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CAPITAL STRUCTURE AS A CRITERION OF EFFICIENT MANAGEMENT OF THE CORPORATION'S FINANCIAL RECOURSES

ABSTRACT

The article presents an approach to the corporation's capital structure management based on the criterion of maximizing the return on equity (ROE). The basis of this approach is the determination of the expediency of attracting borrowed resources from the point of view of balancing financial risk and profitability. The toolkit for optimizing the capital structure of the corporation is substantiated, taking into account the indicator of financial leverage, which ensures the most effective proportionality between profitability and financial stability. An algorithm for determining the level of financial risk in the structure of the interest rate for attracting borrowed resources has been developed, which involves the formation of the amount of the premium for the risk of insolvency of the borrower and the corresponding methodology for determining the position of the borrower on the scale "financial stability–solvency–financial risk". The post-optimization multifactor sensitivity analysis of the proposed capital structure optimization model made it possible to establish certain patterns regarding changes in ROE and its components.

Keywords: capital structure, return on equity (ROE), return on assets (ROA), financial leverage, financial risk, financial stability

JEL Classification: C30, D24, G32, M20

INTRODUCTION

In the context of globalization of the market economy, the prerequisite for a successful corporate function is effective management of financial activity in general and financial resources in particular. Within the framework of the company's capital management, one of the most important issues is the problem of optimization of its structure and related financial risks.

The process of managing the corporation's capital structure optimization assumes the existence of a target structure of financial resources, i.e. the ratio of its elements that will ensure the achievement of the chosen optimization criterion. This indicator reflects the financial ideology of the corporation (owners/managers) and is included in the system of strategic target standards for its development. The main goal of the corporation's capital structure management is to ensure the maximization of the efficiency of the resources invested by the owners.

Under the influence of a certain set of internal and external factors, the process of the corporation's capital structure optimisation should be considered one of the most difficult problems of financial management, which consists in determining the optimal ratio of own and borrowed capital, which, firstly, will ensure the optimization of the proportions between the level of ROE and level of risk of financial stability loss and, secondly, will create conditions for maximizing the market value of the corporation.

Nowadays, there is no single universal method of a capital structure optimisation, the use of which would determine the optimal ratio between the corporation's equity and loan capital and exert the maximum positive influence on the achievement of its strategic goals. Today, the following methods of the corporation's capital structure optimisation should be considered the most well-known: maximizing the level of ROE criterion

(Blank, 2000; Effendi, 2017; Horváthová, & Mokrišová, 2017; Dao & Ta, 2020); according to the minimizing the cost of capital criterion (Tereshchenko, 2000; van Binsbergen et al., 2011; Trisnaningsih & Hendra, 2021; Vrbka et al., 2022; Drobot & Korniyenko, 2022); according to the minimizing the level of financial risks criterion (Stretcher & Johnson, 2011; Bagatska et al., 2021).

The main disadvantage of the considered single-criterion methods for capital structure optimisation is that they take into account a limited number of factors. Modern science does not stop trying to find the most effective method of the capital structure optimisation of the corporation, which is based on meeting the requirements of several optimization criteria at once. Accordingly, in this article, the main emphasis is on improving the methodological support of the process of diagnosis and management of the corporate capital structure based on the use of the ROE maximization criterion from the point of view of the feasibility of attracting loan resources based on balancing financial risk and profitability.

LITERATURE REVIEW

A significant number of scientific works by authors from different countries of the world are devoted to the issue of consideration of the capital structure, problems of its optimization and search for effective ways of management from the position of maximizing the value of the corporation. Moreover, increased interest in this category was observed not only in the middle and end of the 20th century, when the main approaches to capital structure management were formed, but also during the last years of the 21st century and does not lose its relevance even now.

The capital structure theories began to be formed in the 50s and 60s of the XX century in parallel with the market value theories of the corporation and the weighted average cost of capital, between which there is a close relationship – it is the optimal capital structure that ensures the maximum market value of the corporation under the condition of the minimum weighted average cost of capital and the minimum financial risk.

