ORIGINAL PAPER

DOI: 10.26794/2304-022X-2024-14-3-78-94
UDC 332.644;65.011.44(045)
JEL G12, G32, O16

Profitability Indicators: Critical Analysis and Applicability in Modern Conditions

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ABSTRACT

Constant variability of the external environment is one of the key features affecting the business activity of domestic organizations and generates the need for constant updating of managers' professional skills. The issues of assessment efficiency of commercial companies are always relevant not only for owners, but also for managers, employees and other stakeholders. In the conditions of economic instability, the interest to the indicators of organizations' efficiency increases and, accordingly, their clarification and adjustment is required. and adjustment. **The purpose** of the study is to summarize the profitability indicators depending on the goal-setting of the participants of commercial organizations and to establish the possibility of using these indicators to assess the effectiveness of the company's activities. Many years of experience of the authors of this article in the field of business valuation allowed to systematize the techniques of calculation of the main profitability indicators, to present an updated system of their grouping, as well as to classify the factors affecting them. Also, theoretical approaches to the calculation of invested capital were generalized in the course of the work. The research applied the **methods** of analysis, comparison, synthesis, classification, collection and generalization, logic, graphical and tabular display of information. Theoretical significance of the obtained **results** consists in the development of the methodology of value-oriented management in order to actualize and adapt the algorithms for calculating profitability indicators to domestic conditions, taking into account the interests of the participants of the organization. The practical significance of the work consists in the development of methods for assessing the performance indicators of the company, which can be used in the corporate governance of commercial structures, as well as in making management decisions by stakeholders.
Keywords: value approach; value-based management; valuation methods; equity capital; invested capital; profitability

For citation: **Bondarenko S.A., Pupentsova S.V. Profitability indicators: Critical analysis and applicability in modern conditions. *Upravlencheskie nauki = Management Sciences*. 2024;14(3):78-94. DOI: 10.26794/2304-022X-2024-14-3-78-94**

INTRODUCTION

Correct and timely decision-making in management is a basic condition for building a successful organization capable to cope with external and internal challenges and achieve effectively its goals. One would not answers to management questions in the abstract without assessment of the results achieved. To make a certain management decision, a manager must consider the potential impact on the profitability indicators and as a follow-up to assess effectiveness and efficiency of the company's activities. In this regard, all issues of assessing the achieved results are key factors for building a reasonable approach to management, and besides, for solving potential problems of the estimate of efficiency (profitability and cost efficiency) of commercial organizations which remain relevant not only for their owners, but also for their managers, employees and other stakeholders.

The authors of the study set as their goals to collect and classify coefficients of profitability and, depending on the goal-setting of the participants of commercial companies, also define options for their employment to assess the efficiency of the company. During the scientific research, the following tasks were solved: the authors have determined classification of the main profitability indicators and the factors influencing them. Besides, they made a systematization of the calculation technique for these indicators (employed by foreign and domestic authors) as well as differentiation of these indicators in accordance with the criterion of applicability for the purposes of individual stakeholders. The authors also made a general summery of theoretical approaches towards calculating invested capital as well.

It is worth noting, that within the framework of this work, the authors also studied general indicators of profitability regardless of the type of activity for such type of commercial corporate organizations in business, as joint-stock companies (JSC) and limited liability companies (LLC).

METHODOLOGY AND INFORMATION BASIS OF RESEARCH

As a rule, the traditional approach to assessing the performance efficiency of an organization (in this case, a commercial company) is primarily estimated on original goal of commercial enterprises, which are established aimed to make a profit as a result of their core activities.[1]

It is worth noting, that this approach has a few essential disadvantages: the presence of which require the need to use other indicators for such an assessment. Due to development of scientific thought in the theory of strategic management, several basic methods emerged to determining effectiveness of organizations and this made it possible to identify positive aspects of the entity for its stakeholders.[2]

One of them is the concept of Value-Based Management (VBM), a mindset known in the Russian scientific literature as "theory of cost management" or "cost approach to management". A. Rappoport [1], J. Olson [2], T. Copeland [3], B. Stewart [4] and A. Damodaran [5, 6] developed main provisions of the concept. Based on many value-oriented indicators, some of the key indicators deal with profitability. The theory of cost management and its individual aspects were also elaborated by such domestic specialists in the field of financial management as I.A. Astrakhantseva [7], D.L. Volkov [8], D.S. Demidenko [9], A.M. Emelianov [4], I.V. Ivashkovskaya [10], V.V. Kobzev [11], T.V. Teplova [12], S.V. Cheremushkin [13], E.A. Yakovleva, E.A. Kozlovskaya [14] and some more experts.

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[1] Civil Code of the Russian Federation (part one) of 30.11.1994 No. 51-FZ (as amended on 08.08.2024) URL: https://www.consultant.ru/document/cons_doc_LAW_5142/3a585d0351c74adc4c9878b6019d704cdd9d3699/?ysclid=m012ixzl8v606408912

[2] Stakeholder is a person or organization that can influence the activity or decision-making, be subject to their influence, or perceive themselves as the latter.URL: https://www.consultant.ru/document/cons_doc_LAW_195013/?ysclid=m012tjt77k154334434

A.N. Golovina ranks indicators related to effectiveness of the organization's cost management by complexity and accuracy, assessing in priority the return on equity, return on net assets and dividend yield [15]. In our opinion, this needs to be expanded and to be brought to uniform designations and formulations, which in fact served as a prerequisite for conducting this study.

The authors of this research work have used more methods of analysis, comparisons, synthesis, classification, collection and generalization, logic, as well as graphical and tabular presentations. The above-mentioned works of international and domestic specialists in the field of the topic under study made an information basis for this article.

RESULTS

The concept of value-oriented management was revealed among other parts of the study, through the approach towards assessing the effectiveness of an organization's management, which is generally based on the profitability indicators proposed within its framework. Merging and ranging of these indicators was based on calculation of the rate of return on assets, return of equity employed and total financial return which in display in *Fig. 1*.

