UDC 330.332.5

Makhmudov Khanlar,
Doctor of Economics,
Head of Department of Entrepreneurship and Law,
Poltava State Agrarian Academy
Sivitska Yuliia,
Postgraduate Student, Department of Economics and Management,
Poltava State Agrarian Academy

Махмудов Х.З.,
доктор економічних наук, професор,
завідувач кафедри підприємництва і права
Полтавська державна аграрна академія,
Сівіцька Ю.О.,
здобувач ступеня доктора філософії
зі спеціальності 051 «Економіка»,
Полтавська державна аграрна академія

THE PROGNOSIS OF DISCOUNTED CASH FLOWS FOR AGRICULTURAL BUSINESS VALUATION

Makhmudov Khanlar, Sivitska Yuliia. The prognosis of discounted cash flows for agricultural business valuation. Cash flow forecasting is a key element in business valuation, financial analysis, and investment decisions. There is a lack of literature on the subject of cash flow forecasting, especially articles, supported by empirical data. In this article, we have analysed scientific literature on this topic and applied the findings to projecting cash flows and calculating the value of an agricultural enterprise – a Brazilian agricultural holding SLC Agricola S.A. The obtained results indicate that the selected methodology of future cash flows prognosis provides a value of one company's share as close as possible to its current quotation on the stock exchange Bolsa de Valores de São Paulo (BM&F Bovespa).

Key words: cash flow forecasting, prognosis, cash flows, agricultural business valuation, business valuation, direct method, indirect method.

Махмудов Х.З., Сівіцька Ю.О. Прогноз дисконтованих грошових потоків для оцінки сільськогосподарського бізнесу. У даній статті здійснено пошук та обгрунтування методології, яка дозволяє передбачити майбутні грошові потоки для отримання найбільш реальної вартості компанії в процесі оцінки сільськогосподарських компаній з метою інвестування. При розрахунку вартості сільськогосподарського підприємства з використанням методу дисконтованих грошових потоків постає питання вибору методології прогнозування грошових потоків. Адже прогноз суттєво впливає на результати оцінки бізнесу та на рішення, яке буде прийнято інвестором після перегляду цих результатів. Прогнозування грошових потоків є ключовим елементом в оцінці бізнесу, фінансовому аналізі та при прийнятті інвестиційних рішень. Необхідність прогнозування грошових потоків та пошук правильної методології очевидна. Особливо в аграрному секторі, де сьогодні інвестиції є надзвичайно важливими. У той же час бракує літератури з методології прогнозування грошових потоків, особливо статей, підкріплених емпіричними даними. Цей факт зумовив вибір даної теми для подальшого дослідження. Сьогодні серед фахівців з оцінки бізнесу немає єдиної думки щодо того, як слід розраховувати прогноз грошових потоків та яка методологія забезпечує найбільш реалістичний результат. Прогнозування грошових потоків часто є необгрунтованим і непідтвердженим очікуванням аналітика компанії щодо отримання певної цифри чистого прибутку або річного темпу приросту на наступні роки. У цій статті ми проаналізували наукові праці з даної тематики та застосували отримані результати для прогнозування грошових потоків та підрахунку вартості сільськогосподарського підприємства. Виявлені результати застосовані до прогнозування грошових потоків бразильського сільськогосподарського холдингу SLC Agricola S.A., акції якого котируються на біржі Bolsa de Valores de São Paulo (BM&F Bovespa), для обчислення вартості компанії методом дисконтованих грошових потоків. Отримані результати свідчать про те, що обрана методологія прогнозування майбутніх грошових потоків забезпечує вартість однієї акції компанії, максимально наближеною до її поточного котирування на біржі Bolsa de Valores de São Paulo (BM&F Bovespa).

Ключові слова: прогнозування грошових потоків, прогноз, грошові потоки, оцінка сільськогосподарського бізнесу, оцінка бізнесу, прямий метод, непрямий метод.

Махмудов Х.З., Сивицкая Ю.О. Прогноз дисконтированных денежных потоков для оценки сельскохозяйственного бизнеса. Прогнозирование денежных потоков является ключевым элементом в оценке бизнеса, финансовом анализе и принятии инвестиционных решений. В то же время не хватает литературы по методологии прогнозирования денежных потоков, особенно статей, подкрепленных эмпирическими данными. В этой статье мы проанализировали научные труды по данной тематике и применили полученные результаты для прогнозирования денежных потоков и расчета стоимости сельскохозяйственного предприятия. Полученные результаты свидетельствуют о том, что выбранная методология прогнозирования будущих денежных потоков обеспечивает стоимость одной акции компании, максимально приближенной к ее текущей котировки на бирже Bolsa de Valores de São Paulo (BM & F Bovespa).