The beginning of the capital structure theory formation is associated with the works of Modigliani & Miller (1958), who first drew attention to loan capital and the possibility of its influence on the company's expected profitability. The theoretical approaches described in the modern scientific literature regarding the possibility of the company's capital structure optimisation are based on the concepts of such scientists as Markowitz (1952), Modigliani & Miller (1958), Gordon (1959), Donaldson (1961), Sharpe (1964), Jensen & Meckling (1976), Miller (1977), Roll & Ross (1980), Myers & Majluf (1984), Brigham & Gapenski (1988), Brealey & Myers (1991), Helfert (1996), Van Horne & Wachowicz (2008).

Today, in the theory of financial management, the following conceptual approaches to the company's capital structure management have been formed: traditional approach; compromise; theories of asymmetry of information: signalling theory, theory of agency costs, theory of the hierarchy of funding sources; behavioural theories: corporate control theory, stakeholder theory, managerial influence theory, market tracking theory Baker & Wurgler (2002); theory of arbitrage pricing Roll & Ross (1980).

Considering the approaches to the capital structure optimisation of enterprises, which are used in Ukrainian practice, we note that they are based on elements that are substantiated by foreign practice and take into account the peculiarities of the internal and external environment of the functioning of companies. The economists focus on the optimal capital structure, which ensures the most effective proportionality between ROE and financial stability and ensures the maximization of the company's value (Blank, 2000), the minimization of the WACC is ensured and optimal financial stability (Prymostka, 2017; Drobot & Tucha, 2019; Kuznyetsova, Kozmuk and Levchenko, 2017; Rohanova & Kotliarova, 2021) and the maximum value of the company is observed (Tereshchenko, 2000), the optimal capital structure is formed based on the assessment of external risks (Bagatska et al., 2021) and the company's financial security is ensured based on WACC, liquidity and financial stability (Drobot & Korniyenko, 2022).

Each of the criteria for the company's capital structure optimisation described in modern scientific literature is important. However, in our opinion, the most significant criterion that characterizes the efficiency of the use of the capital invested by its owners is ROE, which should be considered in detail in this research.

In modern scientific literature, a significant number of empirical studies on the influence of the capital structure and other related factors are presented: debt to equity ratio, total debt to total assets ratio, short-term debt to total assets ratio, long-term debt to total asset ratio, self-financing ratio, financial leverage ratio into ROE (Dinh & Pham, 2020; Hajisaaid, 2020; Alghifari et.al., 2022; Akhmadi et.al., 2022; Trisnawati & Maulana, 2022). Since ROE and ROA are closely related, some works investigate the influence of the capital structure on both of these indicators of the company's performance (Salim & Yadav, 2012; Stoiljković et.al, 2021; Anwar et.al, 2022; Ali et.al, 2022; Rusnaeni et.al, 2023). There are also

analytical works dedicated to assessing the impact of the capital structure only on ROA, as the main criterion of efficiency (Andersson & Minnema, 2018; Parvin et.al, 2020; Brendea et.al, 2022; Gah, 2022; Wijayant et.al, 2022).

In the economic literature, a methodical approach is also considered, which involves the use of the mechanism of financial leverage. The relationship between the effect of financial leverage and ROE was considered both in the works of authors of the middle of the 20th century, for example, Murphy (1968), and modern authors (Huynh et.al, 2022; Kaakeh & Gokmenoglu, 2022; Kruhlova et.al, 2023), (Kuznyetsova, Klipkova, & Maslov, 2022). In addition, there is a study of the impact of the capital structure on the financial stability of the enterprise using debt ratio and ROA (Rutanga et.al., 2021) and an assessment of the relationship between solvency (financial stability), capital structure and company value (Gennaro, 2021).

It is worth noting that correlation-regression analysis is mostly used as a methodological tool in the empirical studies described above, which allows establishing the degree of influence of a certain set of factors (indicators) on the profitability of the company, the authors change only a set of indicators characterizing the company's capital structure. And this, in our opinion, does not give a complete picture of the formation of ROE at the expense of borrowed resources, since it does not reflect the expediency of their involvement on the "risk–return" scale.