The indicators of profitability for the company under consideration may not be of interest to all stakeholders. This is why it is important to classify the latter and identify those among them who are the subject of the study. The main criterion should be their affiliation: whether stakeholders belong to the organization or they are outsiders (*Fig. 2*). The first group is internal, and these stakeholders are analyzed in accordance with the principle of close or no association with the company's management bodies.

The second (external) group is, in its turn, divided into several large sub-groups, and their list is open. This circumstance is due to the fact, that it is not possible to categorise the full list of such stakeholders due to the unclear motives of the involvement of these persons, who may find themselves influenced by the organization's decisions. At the same time, it is permissible to categorize several large groups of stakeholders for the purposes of the study, which was accomplished in the course of the work. Subsidiaries for the purposes of classification are formally excluded

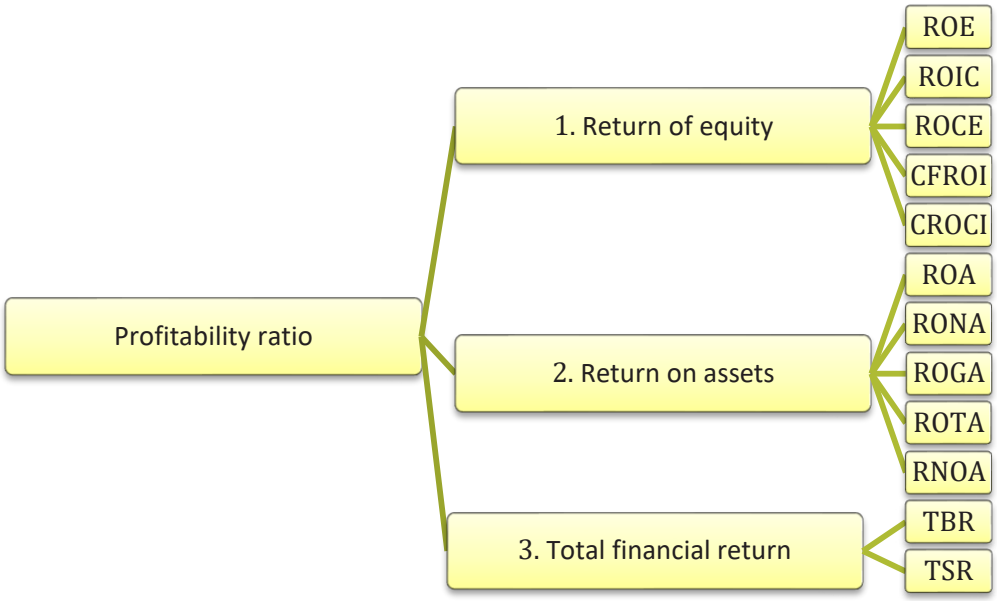

Fig. 1. **The main profitability indicators within the framework of value-based management**

Source: compiled by the authors based on [8, 9, 16].

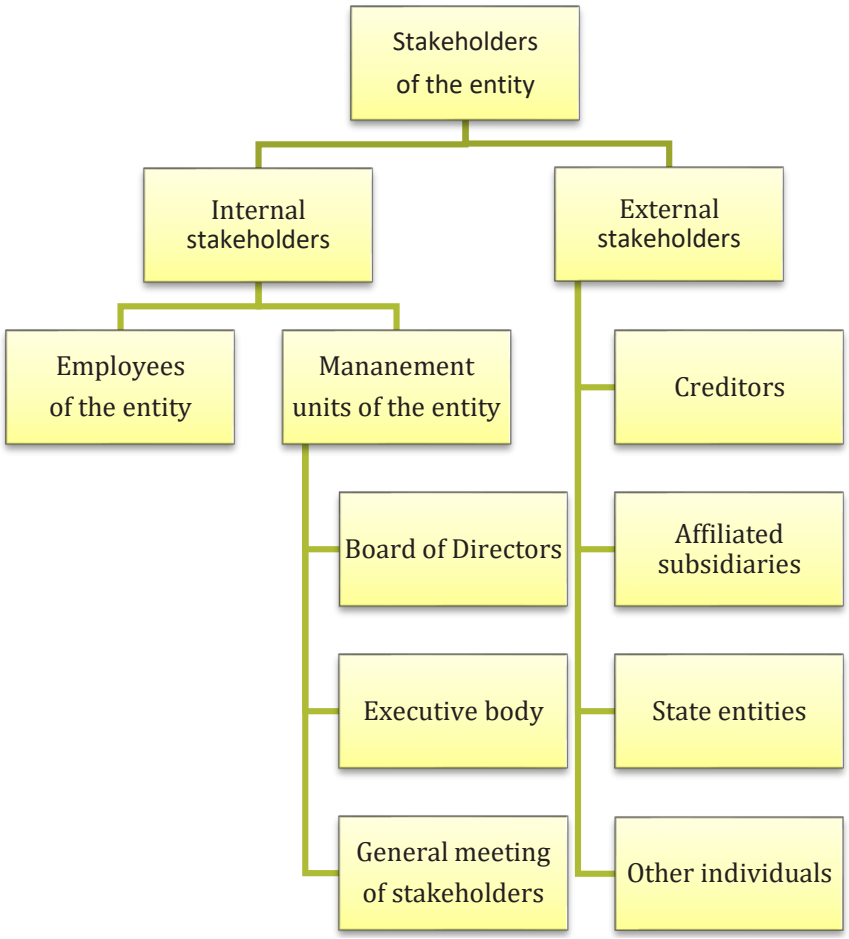

Fig. 2. **Commercial corporate organization's stakeholder tree**

Source: compiled by the authors based on [17].

from outside the perimeter of the company under consideration: since, as a matter of fact, they formally operate as quite a separate and often independent business category.