Ключевые слова: прогнозирование денежных потоков, прогноз, денежные потоки, оценка сельскохозяйственного бизнеса, оценка бизнеса, прямой метод, косвенный метод.

Problem statement. Cash flow forecasting is a key element in business valuation, financial analysis, and investment decisions. The necessity of cash flow prognosis and the search for the correct methodology are obvious, especially in the agricultural sector, where investments are extremely important today. At the same time, there is a lack of literature on the subject of cash flow forecasting, especially articles, supported by empirical data. This fact led to the choice of this topic for further research.

Materials and methods of research. We have analysed the scientific literature (from 1994 to 2018) on the topic of forecasting cash flows of an enterprise. The revealed results (indirect cash flow presentation method and weighted average method for forecasting of cash flows) were applied to the forecasting of cash flows of a Brazilian agricultural holding SLC Agricola S.A., whose shares are listed on the stock exchange Bolsa de Valores de São Paulo (BM&F Bovespa), to calculate the company's value by the discounted cash flow method.

Purpose and objectives of the study. The purpose of this article is to determine methodology, which allows predicting future cash flows to get the most realistic company valuation in the process of agricultural company valuation for investment purposes.

Analysis of recent researches and publications.

Livnat and Zarowin (1990), exploring the US stock market, found that the direct method of the presentation of cash flow information explains stock returns [1].

Dechow (1994) argued that the duration of the company's operating cycle affects the accuracy of cash flow forecasting using both models: the Operating Cash Flow and the Earnings [2].

Hayn (1995) stated that the most accurate prediction of both the OCF model and the Earnings model is in large companies compared to small. As well as those who report positive operating cash flow, compared with those who show negative [3].

Krishnan and Largay (2000) reported that the direct cash flow components method is better to predict future cash flows, than aggregate operating cash flows [4].

Charitou et al. (2001) argued that in order to forecast future cash flows, information about unexpected earnings is more important for small companies than for large ones [5].

Clinch et al. (2002) on the example of Australian companies of the mining industry proved that direct cash flow components method is much better in stock returns prediction than aggregate operating cash [6].

Cheng and Hollie (2008) presented studies that prove better usefulness of direct cash flow method compared with aggregate operating cash flow [7].

Arthur, et al. (2008) found out that the cash flow component model better explains and predicts future earnings than the aggregate cash flow model [8].

Orpurt & Zang (2009) presented evidence that the direct method is more effective and informative in future cash flows predicting than the indirect method [9].

Arthur, Cheng, and Czernkowski (2010) examined Australian companies and stock market data and came to the onclusion that the direct cash flow components method explains future earnings [10].

Al-Debi'e and Mamoun M. (2011) affirmed a considerable negative correlation between length of the company operating cycle and profitability. The study was conducted on the example of industrial companies in Jordan [11].

The basic results of the article. The value of a firm is determined by the present value of future cash flows. Future cash flows are predicted using various information because it is difficult to know precisely the future cash flow at the present time. Corporate sustainability is closely related to future cash flows. If there is not enough cash flow in the future, the sustainability of the firm will be significantly lowered. For investors, it is not easy to predict the future cash flow of a firm. If they can predict the future cash flow through accurate information, they will be able to supply capital and procure capital in a timely manner, which will increase the viability of the firm. In the capital market, financial analysts act as information intermediaries between firms and investors. There are many stakeholders in the capital markets. These stakeholders strive to pursue their own interests. There is an information asymmetry between those who have information and those who do not, and incentives to pursue private interests due to information asymmetries. For a firm to be sustainable for a long time, it can be seen from many companies' examples that it is necessary to disclose relevant information to stakeholders through transparent management, and to receive sound surveillance, rather than seeking private benefits by using information asymmetry between investors and manager [12, p. 1].

A primary goal of financial reporting is helping investors to make economic decisions. A primary economic decision that investors make is assessing the value of firms in which they are invested or are considering investing [13, p. 312].

The DCF method is very vulnerable to changes in the underlying assumptions. Only marginally changes in the perpetual growth rate will lead to huge variances in the terminal value. Since the terminal value accounts for a large portion of the company's value, this is of big significance for the validity of the DCF method. It is very easy to manipulate the DCF analysis to result in the value that you want it to result in by adjusting the inputs [14, p. 14].

The company valuation using discounted cash flows is a valid method to assess the company's value if special precaution is put on the validity of the underlying assumptions. As with all other financial models, the validity of the DCF method almost completely depends on the quality and validity of the data that is used as input. If used wisely, the discounted cash flow valuation is a powerful tool to evaluate the values of a variety of assets and also to analyse the effects that different economic scenarios have on a company's value. The range of reasonable rates for discount factor and perpetual growth rate depends on each specific firm, its business situation, and many more variables [14, p. 15].