Undoubtedly, the presence of such a significant number of works devoted to the company's capital structure and its relationship with profitability indicates the high relevance of this issue in modern financial management in the world. However, a number of theoretical and practical aspects of this multifaceted research problem are under-researched, remain uncertain and require further study. In particular, the questions of forming a methodical toolkit for determining the optimal capital structure based on the assessment of the impact on the ROE indicator of the consequences of attracting borrowed resources remain outside the attention of the authors.

AIMS AND OBJECTIVES

The purpose of the article is to develop a toolkit for the corporation's capital structure management based on maximizing the ROE level criterion and justifying ways to solve the problem of the structure of financial resources optimizing according to the "risk–return" scale based on the engagement of the borrowed resources.

The main tasks of the research are defined as: substantiating the optimal proportions of equity and debt capital that maximize the level of ROE; development of a mechanism for determining the level of financial risk in the structure of the interest rate for attracting borrowed resources; substantiation of the toolkit for capital structure optimizing of the corporation, taking into account indicator of financial leverage, which ensures the most effective proportionality between profitability and financial stability.

METHODS

In the process of writing the article, the following methods of general theoretical and empirical research based on a systemic approach were used: abstract-logical method (for the systematization of scientific publications on the problems of multi-criteria of the capital structure management of enterprises), method of comparisons (in the process of post-optimization sensitivity analysis of the capital structure optimization model of the corporation), coefficients method (for the development of the capital structure optimization model of the corporation according to the maximizing the ROE level criterion, evaluating the position of the borrowing corporation on the scale of "financial stability – solvency – financial risk"), method of formalization (in the process of developing a scale of indication of the enterprise according to the level of financial stability, solvency, financial risk), analysis method (for the formation of a toolkit for evaluating the structure of the nominal interest rate based on loan resources; in the process of evaluating the optimality of the decision of the capital structure optimization model), modeling method (to establish the nature of the functional dependence between the leverage arm and the level of ROE, in the process of determining the premium for the risk of insolvency of a potential borrower), the synthesis method (to develop a scale for determining the statistical parameter j characterizing the lender's relationship to the client's insolvency risk; to calculate the optimal amount of leverage that maximizes the ROE level) and the generalization method (to formulate research conclusions).

RESULTS

Capital management of the corporation based on attracting borrowed capital by optimizing its structure is one of the

important functions aimed at achieving high financial results of its operation. The method of capital structure optimisation according to the criterion of maximizing the level of ROE is based on multivariate calculations of its level for different structures of the corporation's financial resources.

In the economic literature, a methodical approach based on the use of the mechanism of financial leverage is traditionally considered. The essence of financial leverage is the corporation's use of borrowed capital, which affects the change in ROE and gives it the opportunity to receive additional profit on equity. The method of calculating the effect of financial leverage provides, on the basis of the separation of three main components (the tax corrector of financial leverage; the differential of financial leverage, and the arm of financial leverage), to purposefully manage it in the process of financial activity. In the context of capital structure management, financial leverage characterizes the practice of financing long-term development at the expense of borrowed resources for the sake of achieving the interests of the owner, or rather, for the sake of increasing the corporation's market value.

The decision to optimally the financial resources structure of the corporation is a solution to the dilemma between a high expected level of financial results with a high degree of risk and lower results with less risk. A reasonable compromise is determined by a system of factors in each specific situation and can be found based on the use of developed recommendations for managing the process of forming the financial resources structure of the corporation based on the criterion of increasing ROE.

It is known that ROA and ROE are interrelated:

$$ROE = (1-n) \times ROA + (1-n) \times (ROA-k) \times \frac{\bar{D}}{\bar{E}} \tag{1}$$

where, n – the income tax rate; ROA – the return on assets; k – the average interest rate for the use of borrowed capital; $\frac{\bar{D}}{\bar{E}}$ – debt to equity ratio.

The first component of ROE is ROA, taking into account the income tax rate. Its size is determined by the efficiency of economic activity, the taxation system and does not depend on the peculiarities of the composition and structure of the formation of financial resources by the corporation. The second term – the effect of financial leverage – reflects the level of an additional increase in ROE due to the change in the structure of financial resources due to the attraction of borrowed capital. Its effect is determined by the multiplicative effect of three components: $(1 - n)$ – tax adjuster; $(ROA - k) = d$ – lever differential; $\frac{\bar{D}}{\bar{E}} = p$ – lever arm.