Since internal structure is of paramount importance for existence and activities for any company, the focus is on internal stakeholders — within its internal perimeter. At the same time, the assessment of the company's effectiveness should take into consideration all points of view of LLC participants (or shareholders), because their influence cannot be disregarded. By virtue of competence, the General Meeting of owners has exclusive powers to form executive bodies, terminate their powers before the schedule ends, or delegate the powers to other persons.[3] Since the entity's participants are beneficiaries of its activities as well, they have the right to appoint governing bodies. This is why the entity's administrator, who runs the company, cannot ignore their interests, while carrying out their duties. This also determines the need to consider any indicators of effective performance of the entity from the point of view of its participants.

[3] Federal Law of 08.02.1998 No. 14-FZ (as amended on 08.08.2024) "On Limited Liability Companies". Clause 2 of Art. 33. URL: https://www.consultant.ru/document/cons_doc_LAW_17819/a30bf80b5a1bd89c0c53d61c2d178b65a9a20f60/; Federal Law of 26.12.1995 No. 208-FZ (as amended on 08.08.2024) "On Joint-Stock Companies". URL: https://www.consultant.ru/document/cons_doc_LAW_8743/fca351034948ee4a2889d0f3c08595a7933ea9f2/

In the interests of research, it is necessary to assess furthermore the profitability indicators of value-oriented management for their compliance with objectives of the corporation's activities in accordance with points of views of the stakeholders under consideration — its participants (owners). Any reasonable investor has a similar motive: just income from activities of the entity, which is, according to the rights of the entity's participants, guaranteed by domestic corporate legislation. There are the following types of income:

- dividends — a portion of the profit subject to be paid to participants of the entity;
- the difference between the acquisition price of a participatory interest in the capital of the entity and the value of property received by the participant after the liquidation of the entity;
- the difference between acquisition price of participatory interest in the capital of the entity and its sale price (market value);
- the difference between acquisition price of a participation interest in the capital of the entity and value of interest in case if the participant withdraws from the limited liability company.

The authors have accomplished a comprehensive analysis of profitability indicators (*Fig. 1*) and made a general conclusion regarding the possibility of application of profitability indicators in current conditions by means of correlating algorithms to calculate these indicators and the criteria (factors) shown in *Fig. 2* with consideration of financial interests of the entity's owners.

Fig. 3 shows the classification of factors needed to take into account for calculating these indicators.

It is worth noting, that comprehensive analysis of the latter indicators implies taking into account of the following aspects:

- all forms of income that can be received exactly by owners of the company generated by personal involvement in their capital. In *Fig. 3* **Formal factor**: profitability indicators from the point of view of the company's participants should reflect the profitability which they can claim in the context of all previously identified forms of income;

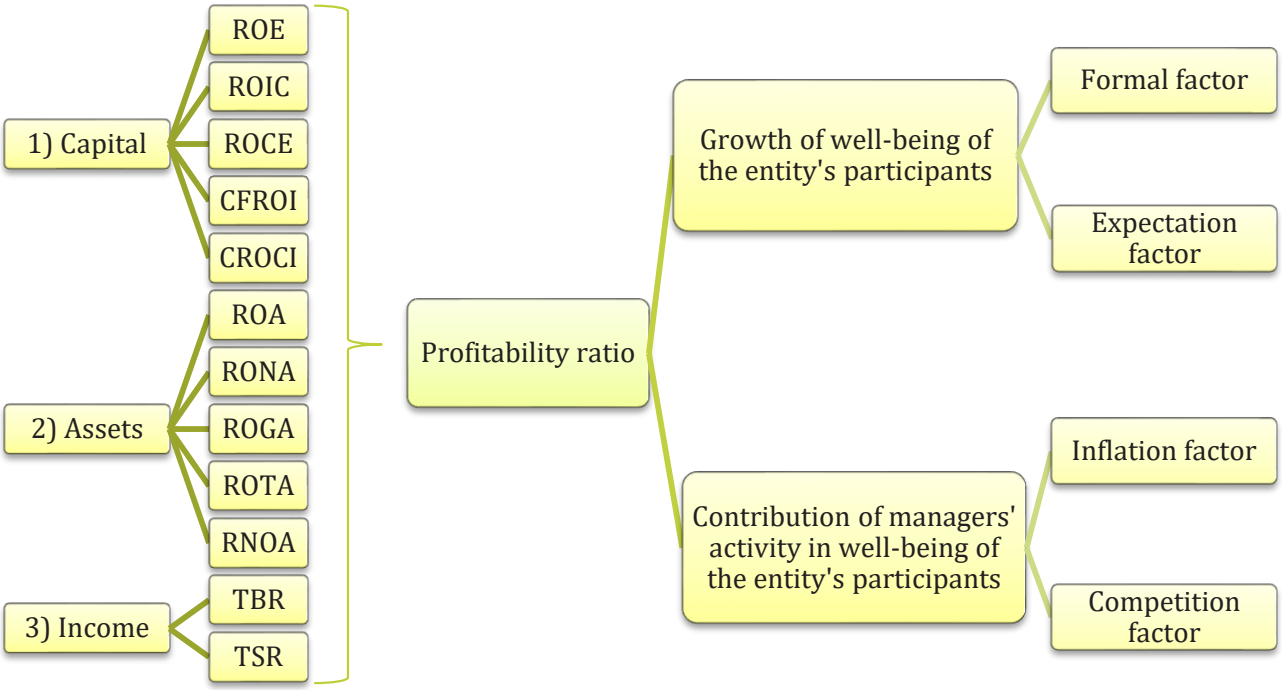

Fig. 3. **Classification of factors affecting profitability indicators**

Source: compiled by the authors.