The discounted cash flow methodology relies on expected cash flows. However, cash flow forecasts often ignore low-probability downside events so that the forecasts are excessively optimistic or upwardly biased measures of expected cash flows. Such forecasts need to be adjusted when using them in valuations. Practitioners typically account for these downsides by increasing the discount rate beyond the market-based cost of capital whereas academics generally prefer adjustments to the cash flow forecasts themselves [15, p. 15].

Therefore, firms that provide both earnings forecasts and cash flow forecasts are more likely to predict earnings analysts' earnings accuracy than those that do not. The effect of financial analysts' cash flow forecast accuracy on the accuracy of earnings forecasts is significantly positive. Therefore, the empirical results show that firms that accurately predict cash flow forecasts have higher earnings forecasting accuracy than those that do not [12, p. 1].

Cash flow forecasting information of financial analysts provides important evidence for capital market participants because it provides evidence that capital market participants' information can be used as useful information for economic decision-making. These results show the sustainability of a firm from the viewpoint of a financial analyst who acts as an intermediary and external supervisor in the capital market. In addition, the analysts' cash flow forecasting information is expected to reduce the information asymmetry between the company and the investor, thereby increasing the transparency and sustainability of the firm [12, p. 1].

Cash flow presentation methods

The key element of a discounted cash flow methodology is expected cash flows. As you can see above, it is often mentioned in scientific articles that correctly drawn up cash flow forecasts are very useful for investors. They provide important information for economic decision-making.

There are several classifications of cash flows:

– by type of company operations: cash flow resulting from operating activities, cash flow resulting from investing activities, cash flow resulting from financing activities;

– by type of capital: for invested capital and for equity;

– on accounting for the inflation component: real (non-inflationary) and nominal;

– to calculate the cost of capital, you can use equity cash flow or invested capital net cash flow [16, p. 4].

The main difference between these flows is that the flow for all invested capital is based on the assumption that all the funds invested in the company, including borrowed capital, are treated as equity for the company. Cash flow for equity is the funds that remain with the shareholders (owners) of the business [16, p. 4].

Justification for the choice of calculating the value of the flow on its own or invested capital is not widely highlighted as a part of the valuation theory, but it is quite a significant point in the business valuation [16, p. 5].

The scientific literature describes two methods for representing the cash flows of an enterprise: direct and indirect. We shall consider the description, advantages and disadvantages of each of them further.

Over the past two decades, there has been growing interest concerning the usefulness of the information provided from reporting operating cash flows using the direct method. Even before the standardisation of cash flow disclosures,

a number of academic papers, examining various reporting formats for operating cash flows, had each expressed a definitive preference for the direct method [17, p. 42].

The direct method (see Table 1) reports the major items of cash receipts and cash payments in the operating section of the statement. It provides gross inflows and outflows components of cash flows from operations (i.e., cash from customers and cash paid to suppliers). The operating cash flows section of the statement of cash flows under the direct method would include: cash receipts from customers; cash paid to suppliers; cash paid to employees; interest paid; income taxes paid; and cash paid for other operating expenses [18, p. 1].

The explanatory power and predictive ability of disaggregated cash flow models are superior to that of an aggregated model, and further disaggregating previously applied core and non-core cash flows provide incremental information about income statement and balance sheet items that enhances prediction of future cash flows. Disaggregated models and their components produce lower out-of-sample prediction errors than an aggregated model [19, p. 1].

The predictive ability of both aggregated and disaggregated cash flow increases with firm size [20, p. 113].

The direct method cash flow components enhance the predictive ability of aggregate operating cash flow for up to a four-year forecast horizon. Moreover, the predictive ability of both aggregate operating cash flow and direct method cash flow components are noticeably higher when the operating cash cycle is short, the firm is large, the firm is profitable, or the firm generates positive net operating cash flow [20, p. 131].

This method (direct), in the opinion of a practicing business valuation professional, MRICS (Member of Royal Institution of Chartered Surveyors), PhD in economics Pavel Kartsev, is considered more accurate, but also more time-consuming and insufficiently informative, because it does not allow tracing the transformation of net profit into cash flow. In this sense, the indirect method of presenting information about cash flows is more preferable [16, p. 4].

Valuing a company, operating in emerging markets, based on nominal cash flow is much more preferable from the point of view of the reliability of results, than the valuing using real (non-inflationary) cash flow. Thus, the most correct method of presenting cash flows for business valuation using the discounted cash flow method is the calculation of nominal cash flow from operating activities using the indirect method [16, p. 5-6].

The indirect method (see Table 2) adjusts accrual basis net profit or loss for the effects of non-cash transactions. It reconciles net income with the cash flows from operations. The operating cash flows section of the statement of cash flows under the indirect method is determined by adjusting profit or loss for the effects of: (a) changes during the period in inventories and operating receivables and payables; (b) non-cash items such as depreciation, provisions, deferred taxes, unrealized foreign currency gains and losses, undistributed profits of associates, and non-controlling interests; and (c) all other items for which the cash effects are investing or financing cash flows (IAS 7 (International Accounting Standards : Statement of Cash Flows), par. 20) [18].