The classic definition of ROE through ROA and the effect of financial leverage can be developed more deeply and brought to the level of methods and algorithms for calculating the optimal level of leverage that maximizes ROE. For this purpose, we should take a closer look at the relationship (1.1), which connects the level of ROE with the size of the leverage arm, which at first glance has the character of a linear relationship. In fact, ROE as a function of leverage $ROE = f(l)$, is not linear. In order to determine the form of this dependence, the structure of the average interest rate k should be considered more deeply.

In general, in the structure of the nominal interest rate k, the state of the credit market, the rate of inflation, and the risk component associated with a specific credit contract can be taken into account as follows:

$$k = i + (r + \bar{r}) + i \times (r + \bar{r}) \tag{2}$$

where, r – risk-free real interest rate prevailing on the credit market; $\bar{r}$ - premium for the client insolvency risk; i – inflation rate.

Ratio (1.2) is obtained on the basis of Fisher's formula, which links the nominal (k) and real interest rate (m):

$$(1+k) = (1+i) \times (1+m) \tag{3}$$

where

$$k = i + m + i \times m \tag{4}$$

Fisher's formula for taking into account the impact of inflation is a more correct analytical tool, in our opinion than the linear correction for inflation $(k = i + m)$. This is due to the fact that the latter does not take into account the component equal to mi, which reflects the depreciation of interest payments and is of great importance in conditions of high inflation.

The real interest rate consists of two elements – the risk-free rate determined by the state of the credit market and the premium for the risk of client insolvency:

$$m = r + \bar{r} \tag{5}$$

The premium for the risk of client insolvency increases with the increase in leverage, as the level of financial leverage, which reflects the degree of financial risk, increases. With a certain degree of approximation, the premium for the risk of insolvency of a potential borrower can be presented as follows:

$$\bar{r} = j \times p \tag{6}$$

where, j – statistical parameter characterizing the bank's relationship to the risk of non-solvency of the client (corporation).

One of the ways to determine the risk premium can be a preliminary assessment of the position of the borrowing corporation on the scale "financial stability – solvency – financial risk" according to the methodology described in the research of Dokiienko (2021) as one of the alternative ways of assessing the financial security of the corporation, and therefore its reliability as a borrower.

Indication on the scale of financial stability. At a certain point in time, the financial stability of a corporation can be in one of three states: financial stability, financial equilibrium, and financial instability. The indicator of financial stability (I_{FS}) is the difference between equity and non-financial assets, or the difference between financial assets and borrowed capital:

$$I_{FS} = E - NF_A = F_A - D \tag{7}$$

where, NF_A – non-financial assets, F_A – financial assets; E – equity, D – debt (borrowed capital).

Thus, the excess of equity over non-financial assets means financial stability. At the same time, financial assets exceed debt and not only guarantee the coverage of liabilities but also provide the possibility of maneuvering one's own free financial assets. The lack of equity compared to non-financial assets means financial instability when financial assets do not cover the corporation's debt.

Indication on the solvency scale. Zones of the differentiated scale of the corporation's financial stability are distinguished by indicators of solvency. In the zone of absolute stability, all liabilities of the corporation can be covered by liquid assets, which indicates absolute solvency. In the zone of sufficient stability, all liabilities of the corporation are covered by financial assets, which means guaranteed solvency. In the tension zone, not only financial but also non-financial (but liquid) assets participate in covering liabilities, which means the presence of potential solvency. In the risk zone, the corporation has an insufficient amount of liquid assets, that is, it is insolvent.

Hence, the following states of the corporation's solvency can be distinguished: absolute solvency, when all liabilities can be covered by the corporation's mobile assets; guaranteed solvency if all liabilities are covered by the financial assets of the corporation; potential solvency – provided that not only financial but also non-financial (liquid) assets of the corporation participate in covering liabilities; insolvency, when a corporation has insufficient liquid funds to cover liabilities.

