Russian practice of financial management of the enterprise

Alexander Evseevich Karlik[1], Daniil Semenovich Demidenko[2], Elena Anatolievna Iakovleva[2], Magamedrasul Magamedovich Gadzhiev[3]
[1]St.-Petersburg State University of Economics, Sadovaya Street, 21, room 3111, St-Petersburg, Russian Federation
[2]St.-Petersburg State Polytechnical University, Polytechnicheskay str., 29, St-Petersburg, Russian Federation
[3]Dagestan State Institute of National Economy at the Republic Dagestan Government, Ataeva str., 5, Makhachkala, 367008, Dagestan, Russian Federation

Abstract: To actualize efficiency of asset management company on the basis of the cost approach make such as the development of information technologies; the rapidly changing situation of the stock market; growing process of mergers and acquisitions; agency problem (handover management managers); «commercialization» or practical implementation of intangible assets and intellectual property rights that results in the need to assess their market value and asset management.
[Karlik A.E., Demidenko D.S., Iakovleva E.A., Gadzhiev M.M. **Russian practice of financial management of the enterprise.** *Life Sci J* 2014;11(10):589-594] (ISSN:1097-8135). http://www.lifesciencesite.com. 86

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Introduction

The new approach includes optimization of capital structure, DFL, disinvestment, innovation, intellectual capital, asset restructuring. Scientists rarely take into consideration the following questions:

- Does the task of optimizing the DFL and the company's borrowing level define contents of economic models?
- How does DFL influence investment appeal of projects and risks?
- What are features of the optimization the company's borrowing policy?
- Methods of analyzing economic efficiency of the company's activity.

Many authors [Stewart 1991, Young and O'Bryne 2001, Stephens and Bartunek 1997; Milunovich and Tsuei 1996, Jackson 1996, Mayfield 1997, O'Bryne 1996, Biddle and etc. 1999, Martin and Petty 2000, Feltham et al. 2004, D.J.Obrycki and R.Problems of the economic theory are not generally considered in such a «coordinate system». However, necessity of such approach is becoming more and more obvious.

Economic efficiency and management of enterprise's investment

Now the enterprise is treated as an investment and financial system. And its operation is based on the basic concepts of management (production, investment, innovation and financial). Regarding the economic criteria for effectiveness of enterprise management, the role of the fundamental factors of cost-efficiency is the investments over time (temporary price), price of capital and resources, as well as the result of investment activity in the form of added economic value (profit). Insufficiently investigated the relationship between the interests of owners, managers and other parties. There is no single point of view, whether the market value of enterprises synthesis of economic efficiency of enterprises, which reflects the requirements of the stakeholders to the choice of strategy for the management and development. There are restrictions on the practical application of the value of the concept in the management of the adapted management methodology and mechanisms for the formation of the market value of enterprises that are available for management of the enterprises in conditions of innovative development and environmental variability. When analyzing the market value of the principles and methods of economic analysis of the costs and benefits (models and criteria for investment analysis; analysis of the cost (DCF, discounted cash flows method)); analysis of uncertainty and risks (methods of mathematical economics, economic theory options, margin). Table 1 provides a comparative analysis of two main approaches [1]. Specify the factors influencing the economic efficiency of enterprises. Evaluation of economic efficiency from economic and innovation are the numerous scientific controversies. To date, no systematic look at managing a collection of factors in the market value of the enterprise, its formation and dynamics. In the table 2 shows that investing in innovation model EVA [2], to create a market value in the observed period shall be the ratio (where ROI-return on invested capital), which is a measure of performance [3]. Similar terms (or) must be observed for DCF [4]. Economic efficiency and optimal management of enterprise available assets is determined by many factors, however, innovative development of the enterprise makes a difference in the approaches and methods for assessing its

effectiveness, which has specific requirements for the measurement of activity which are not reflected in the traditional approaches. Hence, the market value of the company is part of an overall assessment of economic efficiency, feature and determining factor which led to the development of the innovation process, dramatically changing all internal and external conditions. For the management of the market value of enterprises need to identify new methods, criteria for assessing the efficiency of asset allocation (for example, the economic value added - EVA). As you can see from the table 2 DCF method ignores information financial reporting on existing assets and a significant portion of the cash flows that are not completed during the projection is reflected in the form of so-called extended value (according to the principle of residual income). Indicator EVA less susceptible to these effects, because it is based on real investment, economic profit forecast of cash flow, adding value. A key feature of the EVA is a combination of new requirements for assessing the efficiency and standard reporting enables adjustment of the financial indicators, including capital, to reflect the typical character, repeatability and exceptional speculative effects [5].