• expectation of future incomes and risks of their receipt. In *Fig. 3* **Expectation factor**: taking into account prospects of the company's participants in relation to future income, including uncertainty and corresponding risks, initial unprofitability of any investment activity related to development (investors are willing to cover these losses with their funding at their own expense for the sake of future profits);

• **Inflation factors** (*Fig. 3*) which may distort the company's performance assessments: profitability indicators should allow to judge the actual performance of the entity regarding the results achieved in the retrospective time period, excluding the influence of inflation, which may become a source of error;

• efficiency of the company's activity evaluated in relations to competitors (*Fig. 3* — **Competitive factor**): conducting a benchmarking analysis of the company's indicators of profitability comparing with the main competitors.

In the course of further research, the authors took into account the above factors.

It is worth noting as well the following aspects:

• the formulas below use Russian ruble as a reference to a monetary unit;

• during the analysis of sources of information on the topic of the study, it was revealed that the same indicators are perceived as different notions in their semantic content. In this regard, each formula is attributed to the source containing the formula indicated, as well as methodological explanations clarifying the features of calculating this or another coefficient;

• the indicators under consideration are brought to a common notion in terms of comparability of values with the time factor. Sometimes calculation requires simultaneous use of company performance indicators, such as statistic data, relevant to a specific date (for example, quoted from the balance sheet), dynamic indicators, reflecting the results for a certain time period (for example, the data from the financial performance report and/or cash flow). For the purpose of comparison in formulas, the authors use average values of statistical indicators for the period of relevance of the dynamic ones. Besides, the authors add an indication, that these ratios are calculated within a certain time period.

ANALYSIS RESULTS: PROFITABILITY INDICATORS OF VALUE-BASED MANAGEMENT

The first group includes indicators based on the ratio of certain types of profit and company's capital:

Return on Equity (ROE) for the period *n* is calculated with the following formula [18, 19]:

$$ROE_n = \frac{NI_n}{\bar{E}_n}, \quad (1)$$

with NI_n as net profit in thousand Rubles for the time period *n* and $\bar{E}_n$ as average value of equity in thousand Rubles for the time period *n*.

The ROE indicator demonstrates profitability of company's assets generated from the funds of its participants, based on its financial result, and it also illustrates effectivity of investments in this company (compared with possible alternatives), based on the amount of its net profit.

At the same time, since such indicator as *ROE* is based on the amount of net profit, its use for the category of stakeholders under study is not appropriate. The reason is that income of the company's owners is determined on the basis of the amount of the company's net profit, reduced prior to payment of dividends, for example, by the amount of investments in capital assets and working capital required for functioning, or by the amount of borrowed funds to be repaid in the calculation period. At the same time, the amount of dividends, which could be paid to the owners of the company's equity instruments, do not reflect expectations related to the company's performance, as well as risks that follow together with receiving income.

In this regard, the application of a coefficient based on the value of net profit without additional adjustments, which take into account the above circumstances, is not consistent with objectives of the company's participants.

There is an option of calculating *ROE* suggested by A. Damodaran [5, 6], which implies the use of this indicator only for a certain part of equity capital that relates to ordinary shares. This option raises doubts about consistency of its application in relation to assessment of efficiency of those emitters, who issued, among other things, preferred shares, since a part of net profit of such an emitter subject to distribution is directed to payment of dividends of this type of shares as well. This circumstance potentially causes incomparability of numerator and denominator in the formula used (1). Therefore, this indicator should not be used in practice.

Return on Invested Capital (*ROIC*) for the time period *n* is calculated by means of the following formula[4]:

$$ROIC_n = \frac{NOPAT_n}{\overline{IC}_n}, \quad (2)$$

with $NOPAT_n$ as net operating profit after tax deducted in thousand Rubles for the time period *n*, $\overline{IC}_n$ as average value of invested capital in thousand Rubles for the time period *n*.

$NOPAT_n$ is calculated as Net Operating Profit After Tax before interest payable and income tax, similarly to designated indicator EBI in specialized literature [12, 20, 21].

Coefficient *ROIC* helps to determine profitability of the company's assets compiled from all available sources of financing, based on financial results related to all of them.

This indicator, in comparison with return on equity, involves a larger number of stakeholders, including both the company's participants and other persons (for example, its creditors). It also allows clearly figuring out effectiveness of investments in the company's capital, regardless of the source of its assets, based on the amount of profit attributable to stakeholders (whose investments are accounted for as part of the company's invested capital).

There is another option of calculation: instead of net profit from sales after income tax for the time period (NOPAT), the numerator is the indicator of Earnings Before Interest and Taxes (EBIT) [5, 6, 19], but the format of the *ROIC* indicator does not change significantly.

Return on Capital Employed (*ROCE*) for the time period *n* is calculated with the following formula [12, 20]:

$$ROCE_n = \frac{NOPAT_n}{\overline{CE}_n}, \quad (3)$$

with $NOPAT_n$ as net operating profit after tax in thousand Rubles for the time period *n*, hereinafter this indicator is calculated as profit before deducting interest payable and income tax (similar to the indicator designated as EBI in specialized literature), meanwhile $\overline{CE}_n$ is the average value of capital employed in thousand Rubles for the time period *n*.

This indicator is close in the essence to the Return on Invested Capital (*ROIC*) and may correspond to it under certain conditions. However, in most techniques, *CE*, which means Capital Employed is a reimbursable investment in the form of equity and interest-bearing[5] borrowed capital. In analyzed algorithms for calculating the indicators, equity capital is regarded as a source of financing that involves the remuneration payment for its provision, since it is assumed, that the company will provide all its investors with the required rate of return. Sometimes one can find the designation ROTC,[6] which in most cases corresponds to ROC. However, these indicators may differ depending on the way for calculating the amount of invested capital and on understanding of the term "total capital".