The main indicator that characterizes the level of the corporation solvency is the absolute solvency indicator (I_S), which indicates the sufficiency, excess or insufficiency of cash in comparison with current liabilities:

$$I_S = M_{FA} - D = E - NM_{FA} \tag{8}$$

where, M_{FA} – mobile financial assets (current financial investments and cash); NM_{FA} – non-mobile financial assets (long-term investments and receivables).

Indication on the scale of financial risk. The scale of financial risk is built on the basis of a comparison of the corporation's equity with non-financial illiquid assets (NLN_{FA}). Such an indicator reveals the reserves of own working capital, which, if available, create the financial security of the corporation. Its calculation is carried out according to the formula:

$$I_R = E - NLN_{FA} \tag{9}$$

where, I_R – financial risk indicator, NLN_{FA} – illiquid non-financial assets (non-current assets excluding long-term financial investments).

The combination of three indicators allows you to determine the position of the financial equilibrium of the corporation (F_E):

$$F_E = \begin{cases} I_{FS}=0 \\ I_S<0 \\ I_R>0 \end{cases} \tag{10}$$

In turn, in the zone of financial stability, the corporation can be in two positions:

▪ the position of **perfect stability – absolute solvency – maximum independence**, in which the amount of equity exceeds the amount of non-mobile assets and the amount of debt is less than mobile financial assets and the following ratios are maintained:

$$FS_P = \begin{cases} NM_{FA}<I_{FS}<F_A \\ 0<I_S<M_{FA} \\ NM_{FA}NLN_{FA}<I_R<L_A \end{cases} \tag{11}$$

where, $NM_{FA}NLN_{FA}$ – non-mobile financial and liquid non-financial assets (long-term investments, receivables and inventories); L_A –liquid assets.

▪ the position **sufficient stability – guaranteed solvency – optimal reliability**, in which the amount of equity is greater than non-financial assets but less than non-mobile assets, and the amount of debt is greater than mobile financial assets and less than the amount of financial assets, and the following conditions are met:

$$FS_S = \begin{cases} 0<I_{FS}<NM_{FA} \\ -NM_A<I_S<0 \\ LN_{FA}<I_R<NM_{FA}NLN_{FA} \end{cases} \tag{12}$$

where, NM_A – immovable assets (all assets excluding cash and financial investments); LN_{FA} - liquid non-financial (current) assets (inventories).

In the zone of financial instability, the corporation can be in two positions:

▪ the position **tension – potential solvency – relative security**, in which the equity is less than non-financial assets but greater than illiquid non-financial assets, and the amount of debt is less than liquid assets, but greater than financial assets, and is characterized by the following inequalities:

$$FS_T = \begin{cases} -LN_{FA}<I_{FS}<0 \\ -NM_{FA}NLN_{FA}<I_S<-NM_A \\ 0<I_R<NLN_{FA} \end{cases} \tag{13}$$

▪ the position **risk area – insolvency – crisis risk**, in which the equity is less than the illiquid non-financial (long-term) assets and the debt is greater than the liquid assets, and is characterized by the following ratios:

$$FS_R = \begin{cases} -NF_A<I_{FS}<-LN_{FA} \\ -NM_A<I_S<-NM_{FA}NLN_{FA} \\ -NLN_{FA}<I_R<0 \end{cases} \tag{14}$$

where, NF_A – non-financial assets (inventories and non-current assets minus the amount of long-term financial investments); LN_{FA} – illiquid non-financial (long-term) assets (non-current assets minus the amount of long-term financial investments).

Thus, having determined the position of the borrower on the scale "financial stability – solvency – financial risk", each creditor can develop (establish) his own scale for determining the statistical parameter j, which characterizes its relationship to the risk of insolvency of the client (corporation).

When developing a scale for determining a statistical parameter, it is advisable to take as a basis the following graduation, developed by the authors:

1) if the borrower is in the position of "perfect stability – absolute solvency – maximum independence", then the recommended value of $j = 1$;

2) when placing the borrower in the position of "sufficient stability - guaranteed solvency - optimal reliability", the recommended value $j = 1-1,2$;

3) in the position of "financial equilibrium" $j = 1,21-1,5$;

4) if the borrower gets into a position of "tension – potential solvency – relative security", $j = 1,51-1,7$;

5) location of the borrower corporation in the worst position "risk area – insolvency – crisis" risk $j > 1,71$.