Optimization models for borrowing financial leverage effect

As it is known, the return on equity (ROE) for a company which uses external (borrowed) sources of financing is determined by the formula (1) (Damodaran 2002):

$$ROE = ROA + (ROA - \overline{X}) * \frac{D}{A - D} = X + (X - \overline{X}) * \frac{Y}{A - Y} \quad (1)$$

«*ROA = X*» is profitability of the company's assets (profit/assets); $\overline{X}$ is the norm for profitability of assets or the cost of credit on a perfect competitive market – a market (risk-free) interest rate; «*D =Y*» is the value of the company's borrowed capital (D); A is the value of the assets. The denominator is the company's equity capital (E) (*E = A-D = A-Y*). The financial leverage effect (DFL) [6], which is the second item on the right side of the formula, can be both positive and negative for the company, depending on the value of the return on assets (ROA). In principle, the positive value of the financial leverage effect should be considered as a positive trend in the financial position of the company, because the effect (DFL) increases the return on equity (ROE) of the company. When the financial leverage has a negative effect (DFL), the trend is opposite, which can be partially offset by a decreased value of the borrowed capital (D). The possibility for the company to optimize the financial leverage effect (DFL) is of great practical importance in terms of financial planning and borrowing policy. To identify the value of the borrowed capital (D) which would ensure the maximum financial leverage effect (DFL) is to find the best financial plan. However, this is not possible in the concept of MM based on the theory of a perfect competitive market, absence of risks and risk-free interest rate [7]. Optimization of the financial leverage effect is usually considered on the basis of the so-called «practical approach», which involves resignation from the concept of MM. Then the interest rate is not risk-free, because it depends on the amount of borrowings (D). The bigger the value of borrowing D is, the greater the repayment risk (credit risk) and the risk component of the interest rate which reflects it are. It is commonly assumed that the interest rate is increasing function of the amount of credit $\overline{X}(Y)$ or $\overline{X}(D) when Y = D$, which is continuous and twice differentiable with the decreasing rate of growth. In this case, the financial leverage effect (DFL) is a nonlinear function, with a maximum of $\mathrm{DFL} = (X - \overline{X}(Y)) * \frac{Y}{A - Y}$. It is obvious that this relation should reflect the well-known neoclassical principle of «the diminishing ultimate performance», but its argumentation in analytical form does not exist. Such an approach to optimizing the DFL is practical, cannot have rigorous argumentation and is individual for each company. Therefore, the determination of the optimal DFL is difficult due to the non-linearity and uncertainty of function $\overline{X}(Y)$. We shall take the possibility for optimizing the DFL in terms of the concept of MM. The DFL effect on the company's performance must be studied with a constant value «A» in order to exclude investment activity. Otherwise, if you change the value «*A*», the performance analysis will reflect the investment activity effectiveness, but not the capital structure influence [8]. The DFL in the formula (1) is defined by two parameters («*X*» and «*Y*»), with non-linear relationship between them. In principle, the DFL is useful for the company, although increased borrowings lead to increased financial risks. The company's rational policy in terms of borrowing and improved capital structure is to retain the achieved DFL value provided the DFL meets the company's regulatory requirements or criteria for the optimal financial and economic position of the company or its improvement through impact on the key parameters [9]. This approach uses the microeconomic principle of marginal analysis according to which in each period the achieved values of the key parameters are regarded as

constants and variable values are incremental values of the parameters, which, unlike the parameters themselves, can have any character, positive (increase) or negative (reduction) [10]. To optimize the company's borrowing policy, certain limitations reflecting the logic and contents of the economic processes in the company must be taken into account, as well as resulting from accepted and objectively existing resource or regulatory limitations [8]. The limitations can be set both on the relationship between optimizing variables and separately on variables. The economic policy of the company is expressed by the requirement of non-negativity of the DFL change once the parameters «*X*» and «*Y*» are changed. The mathematical expression of this condition is non-negativity of the total DFL differential (2):