[4] Heyes A., James M., Kazel M. Return on Invested Capital: What Is It, Formula and Calculation, and Example. Investopedia. URL: https://www.investopedia.com/terms/r/returnoninvestmentcapital.asp; Alt-Invest (Encyclopedia). URL: https://www.alt-invest.ru/library/kb/

[5] Return on invested capital, ROIC. Alt-Invest (Encyclopedia). ROIC. URL: https://www.alt-invest.ru/lib/roic/?ysclid=ltlqdo9opr786334189

[6] Return on Total Capital (ROTC). URL: https://corporatefinanceinstitute.com/resources/accounting/return-on-total-capital/

There is also another way to calculate *ROCE*, which implies taking into account the profit, or earnings before interest and taxes (EBIT) for denominator, or net operating profit, however, after income tax paid (NOPAT). Anyway, the focus of the indicator under consideration does not change significantly: it is oriented towards a whole variety of stakeholders, and therefore cannot be used for the purposes under consideration.

Cash Flow Return On Investment (CFROI) in general and for the time period *n* can be determined using the following formula [8]:

$$CFROI_n = \frac{CF_n^{adj}}{\overline{CI}_n^{adj}}, \quad (4)$$

with CF_n^{adj} as inflation-adjusted cash inflow in thousand Rubles for the period *n* and $\overline{CI}_n^{adj}$ as average inflation-adjusted investment in the company in thousand Rubles for the time period *n*.

Denominations of indicators used in the research work by D.L. Volkov [8] have been adjusted in accordance with their actual economic meaning. This circumstance regarding the numerator of formula (4) is resulted by the fact, that receipts (or cash inflows, according to the source) do not quite correctly reflect benefits for stakeholders who do not take into account cash outflows (payments). This is why the use of *cash flows* in formula (4) is more appropriate and corresponds to some other options for calculating CFROI, which is discussed below.

As to denominator, it is worth noting that companies often receive large non-monetary investments, for example, various contributions to the capital from participants. This is why "monetary" definition (regarding investments) is removed from this formula.

Due to inflation impact, adjustments are necessary for the components of formula (4). Their purpose, based on economic sense, is to bring the quantities under consideration to the form corresponding to a single price level.

According to A. Damodaran, it is possible to calculate the indicator under consideration with a more detailed formula [5, 6]:

$$CFROI_n = \frac{GCF_n - ED_n}{\overline{GI}_n}, \quad (5)$$

with GCF_n as gross cash flow in thousand Rubles for the time period *n* and $\overline{GI}_n$ as gross investment in the entity in thousand Rubles for the time period *n*. Meanwhile ED_n as Economic Depreciation for the time period *n* can be calculated using the following formula:

$$ED_n = \frac{RC_n}{\left(1 + \overline{r}_n^{IC}\right)^n - 1}, \quad (6)$$

with *RC* as replacement cost of assets in thousand Rubles for the time period *n*, $\overline{r}_n^{IC}$ average cost of raising invested capital for the period *n* in per cent, and *n* as an expected lifespan of assets at the date of calculation of the indicator expressed in the length of period n (years, months, weeks, etc.).

According to A. Damodaran, all-round investments in a company should be regarded as the book value of assets adjusted. Firstly, adjustment is the result of inflation that probably occurred during the period from the date of their acceptance for accounting, until the date of calculation of the required indicator. Secondly, adjustment is related to amount of accumulated depreciation of assets over the same time period. In fact, according to M.L. Pyatov [22], the amount of total investment in this case is equated to replacement cost of assets in current terms, which is justified from the viewpoint of management decision. The scientist notes pointed out, that the most appropriate way is to assess the value of relevant assets at their fair value by means of using accounting data to obtain information on the volume of aggregate investments.

The term "gross cash flow" is correctly acquired from English by M.L. Pyatov, is defined by him, as operating profit [profit after paying business costs]

including costs of depreciation and amortization and taxes to be paid.

Cash Return on Capital Invested (*CROCI*) is calculated in thousand Rubles for the time period *n* with the following formula[7]:

$$CROCI_n = \frac{EBITDA_n}{\overline{E}_n}, \quad (7)$$

with $EBITDA_n$ as Earnings Before Interest payable and income Tax profit Deduction and Amortization paid in thousand Rubles for the time period *n* and $\overline{E}_n$ as the average capital of the equity in thousand Rubles for the time period *n*.

This indicator under consideration can be used to assess the efficiency of the company's activities only if it has no borrowed funds, since otherwise both the numerator and denominator are incomparable. To correct this discrepancy, if the company has borrowed funds, it is possible to either apply the invested capital in the denominator, indicator that excludes interest payable from this amount in numerator.

If both numerator and denominator are comparable, *CROCI* can be regarded as alternatives to indicators of efficiency of return on equity and invested capital, implying cash flows instead of a certain type of profit. At the same time, this profitability ratio has disadvantages, similar to those indicators observed above, and, as a result, it is inappropriate to apply it for the needs of the company's participants.

The second group includes indicators based on the ratio of certain types of profit and assets:

Return on assets (ROA) in thousand Rubles for the time period *n* is calculated by means of the following formula[8]:

$$ROA_n = \frac{NI_n}{\overline{TA}_n}, \quad (8)$$

with NI_n as net income for the time period *n* in thousand Rubles and $\overline{TA}_n$ as the Total (amount of) Assets for the time period *n* in thousand Rubles.

The indicator under consideration makes it possible for the company to assess the efficiency of operations with its assets. It also gives a clear understanding for stakeholders of the entity, how effectively investments generate the net profit.

There are several options for making calculation of *ROA*:

- with the amount of net profit and interest expense payable included in the numerator [19];
- using pre-tax income indicators, when the amount of operating profit without deduction of any taxes included in the numerator [8];
- with the amount of net profit and interest expense payable included in the numerator, but the specified percentage is subject to reduction by the amount of income tax accrued on them (After-Tax Interest) [5, 6, 23].