So, in a generalized form, the nominal interest rate has the following structure:

$$k = i + r + jp + i \times (r + jp) = i + r + ir + (1+i) \times jp \tag{15}$$

In this case, the ratio (1) turns into:

$$ROE = (1-n) \times ROA + (1-n) \times (ROA - [i + r + ir + (1+i) \times jp]) \times p = (1-n) \times ROA + (1-n) \times [ROA - (i + r + ir)] \times p - (1-n) \times (1+i) \times jp^2 \tag{16}$$

If we consider the financial profitability as a function of p, with the given values of the parameters n, ROE, i, r, j, then the task of calculating the optimal value of the lever arm that maximizes the level of ROE is reduced to the problem:

$$ROE(p) = (1-n) \times ROA + (1-n) \times [ROA - (i + r + ir)] \times p - (1-n) \times (1+i) \times jp^2 \to \max p$$

under limitation p > 0. $\tag{17}$

Solving the task, we will get:

$$\frac{dF}{dp} = (1-n) \times [ROA - (i + r + ir)] - 2j \times (1-n) \times (1+i) \times p = 0 \tag{18}$$

$$P^* = \frac{ROA - i - r - ir}{2j \times (1+i)} \tag{19}$$

$$\frac{d^2 F}{dp^2} \bigg|_{p=p^*} < 0, \quad p^* = \arg \max F(p) \tag{20}$$

Thus, the obtained value $p^* = \frac{ROA - i - r - ir}{2j(1+i)}$ is the optimal value of the lever arm, which provides the maximum level of ROE under the specified parameters ROA, i, r, j, n. At the maximum point, the value of ROE is:

$$ROE(p^*) = (1-n) \times ROA + (1-n) \times \frac{[ROA \times (i+r+ir)]^2}{4j \times (1+i)} \tag{21}$$

Accordingly, the maximum ROE is the result of the cumulative effect of two components. The first of them is determined by the efficiency of economic activity and is embodied in the level of ROA, taking into account the tax rate. The second component (Ef) is determined by the method of financing and reaches its maximum value at point p^*:

$$Ef(p^*) = (1-n) \times \frac{[ROA - (i+r+ir)]^2}{4j \times (1+i)} \tag{22}$$

The optimal value of the lever arm does not depend on the income tax rate and is determined by the following factors: the real rate, which reflects the state of the financial market; the inflation rate; the credit policy of the bank, which determines the value of j; the level of ROA of the corporation (Figure 1).
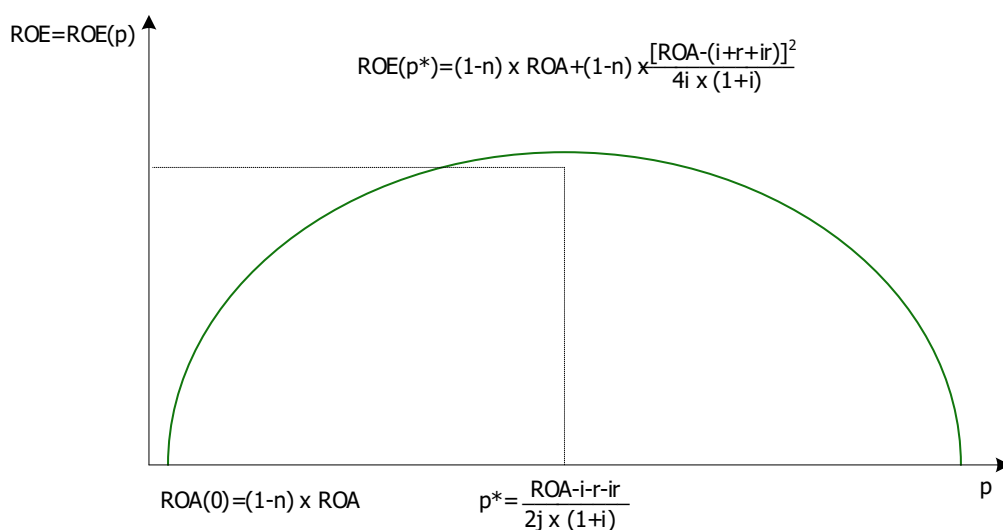
Figure1. Relationship between financial leverage and ROE of the corporation.