Direct versus indirect method in company cash flow presentation

In practice, however, the vast majority of companies (approximately 97% to 98%) in the U.S. and other countries prepare their reports using the indirect method. The popularity of the indirect method among financial statement preparers stems from the perception that the direct method is complicated and unduly burdensome in terms of data collection and accounting systems design [20, p. 113-114].

Cash flows from operations, the operating section of a statement of cash flows, provide a key metric in assessing a firm's ability to generate cash from internal operations and

Table 1

The direct method of cash flow presentation

Advantages	Disadvantages
Consistent with the objective of a statement of cash flows (FASB, 1987, par. 111) [18]	Reveals unwanted information to competitors
Refines the forecasting of future operating cash flows	More costly than indirect method
A better marker of company solvency	More labour-intensive
Superior over the indirect method in predicting future stock returns	
Gives significant information to investors	

Source: [1-21]

Table 2

The indirect method of cash flow presentation

Advantages	Disadvantages
More simple and convenient to prepare	Indeterminacy in the term "operations"
Gives a practicable link between financial reports such as statement of cash flows and income statement	Variety of the Report presentation (in practice)
Disclosures non-cash transactions	Comprise objectionable details and may confuse the readers
Less costly than direct method	Less transparent and compliant with procedures of international accounting than direct method
Net cash flow from operating activities is a better measure of company performance than net income	

Source: [1-21]

remain viable. Currently, most firms adopt indirect methods of adjusting earnings by accruals to present cash flows from operations. Its practical implementation imposes two difficulties in analysing a company's cash power. First, investors without insider information are not able to derive the same number as what the company reports as cash flows from operations if they apply the indirect method mechanically. Second, although the statement of cash flows from operations prepared by companies reports changes in the balance of current accounts (i.e., accruals) excluding transactions that do not relate an operating source or use of cash to an income statement account, it does not present what underlying transactions cause changes in accruals or other operating cash flows, and thus determine the total amount of operating cash flows. Firms are neither required to disclose the individual sources of operating cash flows in the footnote disclosures. Not revealing explicitly how companies generate operating cash flows, a statement of cash flows lacks transparency needed for an investor to fully appreciate its economic implications. In worse scenarios, management could opportunistically report the desired amount of total operating cash flows to influence investor perception of the firm's cash-generating ability and future prospects [21, p. 421].

In Ukrainian valuation practice, applying the income methodological approach to business valuation, calculations are carried out mainly using the nominal cash flow from operating activities and cash flows are presented with the indirect method. Consider the application of this method (see Table 3) on the example of a Brazilian agricultural holding SLC Agricola S.A.

An integral part of a business valuation using an income methodological approach is the calculation of the discount rate. We calculate the discount rate for the company SLC Agricola S.A. (see Table 4). Based on the previous study, which revealed the most correct mode to calculate the discount rate in agricultural enterprise business valuation for investment purpose, the calculation is performed using the Build-up method [23].

Cash flow prognosis methods

One of the most important issues, arising while using a methodological income approach and especially the discounted cash flow method in agricultural enterprise valuation is the selection of methodology of future cash flow forecasting. Cash flow forecasting is often an unreasonable and unconfirmed expectation of a company's analyst about obtaining a certain figure of net profit or annual growth rate for the next years. In most cases of valuation practice, the forecast is included in the company's valuation report without any calculation, just the final forecast figures.

Negative scenarios, such as changes in weather conditions, unforeseen situations in the market for such products, are often not considered at all. Sometimes the calculation is carried out using three scenarios: optimistic, pessimistic, and realistic. But this option is a pure assumption of the company's analyst or, worse, an appraiser's assumption (method of expert assessments), who needs to reach a specific figure in their calculations.

In our opinion, a more objective result can be obtained by relying on statistical methods: the weighted average method, the moving average method. It is possible, in this case, to use the methods of exponential smoothing, building multiple regression models or extrapolation.

The exponential smoothing method combines the weighted average method and the moving average method [26, p. 15]. It is not used in our calculations since it actually duplicates the other two methods.