$$dDFL = DFL'_x * \Delta X + DFL'_Y * \Delta Y \geq 0 \quad (2)$$

where $\Delta X, \Delta Y$ – increment (algebraic) «*X*» and «*Y*»; DFL'_X, DFL'_Y – the first derivative of the DFL on the «*X*» and «*Y*» respectively. The application of this principle (1) determines the linear relationship of the DFL change to the conditions for new variables $\Delta X and \Delta Y$ and algebraic expression DFL'_X, DFL'_Y conversion (2) received:

$$(A-Y)*Y*\Delta X + (X-\overline{X})*A*\Delta Y \geq 0$$

$$\text{or } \Delta Y \geq -\frac{(A-Y)*Y}{(X-\overline{X})*A} * \Delta X \quad (3)$$

Since receiving

$$\Delta X = \Delta(X-\overline{X}), \Delta Y = -\Delta(A-Y)$$

And after conversion a further condition is:

$$\frac{Y}{A} \geq \frac{\frac{\Delta(A-Y)}{A-Y}}{\frac{\Delta(X-\overline{X})}{X-\overline{X}}} \quad (4)$$

The condition implies that the elasticity of the company's equity (E=A-Y) in terms of the assets profitability must not exceed the company's borrowed D. To maintain the DFL on the fixed level, the changes $\Delta X, \Delta Y$ should be linearly connected (3).

Linearization of the variables' interconnection occurs under the above condition. The connection between the variables $\Delta X and \Delta Y$ is also set on the basis of the company's bankruptcy resistance. It is expressed through the maximum acceptable proportion of the borrowed capital to assets, which is not more than half. The company's assets (sources) in their aggregated form have three components: (D), profit (NP), Y = E. Provided the assets are fixed, the following condition is correct:

$$Y + \Delta Y \leq (\Delta X + X) * A + E \text{ or}$$

$$\Delta Y \leq (\Delta X + X) * A + E - Y \quad (5)$$

The left side of the equation must be nonnegative, because the company's own capital sources must always be bigger than its borrowings. The limitation which sets the connection between the variables $\Delta X and \Delta Y$ is also the required amount of profit to be made by the company. Under the condition of the asset permanence, which has been accepted above, the following equation is correct $E + (X + \Delta X) * A + Y + \Delta Y \geq A$. Once the assets are fixed and no investments are made in the company, «surplus» profit may be used to pay dividends.

The company's profit is the product of assets profitability by the value of assets (X*A). Given that, $E + X * A + Y = A$ by definition, we obtain

$$\Delta Y \geq -A * \Delta X \quad (6)$$

Change of D also has a natural limitation. Reduction of any value cannot exceed the value itself, and its increase cannot exceed the value of assets:

$$-Y \leq \Delta Y \leq A - Y \quad (7)$$

The restrictions for the return on assets are determined by the demand of the standard return on any investments, which are investments in its assets, so:

$$X + \Delta X \geq \overline{X} \text{ or } \Delta X \geq \overline{X} - X \quad (8)$$

Essentially, there are no upper restrictions for the return on the company's assets; the bigger they are the better it is. However, investments may be made not only to expand the assets (in the case we consider they cannot be made since the assets are fixed), but also to reduce production costs. With a fixed value of assets the company's expansion and profit growth due to increased sales becomes impossible. But profits can be increased due to the reduced production costs which will also entail the increased return on assets. It is clear that costs can be reduced, but the value of costs themselves is limited by the nature of this factor. Negative economy is impossible (it is impossible to save more than spend). The upper restriction for «X» is determined by production costs «C», which are not included in the parameters defining the DFL:

$$\Delta X \leq C \quad (9)$$

The target function is maximizing the net cash flow: $(X + \Delta X) * A - (Y + \Delta Y) * \overline{X} \rightarrow \max$

It is expected that loans are at market interest rates. Maximizing net cash flow represents the market value of the company for a period of time.