Thus, the developed approach allows for conducting in-depth studies of all parameters included in the model to choose the optimal financing option and contributes to increasing the possibility of the corporation functioning in the mode of optimal use of financial leverage and the behaviour of the target function. In addition, the proposed model allows not only to optimize the structure of the corporation's financial resources, but also to obtain a significant economic effect from the use of borrowed funds and, other things being equal, to maximize the level of ROE and the market value of the corporation.

DISCUSSION

When determining the optimal capital structure, it is proposed to take into account the fact that the main goal of any corporation is profit maximization in the long term. However, this goal conflicts with another important task – minimization of financial risks, i.e. risks associated with the financing of activities. Accordingly, the research was based on the hypothesis that the optimal capital structure will be the one that achieves the optimal ratio between the risk of the structure of financial resources and ROE, resulting in the maximization of the market value of the corporation and its corporate rights.

The functional dependence between ROE and its structure is proposed to be analyzed on the basis of determining the effect of financial leverage, which to some extent allows to find an approximate value of the optimal capital structure, that is, to identify the limit of the use of loan capital for a specific corporation.

The post-optimization sensitivity analysis of the capital structure optimization model revealed a close, but not equal, the dependence of the change in the optimal size of the lever arm when various parameters affecting its value are changed. The scheme of the analysis provided for a two-stage study: the influence of successive changes in individual factors on the optimal value of the lever arm and ROE; ROE variations when deviating from the optimal solution.

As a result of the multifactor analysis of the sensitivity of the determined parameters of the proposed capital structure optimization model, the following patterns were revealed:

- a direct close connection between the ROA and ROE criteria is established, namely the comparison of the efficiency of the corporation's current activity with the payment of borrowed resources determines the decisive influence on the ROE indicator. If the level of ROA exceeds the stable level of the interest rate for the use of borrowed resources (that is, the leverage differential > 0), the growth of ROE is proportional to the growth of the share of borrowed resources in the capital structure of the corporation; if the level of ROA is equal to the level of the interest rate for using borrowed resources (that is, the leverage differential = 0), then, regardless of the level of indebtedness, the level of ROE will be less than the level of ROA at the rate of income taxation; if the level of ROA is below the level of the interest rate for the use of borrowed resources (that is, the leverage differential < 0), then the level of ROE will decrease more rapidly with the increase in the level of liabilities and may reach negative values;

- the growth of ROA is positively reflected in the possible decisions of the corporation regarding the attraction of loan funds. Moreover, in such a situation, the optimal value of the leverage arm increases by an amount that significantly exceeds the size of the change in the ROA. In addition, the differential increases significantly, which, together with the increased lever arm, provides an increase in ROE several times higher than the size of the change in the factor under investigation. Thus, an increase in ROA creates prerequisites for increasing the volume of borrowed resources, which will allow not only the corporation to fulfil its tasks more fully and on a larger scale, but also to achieve the maximum return on its own financial resources;

- an increase in the share of borrowed resources in the capital structure of the corporation, other things being equal, increases the level of financial risk, which is reflected by an increase in the value of the statistical indicator of the creditor's attitude to risk (j), which, as a result, leads to an increase in the interest rate and a decrease in the effect of financial leverage;

- the relationship between the statistical parameter j and the optimal size of the lever arm can be characterized as inversely proportional. In this regard, a change in the bank's attitude to the risk of client insolvency causes an almost equal in size, but opposite in direction, change in the optimal ratio of debt and equity for the corporation and therefore has almost no effect on the value of the ROE indicator;

- the research on the influence of the risk-free rate of the credit market and the rate of inflation indicates a close dependence of the effective indicator of the optimization model on their change. That is when lending conditions deteriorate the optimal value of the leverage arm decreases to a greater extent than the changes in the analyzed factors. At the same time, it should be noted that in such a situation, one of the components of the interest rate acts as a kind of buffer, namely the premium for the risk of client insolvency, which decreases when the lever arm is reduced. In this regard, significant fluctuations in the ratio of debt and equity cause significantly smaller changes in ROE;