Table 3

Cash flows calculation, SLC Agricola S.A., 2014–2018

Net income, (th,R$)*	290 717,00	392 300,00	15 641,00	369 262,00	406 501,00
Depreciation and amortisation, (th,R$)	99 919,00	106 803,00	104 242,00	91 506,00	111 231,00
Operating cash flow, (th,R$)	390 636,00	499 103,00	119 883,00	460 768,00	517 732,00

* (th,R$) – thousand, Brazilian reals

Source: [22]

Table 4

Discount rate calculation, SLC Agricola S.A. (Build-up method)

Formula	**Rf+EPR*β+CSP+SCRP**		
	Meaning	Number	Source
Rf	Risk free rate of return (Brasil, 2019)	7,88	Aswath Damodaran. 2019. Discount rates. Working paper. Pp. 1-24, [24].
ERP	Equity risk premium (Brasil, 2019)	9,35	Aswath Damodaran. 2019. Discount rates. Working paper. Pp. 1-24, [24].
β	Industry beta (Farming/Agriculture)	0,72	Aswath Damodaran. 2019. Betas by Sector. Table [25].
CSP	Company size premium	0	Used in the valuation of small companies
SCRP	Specific company risk premium	0	We consider it equal to zero since its influence is not studied in this article
7,88+9,35*0,72+0+0=14,61			

Source: [24, 25]

The extrapolation method is often used to identify economic trends and is also suitable for forecasting cash flows based on past trends. The essence of the extrapolation method is as follows: the trend of a certain indicator, which has prevailed in recent years, will determine its development in the future, provided that the circumstances that determined it also do not change [27, p. 67]. It is not used in our calculations because it is more appropriate to determine the trend in the economic forecasting.

The multiple regression model method is implemented by constructing a statistical regression model as a function where the dependent variable is influenced by various factors such as a number of independent variables [28, p. 45]. This method is also not used since we assume that it will not receive an application in valuation practice due to its excessive labour input. The inputs used in the forecasts of future discounted cash flows are also subjective. In the opinion of F. Steiger (2010), analysts or business professionals have no tools to estimate the input factors with that kind of exactness [18, p. 4].

According to Professor Anderson (2013) from Stanford University, the basic error in predicting DCF is a too long and detailed analysis, compiling impressive tables and graphs, and not paying due attention to the correct justification of the future revenue growth rate [29, p. 440].

In forecasting the discounted cash flows of an agricultural enterprise, we used the weighted average method since it has a minimum of assumptions and a maximum of actual figures.

In their research article, Khansalar and Namazi (2017) using multiple regression analysis proved that around 60% of the current year's cash flow will persist into the next period's cash flows, and that income statement and balance sheet variables persist similarly [20, p. 1]. During the appraisal process, an appraiser performs Reconciliation of Final Values, the essence of which is that they determine the degree of trust in each of the business valuation methods used in the valuation process. Based on the empirically proven fact that "around 60% of the current year's cash flow will persist into the next period's cash flows, and that income statement and balance sheet variables persist similarly," we give the highest percentage of confidence to the method based on the use the financial statements of past years, specifically, the weighted average method (see Table 5).

The method is based on the calculation of the average forecast through the "weighing" of previous periods. At the same time, the periods closest to the predicted ones (2017, 2018) are assigned to the largest weights. These periods are assigned the highest weight (3 and 5 points), due to the fact that these data are most likely to be carried over to the next subsequent periods, further, according to the degree of approximation, the weights are reduced by 2014 (2 points for each period). The forecast value is calculated by dividing the weighted OCF (operating cash flows) by the total amount of points (10 points).

Thus, Table 6 presents the initial data for calculating the value of the company and one share of the company SLC Agricola S.A., listed on a stock exchange Bolsa de Valores de São Paulo (BM&F Bovespa). This calculation will verify the correctness of the selected cash flow forecasting methodology for agricultural business valuation.

Based on the above data, we calculate the value of one share of SLC Agricola S.A. (see Table 7).

The data obtained as a result of calculations indicate the correct methodology for forecasting cash flows of the agricultural business, namely, the indirect method of cash flows presentation and the weighted average method in forecasting future cash flows. Since the value of 1 share of SLC Agricola S.A., obtained as a result of our calculations 18,02 R$, is close to its current quotation on the stock exchange Bolsa de Valores de São Paulo (BM&F Bovespa) – 18,24 R$.

Conclusions. When calculating the value of an agricultural enterprise using the discounted cash flow method, the issue of choosing a cash flow forecasting methodology arises. After all, the forecast has a significant impact on the results of business valuation and on the decision which will be taken by the investor after reviewing these results.

We can predict future cash flows using various information sources but it is not an easy task.

The discounted cash flow method is defenceless to changes in the underlying assumptions. As with most methods of business valuation, the result of the discounted cash flow method completely depends on the quality of the input data. On condition of using it correctly, this method is a versatile business valuation tool.

The key element of a discounted cash flow methodology is expected cash flows. As you can see above, it is often mentioned in scientific articles that correctly drawn up cash flow forecasts are very useful for investors. They provide important information for economic decision-making.