The last and the last-but-one options have a more accurate algorithm for calculating asset efficiency for stakeholders. In this case, the financial indicators will be comparable, taking into account the interests of stakeholders' majority and the amount of assets acquired with funds of these stakeholders.

The following formula[9] makes calculation for *Return On Net Assets* (RONA) for the time period *n*:

$$RONA_n = \frac{NI_n}{\overline{FA}_n + \overline{NWC}_n}, \quad (9)$$

with NI_n as the Net Income for time period *n* in thousand Rubles, $\overline{FA}_n$ as the average value of Fixed Assets in thousand Rubles for the time period *n* and $\overline{NWC}_n$ as the average value of Net Working Capital for the time period *n* in thousand Rubles, which, in its turn, is determined in the course of the following calculations:

[7] Kenton W., Kindness D., Munichiello K. Cash Return on Capital Invested (CROCI): What it is, How it Works. Investopedia. URL: https://www.investopedia.com/terms/c/croci.asp

[8] Hargrave M., Kindness D., Eichler R. Return on Assets (ROA): Formula and ‚Good' ROA Defined. Investopedia. URL: https://www.investopedia.com/terms/r/returnonassets.asp

[9] A. Heyes, J. Barry-Johnson. Return on Net Assets (RONA): Definition, Formula, Example. Investopedia. URL: https://www.investopedia.com/terms/r/rona.asp

$$\overline{NWC}_n = \overline{CA}_n - \overline{CL}_n, \quad (10)$$

with $\overline{CA}_n$ as the average value of Current Assets in thousand Rubles for the time period *n* and $\overline{CL}_n$ as the average value of short-term or Current Liabilities for the time period *n* in thousand Rubles.

This indicator allows to make assessment of profitability of a company's assets (as both fixed assets and current assets) formed with its own funds and based on the amount of net profit. It can be used by companies with income largely formed at the expense of fixed assets, reflecting the efficiency of use of both their own fixed assets and their own working capital. In general, this indicator is of scarce information value for participants of companies, who are more interested in income from ownership of shares in its capital, rather than how efficiently particular assets are used.

D.L. Volkov [8] suggested other options for the calculation of *RONA* with the numerator for Earnings before Interest (EBI). The numerator is either the difference between total assets and accounts payable for creditors, or the amount of equity and liabilities that provide for the payment of interest ("paid liabilities'), which is, another words, Capital Employed.

Return On Gross Assets (*ROGA*) is calculated for a certain time-period *n* by means of the following formula [8, 12]:

$$ROGA_n = \frac{GOPAT_n}{\overline{GA}_n}, \quad (11)$$

with $GOPAT_n$ as Gross Operating Profit After Tax deducting for the time period *n* in thousand Rubles. This indicator is different from *NOPAT* due to amortization, deducted from income, as part of the cost price restored when calculating *GOPAT*. Another words, *GOPAT* includes depreciation charges. $\overline{GA}_n$ is the average value of Gross Assets in thousand Rubles for the time period *n*.

Gross Assets are the assets acquired from financing sources that involve a finder's fee for their provision, namely interest-bearing loans and equity increased by the amount of accumulated depreciation.

This indicator in consideration, as follows from its content, is mainly oriented on investors, who provided the entity with reimbursable financing and not on the company's participants. Regarding its content, *ROGA* is closer related to Return on Capital Employed (*ROCE*), however, the difference is in presence, or absence of accounting for depreciation charges (amortization) both in the numerator and denominator of their calculation formulas.

The following formula[10] finds out the total of *Return On Total Assets (ROTA*)

$$ROTA_n = \frac{EBIT_n}{\overline{TA}_n}, \quad (12)$$

for the time period *n* with $EBIT_n$ as the Earnings Before Interest payable and income Tax expense in thousand Rubles within the time period *n* and $\overline{TA}_n$ as Total amount of Assets in thousand Rubles within the time period *n*.

As a matter of fact, this indicator is another option of the previously described *ROA*, however, it bears a separate title.

Return on Net Operating Assets (RNOA) within the time period *n* is determined by means of the following formula [8]:

$$RNOA_n = \frac{NOPAT_n^{adj}}{\overline{NOA}_n}, \quad (13)$$

with $\overline{NOA}_n$ as net operating assets in thousand Rubles within the time period *n* and $NOPAT_n^{adj}$ as net operating profit after tax in thousand Rubles within the time period *n*, which, in its turn, is determined as follows with the following formula:

$$NOPAT_n^{adj} = NI_n + ni_n \times (1 - t_n), \quad (14)$$

with NI_n as net income in thousand Rubles within the time period *n*, ni_n as net interest

[10] Kenton W., Scott G., Courage A. Return on Total Assets (ROTA): Overview, Examples, Calculations. Investopedia. URL: https://www.investopedia.com/terms/r/return_on_total_assets.asp

payable in thousand Rubles within the time period n and t_n as income tax rate effective for the time period n in per cent.

The amount of net interest (*ni*) is based on the difference between interest payable and interest receivable.

According to D.L. Volkov, net (operation) interest is a difference between operating assets and operational covenants.

Operating assets are assessed as assets that are not related to financial ones, namely, the assets, which provide the company with income not related to its core business and the result of such investing its free funds is nearly beyond interest-bearing operations. D.L. Volkov does not specify exactly in his research work, what is operating assets, but it can be understood from the context, that he considers such assets as liabilities, which the company acquired as a result of its core business.

In general, according to D.L. Volkov's research work, it is problematic to visualize the difference between operational and financial assets, as the definition does not provide clarity for other assets that belong to either of these two types. For example, an abandoned non-functioning children's summer camp, which a manufacturing company inherited quite a while ago during reorganization of Soviet enterprises in the 20th century, is not an operational asset. It does not operate in the core sphere of the company's production activity. On the other hand, the camp can not be regarded as a financial asset either: it has hardly become an object of investment. This asset is unprofitable for this enterprise, since it does not function properly and requires costs and expenses for its maintenance.