- the use of borrowed resources in the capital structure management of the corporation determines the effect of savings on taxes, which, as a result, contributes to the reduction of the cost of borrowed resources. And the tax corrector of financial leverage demonstrates the degree of change in the effect of financial leverage under the influence of different levels of corporate income taxation. Fluctuations in the income tax rate, of course, cannot affect the size of the leverage arm, but due to the existing mechanism of mandatory payments of the corporation, it causes opposite fluctuations in the ROE, which are somewhat weakened by the action of other components of the model;

- obtained as a result of fluctuations in the internal parameters of the system, the values of the ratio of debt and equity illustrate the optimality of the found solution. As the analysis shows, deviations of the leverage arm value from the calculated optimal value in all cases are accompanied by a decrease in the ROE.

It is worth noting that the analysis of the specified approach to optimizing the capital structure of the corporation based on the ROE criterion also reveals a number of disadvantages that limit its application in practice: there is no division of borrowed capital into long-term and short-term; the internal structure of equity and debt is not analyzed; the cost of equity is not taken into account.

Accordingly, the most effective from the point of view of achieving the optimal corporation's capital structure will be the approach aimed at simultaneously maximizing the growth of ROE and the level of financial stability, which will be the subject of the authors' further scientific works.

CONCLUSIONS

The research takes as a basis and proves with the help of mathematical tools the hypothesis that the optimal capital structure will be the one that achieves the optimal ratio between the risk of the structure of financial resources and ROE, as a result of which the market value of the corporation and its corporate rights will be maximized.

The model of the corporation's capital structure optimization of the proposed in the article based on taking into account the expediency of attracting borrowed resources according to the "risk–return" scale allows calculating the structure of own and borrowed resources, which maximizes the ROE level of the corporation. The basis of the model is the mechanism for determining the level of financial risk in the structure of the interest rate for attracting loan resources and the justification of the toolkit for optimizing the capital structure of the corporation, taking into account the indicator of financial leverage, which ensures the most effective proportionality between its profitability and financial stability.

At the same time, the considered model for optimizing the capital structure of the corporation is a convenient, simple and understandable tool for diagnosing the level of the corporation's ROE by its main components and an informative tool for

its factor analysis; an effective tool for managing attracting loan resources process; an alternative approach to the formation of the optimal structure of the corporation's financial resources, which allows not only to diagnose the level of ROE but also to effectively manage it in the current period and is the basis for the formation of strategic directions of financial development and forecasting in the corporation for the prospective period.

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СТРУКТУРА КАПІТАЛУ ЯК КРИТЕРІЙ ЕФЕКТИВНОСТІ УПРАВЛІННЯ ФІНАНСОВИМИ РЕСУРСАМИ КОРПОРАЦІЇ

У статті представлено підхід до управління структурою капіталу корпорації за критерієм максимізації рівня рентабельності власного капіталу. В основу цього підходу покладено визначення доцільності залучення позикових ресурсів із позиції збалансування фінансового ризику та доходності. Обґрунтовано інструментарій оптимізації структури капіталу корпорації з урахуванням показника фінансового важеля, що забезпечує найбільш ефективну пропорційність між прибутковістю та фінансовою стійкістю. Розроблено алгоритм визначення рівня фінансового ризику в структурі відсоткової ставки за залучення позикових ресурсів, який передбачає формування розміру премії за ризик неплатоспроможності позичальника та відповідну методику визначення позиції позичальника за шкалою «фінансова стійкість – платоспроможність – фінансовий ризик». Постоптимізаційний багатофакторний аналіз чутливості запропонованої моделі оптимізації структури капіталу дозволив установити певні закономірності щодо зміни рентабельності капіталу та її компонентів.

Ключові слова: структура капіталу, рентабельність власного капіталу (ROE), рентабельність активів (ROA), фінансовий леверидж, фінансовий ризик, фінансова стійкість

JEL Класифікація: C30, D24, G32, M20