There are several classifications of cash flows:

– by type of company operations: cash flow resulting from operating activities, cash flow resulting from investing activities, cash flow resulting from financing activities;

– by type of capital: for invested capital and for equity;

– on accounting for the inflation component: real (non-inflationary) and nominal.

To calculate the cost of capital, you can use equity cash flow or invested capital net cash flow.

The scientific literature describes two methods for representing the cash flows of an enterprise: direct and indirect.

Nowadays, there are many publications concerning the usefulness of the information provided from the presentation of operating cash flows using the direct method. The predictive capacity of operating cash flow components increases when the direct method is used. Besides, the predictive ability of this method noticeably rises when the object of valuation is a large company having a short operating cash cycle, profitable or at least making positive net operating cash flow.

This method (direct) is considered more accurate but also more time-consuming and insufficiently informative because it does not allow tracing the transformation of net profit into cash flow. In this sense, the indirect method of presenting information about cash flows is more preferable.

As confirmation of this fact, the overwhelming majority of cash flow reports is prepared using the indirect method. The analysts confirm that the direct method is very uncomfortable for them. The reasons for that are method complexities, a huge amount of time wasted on collecting initial data and the fact that existing accounting programs are not designed to collect this type of information.

Valuing a company, operating in emerging markets, based on nominal cash flow is much more preferable from the point of view of the reliability of results, than a valuing using real (non-inflationary) cash flow.

Table 5

Prognosis of cash flows for 2019-2023, SLC Agricola S.A.

	2014	2015	2016	2017	2018	Total
Weighing OCF* 2014, points	2			3	5	10
Weighing OCF 2015, points		2		3	5	10
Weighing OCF 2016, points			2	3	5	10
Weighing OCF 2017, points			2	3	5	10
Weighing OCF 2018, points			2	3	5	10
OCF 2014, (th,R$)**	390636,00			460768,00	517732,00	781272,00
OCF 2015, (th,R$)		499 103,00		460768,00	517732,00	998206,00
OCF 2016, (th,R$)			119883,00	460768,00	517732,00	239766,00
OCF 2017, (th,R$)				460768,00	517732,00	1382304,00
OCF 2018, (th,R$)				460768,00	517732,00	2588660,00
Weighted OCF 2014, (th,R$)	781272,00	0,00	0,00	1382304,00	2588660,00	4752236,00
Weighted OCF 2015, (th,R$)	0,00	998206,00	0,00	1382304,00	2588660,00	4969170,00
Weighted OCF 2016, (th,R$)	0,00	0,00	119883,00	1382304,00	2588660,00	4090847,00
Weighted OCF 2017, thousand, Brazilian reals (th,R$)	0,00	0,00	0,00	460768,00	2588660,00	3049428,00
Weighted OCF 2018, (th,R$)				1382304,00	2588660,00	3970964,00
Projected OCF 2019, (th,R$)						475 223,60
Projected OCF 2020, (th,R$)						496 917,00
Projected OCF 2021, (th,R$)						409 084,70
Projected OCF 2022, (th,R$)						304 942,80
Projected OCF 2023, (th,R$)						397 096,40

*OCF – operating cash flows

** (th,R$) – thousand, Brazilian reals

Source: [developed by the author]

Table 6

Initial data for calculating company value with discounted cash flows method

	2014	2015	2016	2017	2018
Operating cash flows, fact, (th,R$)	390 636,00	499 103,00	119 883,00	460 768,00	517 732,00
	2019	**2020**	**2021**	**2022**	**2023**
Operating cash flows, prognosis, (th,R$)	475 224,00	496 917,00	409 085,00	304 943,00	397 096,00
Discount rate	14,61				

Source: developed by the author

Table 7

Calculation of a share value of SLC Agricola S.A.*

Operating cash flows, prognosis, (th,R$)	475 224,00	496 917,00	409 085,00	304 943,00	397 096,00	
	0,5	1,5	2,5	3,5	4,5	
Years	1	2	3	4	5	
Cash flows, (th,R$)	494 955,72	417 025,98	314 358,58	388 764,36	35 901,83	
Discount rate	14,60%	14,60%	14,60%	14,60%	14,60%	14,60%
Present value	0,934130799	0,815122861	0,711276493	0,620660116	0,541588234	1
Net present value, (th,R$)	462 353,38	339 927,41	223 595,87	241 290,53	19 444,01	1 286 611,191
Reversion value, (th,R$)						245 902,946
Company value, (th,R$)						**1 532 514,138**
Shares outstanding						**85 065 106,0**
Share value, R$						**18,02**

*date of valuation: the 20th of August, 2019

Source: developed by the author

After analysing the scientific literature and articles of practicing valuation professionals, we can conclude that the most correct method of presenting cash flows for business valuation using the discounted cash flow method is the calculation of nominal cash flow from operating activities using the indirect method.