After graduation from the target function constant, we get:

$$\Delta X * A - \Delta Y * \overline{X} \to \max \qquad (10)$$

Thus, the task of optimizing the DFL and the company's borrowing level is determined by the following conditions: $\Delta X * A - \Delta Y * \overline{X} \to \max$ (10) the objective function, when you restrict: $\Delta Y \geq -\frac{(A-Y)*Y}{(X-\overline{X})*A} * \Delta X$ (as in formula 3); $\Delta Y \leq (\Delta X + X) * A + E - Y$ (as in formula 5); $\Delta Y \geq -A * \Delta X$ (as in formula 6).

Then $-Y \leq \Delta Y \leq A - Y$ (as in formula 7) and $\Delta X \geq \overline{X} - X$ (as in formula 8), $\Delta X \leq C$ (as in formula 9) can be achieved with linear programming or any other suitable method. Consider an example. In the original set: situations (table 1):

Table 1. Optimizing the DFL and borrowing enterprise level

Indicator	Designation	Unit of measure	Value	Note
Assets	A	monetary unit	1	Fixed
Profitability assets	X	share of monetary unit	0.15	Set
Percentage of the borrowed funds (D)	Y	share of monetary unit	0.3	Set
Regulatory returns on profit	$\overline{X}$	share of monetary unit	0.1	Norm
Net income (profit)	NI=A*X	share of monetary unit	0.15	Calculated value
Maximum possible profitability	C	share of monetary unit	0.8	External restrictions

Assets comprise D = Y = 0.3 arrived NI = A*X= 1 * 0.15 = 0.15, E = 0.55, C = 0.8. All the signs were used. Optimal solutions for optimizing the DFL in table conditions: $\Delta X = 0.8, \Delta Y = -0.3$ the optimal value of the objective function, while limiting 0.83 monetary units. Limited «*C*» is not associated with the other parameters and may vary depending on external conditions. The value of *C= 0.5*, optimum DFL value for table condition is as follows $\Delta X = 0.8, \Delta Y = -0.3$; optimal value of the target function with these limitations is 0.53 monetary units. The results are understandable. The profitability of the company's assets above normative within the existing restrictions should proceed under rule «*for lowest price, borrow more*» till DFL is maximum. With a fixed price of borrowing at the market interest rate (in this case $\overline{X}$ = 0.1) the rule is even easier: «borrow more». However, to implement the resulting solution is difficult, because the return on the company's assets does not control the parameter and indicator reflecting the performance. In real conditions profitability of the company's assets is uncertain. When fixed asset profitability depends on sales and return on assets subject to the company's operating risk and is a random value on the nature of the allocation, certain assumptions can be made. Depending on the value of «*X*» the management of the borrowing «*Y*» may be taken by the governing. The right solution is expressed with the following rules: If

$$\begin{aligned} X > \overline{X} &\to Y > 0 \to DFL > 0 \\ X < \overline{X} &\to Y = 0 \to DFL = 0 \end{aligned} \qquad (11)$$

The represented rule is the so-called «*embedded option*» for the company. It's easy to see that the model of this rule is a «*call*» option in «*short position*» (purchase of an option) with the strike price equal to standard return $\overline{X}$, because if the return on the company's assets is below standard, borrowings are meaningless (option is useless), but in the opposite case, while the return on assets and borrowings increase, the price of the company's option in the form of DFL grows and its market value increases. As it is known, the model of an economic mechanism can be formed with the use of options and other available tools. So, the DFL model for the company is a combination of «*Call*» and «*Put*» options according to the rule: *Buy «Call» and sell «Put» or (Call- Put)*

The area of the DFL negative values can be hedged by the company with the acquisition of the Put option, which results in the positional chart of the Call option reflecting correctly the rule of borrowings:

$$DFL = Call - Put + Put \qquad (12)$$

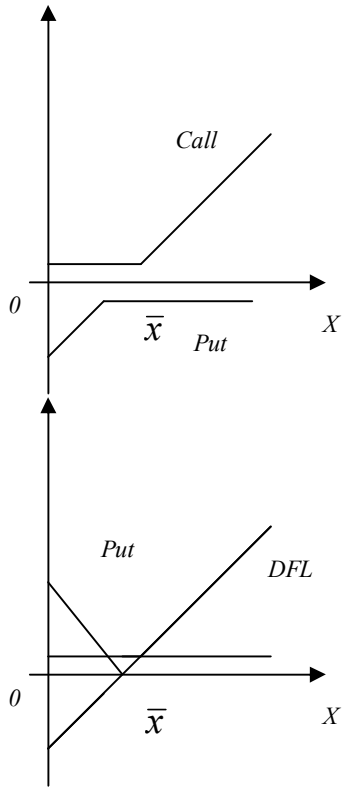

Fig.1. Management of financial risk on the basis of stock options

Thus, out of two tools – the company's DFL and Put option – a rule of taking a decision about the company's borrowings can be created (10), which is modeled with the use of the Call option. With regard to the possible solutions of the management, let us suppose that there can be only two options: «*Y=0*» and «*Y = 0.5*A*» – maximum limit on the amount of borrowings on the grounds of bankruptcy inadmissibility (*A = 1, Y = 0.5*). Any decision to be made is characterized with the value of losses which are defined by the following simple rule: *«Loss» = «Decision taken» – «Right decision».*

If the decision is correct, losses are zero. The values of losses with uncertain return parameter «*X*» in the circumstances accepted earlier are shown in table 2.

Table 2. Values of losses

Decision management	$0 < X < \bar{X}$	$C > X > \bar{X}$
Y=0	Losses =0	Losses (**) $= -\frac{1}{2}(C - \bar{X})$
Y=0,5	Losses (*)$= -\frac{1}{2}\bar{X}$	Losses=0

The losses are defined numerically by replacing the value of a random variable X in the table spacing averages calculated by the formula:

$$Losses\ (*) = \frac{1}{\bar{X}} * \int_0^{\bar{X}} (X - \bar{X})dX - 0 = -\frac{\bar{X}}{2} \quad and$$

$$Losses\ (**) = 0 - \frac{1}{C - \bar{X}} * \int_{\bar{X}}^{C} (X - \bar{X})dX = -\frac{C = \bar{X}}{2} \qquad (13)$$

For the earlier example ($\bar{X}$ = 0.1, C = 0.8) calculated by the formula losses are brought to the table for a decision. To find the optimal strategy of the company's borrowings in the conditions of uncertainty arising from operational risks, one can also use the methods of finding solutions in the situation of competition and accommodated interests of the parties. In the present case, the «*party*» is the nature [11], which creates uncertainty. At that the methods of solutions to the pair games with zero amount can be used (when one party wins, the other loses). Let us introduce two variables based on the number of potential control decisions for management: z_1 corresponding to the decision «Y=0» and z_2 which corresponds to the decision «Y=0.5» provided $z_1 + z_2 = 1, \quad 1 \geq z_1, z_2 \geq 0$ both variable positives reflect the relative frequency or likelihood of the management's control decisions. The expected value of losses (mathematical expectation) with |the first «*State of nature*» is equal to

$V_1 = z_1 * 0 + z_2 * (-0.05) = (1 - z_1) * (-0.05) = -0.05 + 0.05 * z_1$

with the second «*State of nature*» is equal to $V_2 = z_1 * (-0.35) + z_2 * 0 = z_1 * (-0.35)$. The lowest expected losses will be at the point of intersection of lines reflecting the value of losses with the value $z_1 = 0.125$. The appropriate value is $z_2 = 0.87$. This result is not much different from the previously obtained and solution 2 prevails.

Conclusions

The proposed instrument should provide for effective asset management system, generating, and ensure that management decisions aimed at maximizing the market value of enterprises, in terms of resource capabilities, high uncertainty of the innovation process and the probabilistic nature of the forecast parameters. VBM approach transforms traditional views on the effectiveness, cost effectiveness indicators, economic activity of the enterprise: from relative performance (productivity, profitability) to market valuation. Realization of VBM approach requires the development and rationale underlying the principle of the market value of the enterprise: «converting business result in value enterprises», i.e. «result-formation or gains enterprises». Problems of quality economy are traditionally of interest. They provoke attention of scientists and experts when developing quality management systems. Progress in the field of economics is more modest, than, in the fields of quality management, methods of valuation and analysis of quality, optimum quality achievement. Methods of economic and financial management with regard to quality problems still remain exotic although in other areas they are successfully developing (and applied).

Corresponding Author:
Dr.Karlik Alexander Evseevich
St.-Petersburg State University of Economics
Sadovaya Street, 21, room 3111, St-Petersburg, Russian Federation

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