process of business valuation.

Because other premium sometimes capture parts of these risks, care must be taken not to double-count any of these risks by including them in two premiums, which would overstate the Discount Rate. In most instances, the SCRP is a subjective assessment by the business valuator [18, p.38].

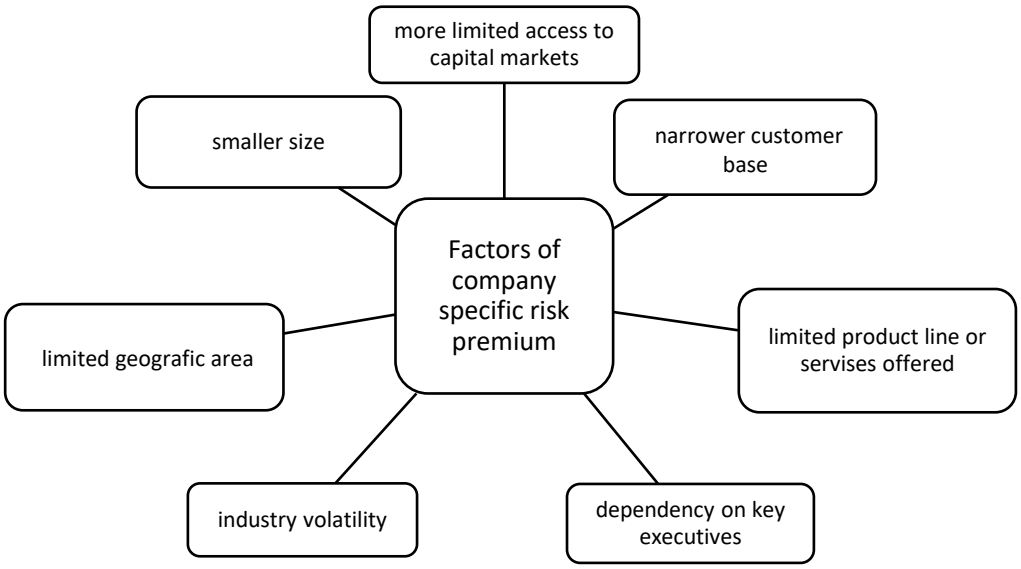

Figure 2 – **Factors which form company specific risk premium**

Source: [18]

While the estimation of the specific company risk premium may seem a relatively minor issue, errors in estimating the appropriate risk premium may have a significant impact upon the valuation estimate. As a result, this may result in an inflated value estimate for a business which may lead the client to overpay taxes, or vice versa. A factor analysis would seem the likely choice in supporting the appraiser's selection of a specific company risk premium for two reasons. First, there is no database from which to draw statistics regarding the specific company risk premium used in various valuations. Second, attempting to create a model would likely require a great deal of historic data for each company in order to perform a regression analysis. Since there is likely not enough historic data for a privately-held company to perform a regression, creating a model may not be possible or appropriate. Therefore, a factor analysis would be the logical choice in assisting the appraiser in developing an appropriate specific company risk premium [21, p.3].

According to the Butler-Pinkerton model (BPM), it is proposed to assess company specific risk premium without identifying the risks inherent in the company.

By using the BPM, you can have a good mix of companies (some larger and some smaller, which potentially bracket the volatility of your private company) to gain a better appreciation of the CSRP and the TCOE (total cost of equity) for your private company. Since company specific risk is just that—company-specific—you do not need perfect comparables do get good indications of CSRPs to assist in determining an appropriate CSRP for a private company [22, p.34].

World-renowned consulting companies, such as Delloite & Touche, Duff & Phelps, Morningstar (Ibbotson Association), recommend relying on world-wide analysts' experience (available databases on consulting firms' websites) when calculating company specific risk premium.

In Table 3 we propose a methodology of agricultural business valuation for investment purposes based on the analysis of scientific articles cited above.

Table 3 **Methodology of agricultural enterprise valuation for investment purpose**

Methodological approach:	Income approach
Method:	Cash flow discounting
Cash flow type:	ECF (Equity cash flow)
Appropriate discount rate:	Required return to equity
Model of appropriate discount rate calculation:	Build-up approach
Modes of Specific Company Risk Premium calculation:	Butler-Pinkerton model [22] Mercer [23] Shepeleva [24] Okulov [25] valuation expert's opinion

Source: developed by the author

Analysing scientific articles we can conclude that: the correct methodological approach for agricultural company valuation for investment purposes is an Income approach, Method - Cash flow discounting, Cash flow type - Equity cash flow. The discount rate should be calculated with the Build-up approach.

Conclusions and suggestions. The production cycle of agricultural enterprises and agribusiness management differs significantly from other sectors. This determines the availability of features assessing the value of this type of business. Along with the presence of many risk factors, this area is also characterized by high profitability and it is always attractive to investors. Thus, the need to justify the most appropriate method for assessing the agrarian business and improving existing methodology is obvious.

It can be concluded that many modern researchers consider the Cost of equity capital model the most suitable for business valuation for investment purposes. Scientists such as Franc-Dąbrowska et al. consider this model acceptable for the agrarian business valuation. This model provides the most objective information for investors and business owners and is most often used in assessing the value of a business when investment decisions are necessary. Many scientists propose using the Build-up approach or Capital Assets Pricing Model (CAPM) to evaluate business for investment purposes.

Cost of equity includes such components as: a risk free rate and a premium supposed for owning a business which can be calculated using the Build-up approach or Capital Assets Pricing Model.

These two approaches can give similar results, but in practice there might be a difference depending on valuators, companies and markets. The Build-up method is the transformed CAPM with adding a Specific company risk premium.

The Build-up method has been accepted by many professional valuators as a reliable method of the discount rate calculation. This method defines the required rate of return on an investment as it includes the Risk free rate, the Equity risk premium and other risks inherent in a given company (the Firm size premium, the Industry premium, and the Specific company risk premium).

The Specific company risk premium calculation is not an easy task, especially, taking into account the fact, that an error in this case can have a significant impact on valuation results. The purpose of Specific company risk premium calculation is to consider the non-diversified risk of the company, which significantly distinguishes this company from others similar to it.

Given the foregoing information we can come to a conclusion that: the correct methodological approach for agricultural company valuation for investment purposes is an Income approach, Method - Cash flow discounting, Cash flow type - ECF (Equity cash flow). The discount rate should be calculated with the Build-up approach as the importance of taking into the account the Company Specific Risk premium is proved.

Future studies should be focused on searching for new methods of Company Specific Risk premium calculation and on testing them for business valuation in different production areas.

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