One of the most important issues, arising during using a methodological income approach and especially the discounted cash flow method in agricultural enterprise valuation is the selection of methodology of future cash flows forecasting. Cash flow forecasting is often an unreasonable and unconfirmed expectation of a company's analyst about obtaining a certain figure of net profit or annual growth rate for the next years. In most cases of valuation practice, the forecast is included in the company's valuation report without any calculation, just the final forecast figures.

In forecasting the discounted cash flows of an agricultural enterprise, we used the weighted average method since it has a minimum of assumptions and a maximum of actual figures. Based on the empirically proven fact that "around 60% of the current year's cash flow will persist into the next period's cash flows, and that income statement and balance sheet variables persist similarly", we give the highest percentage of confidence to the method based on the use the financial statements of past years, specifically, the weighted average method.

The data obtained as a result of calculations indicate the correct methodology for forecasting cash flows of the agricultural business, namely, the indirect method of cash flows presentation and the weighted-average method in forecasting future cash flows. Since the value of one share of SLC Agricola S.A., obtained as a result of our calculations, is close to its current quotation on the stock exchange Bolsa de Valores de São Paulo (BM&F Bovespa).

Further research in this area should be aimed at the development and approbation of methodology for calculating specific company risk premium for agricultural companies since it also has a significant impact on the result of the valuation of the agricultural business.

References:

1. Livna J., Zarowin P. The Incremental Information Content of Cash-Flow Components. *Journal of Accounting and Economics*. 1990. № 13. P. 25-46. DOI: http://dx.doi.org/10.1016/0165-4101(90)90066-D

2. Dechow P. M. Accounting Earnings and Cash Flows as Measures of Firm Performance : The Role of Accounting Accruals. *Journal of Accounting and Economics*. 1994. № 18. P. 3-42. DOI: https://doi.org/10.1016/0165-4101(94)90016-7

3. Hayn C. The Information Content Losses. *Journal of Accounting and Economics.* 1995. № 20. P. 125-53. DOI: https://doi.org/10.1016/0165-4101(95)00397-2

4. Krishnan G. V., Largay J. A. The Predictive Ability of Direct Method Cash Flow Information. *Journal of Business Finance & Accounting*. 2000. № 27. P. 215-245. DOI: https://doi.org/10.1111/1468-5957.00311

5. Charitou A., Clubb C., Andreou A. The Effect of Earnings Permanence, Growth and Firm Size on the Usefulness of Cash Flows and Earning in Explaining Security Returns: Empirical Evidence for the UK. *Journal of Business Finance & Accounting.* 2001. № 28, P. 563-594. DOI: https://doi.org/10.1111/1468-5957.00385

6. Clinch, G., Sidhu, B., Sin S. The Usefulness of Direct and Indirect Cash Flow Disclosures. *Review of Accounting Studies*. 2002. № 7. P. 383-404. DOI: https://doi.org/10.1023/A:1020759511460

7. Cheng C. S., Hollie D. Do Core and Non-Core Cash Flows from Operations Persist Differentially in Predicting Future Cash Flows? *Review of Quantitative Finance and Accounting*. 2008. № 3. P. 29-53. DOI: 10.1007/s11156-007-0062-7

8. Arthur N., Chuang G. C. Alternative Methods of Disclosing Cash Flow from Operations: Evidence on the Usefulness of Direct Method Cash Flow Disclosures. The University of Sydney, Working Paper. IAS 7. 2008. https://pdfs.semanticscholar.org/f7d0/798c2ad2cfe148326abf42ccfebe5dd1ef6c.pdf

9. Orpurt S. F. Zang, Y. Do Direct Cash Flow Disclosures Help Predict Future Operating Cash Flows and Earnings? *The Accounting Review*. 2009. № 84. P. 893-935. DOI: https://doi.org/10.2308/accr.2009.84.3.893

10. Arthur N., Cheng M. Czernkowski R. Cash Flow Disaggregation and the Prediction of Future Earnings. *Accounting & Finance*. 2010. № 50. P.1-30. DOI: 10.1111/j.1467-629X.2009.00316.x

11. Al-Debi'e, Mamoun M. Are Operating Cash Flows A Superior Predictor of Future Operating Cash Flows than Earnings ? Evidence from Jordan. European *Journal of Economics, Finance and Administrative Sciences*. 2011. № 40. P. 36-46. https://www.researchgate.net/publication/284028979_Are_Operating_Cash_Flows_a_Superior_Predictor_of_Future_Operating_Cash_Flows_than_Earnings_Evidence_from_Jordan

12. Hyun Min Oh, Ho young Shin. A Study on the Relationship between Analysts' Cash Flow Forecasts Issuance and Accounting Information: Evidence from Korea. *Sustainability.* 2019. № 11(12). P. 3399. DOI: https://doi.org/10.3390/su11123399