Alternative calculation of net operating assets involves calculating the amount of equity and net debt, which is defined as the difference between financial liabilities and financial assets within the framework of calculating the indicator under study.

Calculation of *RNOA* for the entity with the above algorithm requires re-classification of existing assets and liabilities — both financial and operating ones, which is problematic, as it was noted earlier. This is not mainly related to much efforts for research, but rather to peculiarities of classification of these assets and liabilities.

In view of the above, indicators of the group of the abovementioned assets are oriented rather to a wide range of stakeholders, than to participants of entities, so, consequently, to focus on these assets for the purposes under consideration is highly dubious.

The third group of profitability indicators under consideration may include some relative indicators, which characterize a certain type of return on capital, namely:

Total Business Return (TBR) for the time period n is calculated by means of the following formula [16]:

$$TBR_n = \frac{FCF_n}{V_{n-1}} + \frac{V_n - V_{n-1}}{V_{n-1}}, \qquad (15)$$

with FCF_n as free cash flow in thousand Rubles within the time period n, V_{n-1} as the cost of invested capital in thousand Rubles at the beginning of the time period n, V_n as the cost of invested capital in thousand Rubles by the end of the time period n.

As it follows from the above calculation algorithm, this indicator is oriented to all investors who deal with entity's capital. In this regard, based on the principle of comparability of the numerator and denominator, cash flow to invested capital should probably be used as free cash flow in formula (15).

TBR is probably the cash flow included in the first summand of the given formula and it is subject to distribution among investors in the entity's capital during the given time period, since otherwise these funds will be added to the cost of invested capital again. One should keep in mind this aspect, when examining the indicator under consideration, which means, it is not required to use it for assessment if no distribution of any part of this cash flow occur in favor of corresponding investors.

As follows from the above, investors are more interested about *TBR*, rather than members of the company. At the same time, the applicability of this indicator is questionable: the value of invested capital may grow, if new loans are made at the end of the period under review, however, this would not indicate the efficiency of the company's activities at all.

TBR will be provided exclusively with the growing amount of borrowed capital in such a situation with a conditional zero value of free cash flow invested in the capital within the conditional time period. This is not a positive situation neither for staff members of the company, nor for its lenders, to whom the company had obligations as of the beginning of the period under consideration.

In view of the above circumstances, the indicator in question is not applicable for the purposes under consideration.

Total Shareholder Return (*TSR*) for the period of time *n*, is calculated as follows [16]:

$$TSR_n = \frac{Div_n}{V_{n-1}} + \frac{V_n - V_{n-1}}{V_{n-1}}, \qquad (16)$$

with Div_n as dividends in thousand Rubles for the time period *n*, V_{n-1} as the value of equity instruments of participation in the company's capital in thousand Rubles at the beginning of period of time *n* and V_n as the value of equity instruments of participation in the capital of the entity's equity capital in thousand Rubles at the end of period of time *n*.

To avoid the influence of such factors, as changes in the period of time *n* of number of shares or registered capital relatively to limited liability companies, the above indicator is determined in terms of one share (or Ruble) of the registered capital, respectively, depending on the type of commercial corporate organization.

TSR is applicable to staff members of the entity. Besides, taking into account its specific use (similar to those indicated earlier regarding the overall return of the business in terms of dividends), it involves both the payment of dividends and the increase in the value of equity instruments owned by the founders of the corporation. This makes the indicator even more perfect for assessing the efficiency of the company's activities by its participants in comparison with shareholder added

Table

Systematisation of the considered profitability indicators depending on their focus on the interests (goals) of the selected stakeholders of the organizations under consideration (compiled by the authors)

Stakeholder groups (main)	Interests (goals) in relation to the organization (main)	Profitability indicators aimed at the specified interests (goals)
Participants of the company	Any kind of income from the company's activities	ROE, TSR
Creditors of the entity	Fulfilment of the company's obligations to creditors, including payment of interest for the use of funds	None of the indicators under consideration aimed at assessing the performance of the company only from the perspective of the company's creditors
Creditors and participants of the company	The above objectives in combination	ROIC, ROCE, CFROI, CROCI, ROGA, ROTA, RNOA, TBR

Source: compiled by the authors.

value and free cash flow to equity. At the same time, the *TSR* itself, calculated according to the algorithm given in various sources, does not solve other problems inherent in shareholder added value. Or, to be more precise, it does not allow us to make an assessment of the actual efficiency of the company's activities on the basis of results achieved by it in the retrospective period and in relation to its competitors, which is important from the viewpoint of understanding the efficiency of management activity.

Thus, despite the fact, that such profitability indicator, compared to others, which characterize value-oriented management, can be considered the most suitable for the purposes under study, it does not take into account all the circumstances that are important for assessing the profitability of entities from the viewpoint of its participants. Besides, the *TSR* is a relative indicator, although it makes sense to use an absolute indicator to inform the owners of equity instruments.

This can be solved by converting the components of formula (16) into a non-fractional form by excluding denominators. I.A. Astrakhantseva suggests using the indicator of Returns to Shareholders (RTS), which determines not a relative, but absolute total shareholder return, calculated with viewpoint of the above clarifications [7].

Since most of the indicators under consideration reflect the interests of the company's participants and its creditors (including lenders), whose funds altogether form its assets, these indicators based on the results of the study were categorized in view of specified groups of stakeholders.

ROA and *RONA* are not in the table: they do not meet the interests of the stakeholders. The fact is, that the algorithm for their calculation (as numerators and denominators of the formulas) involves components that are incomparable in their focus: some of which are aimed at the participants of the company, meanwhile some others are aimed at a wider range of stakeholders.