13. Barth M. E., Beaver W. H., Hand J. R. M., Landsman W. R. Accruals, accounting-based valuation models, and the prediction of equity values. *Journal of Accounting, Auditing and Finance.* 2005. № 20. P. 311–345. DOI: https://doi.org/10.1177/0148558X0502000401

14. Steiger F. The validity of company valuation using Discounted Cash Flow methods. European Business School. 2010. Seminar paper. P.1-25. https://arxiv.org/ftp/arxiv/papers/1003/1003.4881.pdf

15. Ruback R.S. Downsides and DCF: Valuing Biased Cash Flow Forecasts. *Journal of applied corporate finance.* 2011. № 23 (2), P. 8-17. DOI: https://doi.org/10.1111/j.1745-6622.2011.00322.x

16. Kartsev P. V., Akanov A. A. (2012) Obzor praktiki primeneniya dohodnogo podhoda k otsenke biznesa [A review of practical application of the income approach to a business valuation] *Voprosyi otsenki,* № 2, pp. 2–19. http://valrus.com/upload/iblock/49d/49d8e198653c59a845e5ba0f47ceb0d7.pdf

17. Alan J. Duboisse de Ricquebourg. The Usefulness of Direct Cash Flow Statements under IFRS. Dissertation for obtaining the degree of Doctor of Philosophy. The University of Leeds. Leeds University Business School. 2013. P.1-276. https://core.ac.uk/download/pdf/18590898.pdf

18. Bassam M. Abu-Abbas. Direct, Indirect, or Both Methods of Reporting Operating Statement of Cash Flows. *International Journal of Finance and Accounting.* 2014. № 3(6). P. 335-340. doi:10.5923/j.ijfa.20140306.01 http://article.sapub.org/10.5923.j.ijfa.20140306.01.html

19. Khansalar, E., Namazi, M. "Cash flow disaggregation and prediction of cash flow", Journal of Applied Accounting Research. 2017. № 18 (4). P. 464-479. DOI: https://doi.org/10.1108/JAAR-02-2015-0011

20. Farshadfar Shadi, Monem Reza M. Further Evidence on the Usefulness of Direct Method Cash Flow Components for Forecasting Future Cash Flows. *International Journal of Accounting, Forthcoming.* 2013. № 48(1), P. 111-133. DOI: https://doi.org/10.1111/acfi.12260

21. Luo Mei. Unusual operating cash flows and stock returns. *Journal of Accounting and Public Policy.* 2008. № 27. P. 420-429. DOI: 10.1016/j.jaccpubpol.2008.07.004

22. Financial statements of SLC Agricola S.A. 2014-2018 years. Company website. Results center. http://ir.slcagricola.com.br/financial-information/results-center#2019

23. Sivitska Y. (2019). Valuing Agricultural Enterprise for Investment Purposes: Methodological Aspect. *Modern Economics*, 15(2019), 175-182. DOI: https://doi.org/10.31521/modecon.V15(2019)-25

24. Aswath Damodaran. Discount rates. Working paper. 2019. P. 1-24. http://pages.stern.nyu.edu/~adamodar/podcasts/valspr19/session4slides.pdf

25. Aswath Damodaran. Betas by Sector. Table. 2019. http://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/Betas.html

26. Khomyak T.V., Malienko A.V., Symonets H.V. (2019) Zastosuvannja metodiv zhladžuvannja dlja prohnozuvannja obsjahu vyrobnyctva [Application of smoothing methods for forecasting production volume]. *Visnyk Nacionalnoho texničnoho universytetu «XPI». Serija: Systemnyj analiz, upravlinnja ta informacijni texnolohiji,* № 1, pp.8-12. DOI: https://doi.org/10.20998/2079-0023.2019.01.02

27. Lendjel M.A., Moroxovyč V.S. (2019) Cučasnyj stan hotelnoho hospodarstva v Zakarpatskij oblasti ta prohnozuvannja joho rozvytku [The current state of the hotel industry in the Transcarpathian region and forecasting its development] *Naukovyj visnyk Užhorodskoho Universytetu,* № 1(53), pp. 65-70. DOI: https://doi.org/10.24144/2409-6857.2019.1(53).65-70

28. Oklander M., Oklander T., Pedko I., Yashkina O. Development of the subsystem of forecasting for the system of marketing information management at an industrial enterprise. *Eastern-European Journal of Enterprise Technologies*. 2019. Vol 5. № 3 (89). P. 39-51. DOI: https://doi.org/10.15587/1729-4061.2017.111547 http://journals.uran.ua/eejet/article/view/111547/107438

29. Anderson P. Economics of Business Valuation. Stanford Economics and Finance. 1st edition (April 10, 2013). P. 440. https://www.sup.org/books/title/?id=11400