DISCUSSION

As the conducted study revealed, the indicators displayed in the *Table* correspond to the interests of the identified groups of stakeholders. However, they can not be used to assess effectiveness of companies from the viewpoint of its participants in the form the indicators presented in the article (according to the data of scientific sources). The point is that these indicators either focus on a different, wider range of stakeholders, or they can not correspond and meet the previously identified factors.

The comprehensive analysis conducted of profitability indicators also allowed us to identify some problems, which managers face, when using the indicators:

Firstly, researchers have a different viewpoint to consider time period to be taken into account in numerators and denominators, when they make calculation of profitability indicators and other static values determined in accounting for a certain moment of time (the value of assets, equity, etc.). For example, one of the options makes a calculation of return on equity with divisor for the value of equity at the beginning of the timeframe period. [8] To make it comparable with the net profit indicator, the calculation is more correct, if it is based on the average value of equity, since its value may change within a certain timeframe period.

However, an individual investor is interested in the ratio of the size of investments transferred at the beginning of a certain timeframe period and the return at the end of the timeframe period. Thus, such indicators as TSR and TBR can be used to assess the effectiveness of investments, in the option of calculation from the sources of information cited in the article, if the composition of the company's participants has not changed during the timeframe period under study. If, on the contrary, one of the specified indicators of this composition underwent changes during the period of cal-

Alt-invest. URL: https://www.alt-invest.ru/lib/roic/?ysclid=ltlqdo9opr786334189

- It is customary to use the sum of equity capital and all long-term liabilities as invested capital.

Berk J. DeMarzo P. [18]

- Equity capital including net debt.

Bukharin N.A., Ozerov E.S., Pupentsova S.V., Shabrova O.A. URL: https://elibrary.ru/item.asp?id=25584626

- The market value of the balance sheet currency minus the market value of current accounts payable is equal to the market value.

Valdaitsev S.V. URL: https://elibrary.ru/item.asp?id=19751837

- The sum of equity and borrowed capital.

Damodaran A. [5, 6]

- Reported value of debt with book value of equity and excluding cash and cash equivalents.

Koller T., Goedhart M., Wessels D. [21]

- Invested capital is the total amount invested by an enterprise in its core business, primarily in fixed assets and working capital.

Pratt S.P.[17]

- Market value of common and preferred stock, and book value of debt as well.

CFA Institute

- Market value of common and preferred stock, and book value of debt as well.

Credit Suisse. URL: https://www.alt-invest.ru/lib/roic/?ysclid=ltlqdo9opr786334189

- The sum of equity capital, all long-term liabilities, and current liabilities on which interest is accrued.

Fig. 4. **Approaches to calculate invested capital**

Source: compiled by the authors.

culation, it is necessary to adjust it with the relevant formulas.

Secondly, scientific communities manifest different understanding of the concept of invested capital and, accordingly, this generates multiple algorithms for its calculation.

The most common in practice approaches are illustrated in *Fig. 4*[11] for calculating the algorithm of this given indicator.

Thirdly, different specialists use different components in the same formulas. It generates a problem, for example, different indicators are used for assessing the effectiveness of company's activities: some use NOPAT indicator, meanwhile others use EBI indicator.

One of the versions is the indicator of profit from sales (operating profit) after profit tax — Net Operating Profit After Tax (*NOPAT*) — is visualized as the profit from sales (operating profit) reduced by the amount of profit tax accrued on the specified type of profit [19]. Besides, due to the specified calculation algorithm and according to the Russian accounting rules, *NOPAT* will be determined regardless of other income and expenses, interest receivable and

[11] The CFA Institute approach established in accordance with CFA® Program Curriculum 2020. Level I. Vol. 4. ISBN 978–1–946442–79–6.

payable, as well as income from participation in other organizations.

According to D.L. Volkov, unlike *NOPAT*, the indicator of net profit before interest payments — Earnings Before Interest (*EBI*[12]) — is calculated with the following formula [8]:

$$EBI_n = NI_n + i_n \times (1 - t_n), \quad (17)$$

with NI_n as net profit in thousand Rubles for the time period n, i_n as interest payable in thousand Rubles for the time period n and t_n as income tax rate effective during the period n in per cent.

EBI is determined with consideration to other income and expenses, interest receivable and payable, as well as income from participation in other organizations, since the calculation of this indicator deals with a net profit.

Despite the fact, that *NOPAT* and *EBI* have different content, various researchers suggest using these two indicators for calculating the same indicators of the company's performance, which may lead to the change of meanings of the latter ones (for example, such indicators as EVA, ReOI, etc.).

At the same time, according to Alt-Invest specialists, the value of NOPAT is calculated as follows:

$$NOPAT_n = EBIT_n \times (1 - t_n), \quad (18)$$

with $EBIT_n$ as profit before interest payable and income tax in thousand Rubles for the time period n, t_n as income tax rate in effect during the timeframe period n in per cent.

According to the formula (18), the indicator in this option takes into account components not provided for in its calculation of the formula cited earlier.

All of the abovementioned information emphasizes, that it is impossible to use these indicators under consideration to assess effectiveness of company's activities from the perspective of its participants.

CONCLUSIONS

The conducted research found out, that the analyzed indicators are used differently in different sources. It confirms the need for systematization and unification of such indicators. It also points out that it is impossible to use them for the purposes under consideration taking into account of the previously cited arguments.

The above-mentioned circumstances reveal problems in using the existing indicators for assessment of effectiveness of company's activities in the current conditions in terms of profitability indicators. It is also necessary to transform these indicators, in view of their shortcomings identified and due to demand of stakeholders mentioned above, which furthermore emphasizes a paramount importance of the relevant studies.

[12] According to D.L. Volkov — earnings before interest and taxes — which does not correspond to the formula to make calculation of this indicator.

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Conflicts of Interest Statement: The authors have no conflicts of interest to declare.

Article was submitted on 15.05.2024; revised on 27.06.2024; accepted for publication on 26.08.2024.
The authors read and approved the final version of the manuscript.