

BFO Theory Principles and New Opportunities for Company Value and Risk Management

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Abstract: This article explores the significance and additional capabilities of new principles for analyzing the capital structure and calculating the market value of a company. These principles are being developed as part of Brusov–Filatova–Orekhova theory (BFO) and are aimed at considering the diverse factors which affect the market value of companies. These principles include accounting and calculating the value of a company within its lifecycle; focusing on a more complete and differentiated assessment of a company's risks and their consideration in the course of running the company and managing its market value, compared to in the Modigliani–Miller theory. According to these principles, one should take into account and assess all significant possible effects that are formed in the course of running a company with regard to its value, even if such effects do not explicitly materialize until a certain point of time, are not taken into account during the market appraisal and are used during the company valuation as some kind of a virtual, imaginary value. Changes in the calculation of such virtual values of a company value may suggest that risks have accumulated both at the micro and macro level of economy. Studying the mechanisms created in the course of running a company and aimed at transforming the virtual values of its value into real positive or negative changes in the value can be an important tool for enhancing the effectiveness of risk management in companies and economic systems.

Keywords: Modigliani–Miller theory, Brusov–Filatova–Orekhova theory, real and imaginary effects of changes in company value, risk and company value management.

1. INTRODUCTION

The theory in question (i.e. Brusov–Filatova–Orekhova (BFO) by Brusov P. *et al.*, 2015) offers a new rational way to determining the optimal capital structure and, thus, minimize the cost of capital and maximize the capitalization of a company. In contrast to the Modigliani–Miller theory, the BFO theory more realistically describes the requisite assumptions. In particular, the BFO theory proceeds from the assumption that joint-stock companies have a limited period of existence and that they are of a certain age. The BFO theory more accurately describes the dynamics of a weighted average cost of capital, whereby such cost may become smaller than under the Modigliani–Miller theory. However, the value of a company's capitalization may become larger than under the theory of Modigliani–Miller. A study of the role of taxes and leverages enables companies to more accurately calculate an optimal level of debt financing, and for the regulator it allows to set a profit tax rate, taking into account the impact of its change on the capitalization of companies.

However, the importance of BFO theory is not only the fact that it more accurately describes the parameters of variables and the conditions for

achieving optimal values of the capital structure and capitalization of companies, but also the fact that it does so using more realistic assumptions. At present, no theory with an adequately high degree of accuracy and probability is capable of predicting the dynamics of an average market cost of capital and company capitalization during volatility and bifurcation of the key market metrics.

2. THE METHOD OF LINKING THE PROFITABILITY OF CAPITAL, ITS STRUCTURE AND THE COST OF CAPITAL BY MODIGLIANI–MILLER

Let us consider a more complete version of the Modigliani–Miller theorem No. 3, whereby taxation is taken into account.

$$\frac{E(X)}{V} = \frac{p^t}{1-t} \left\{ 1 - \frac{trD}{p^t V} \right\} \quad (1)$$

where:

$E(X)$ = X mathematical expectation of profit, or average profit taking into account its fluctuations;

V – market value;

P^t – return on capital (own and borrowed capital);

t – profit tax rate;

r – cost of debt;

D – borrowed capital

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Thus, the market value of a company may be calculated using equation (1). However, in this case we are not interested in the correlation algorithm itself, but in the composition of factors affecting the company value. Therefore, we can write:

$$V = F(X, p^f, D, r, t) \quad (2)$$

That is to say, the value of a company depends on the average profit generated by such company, on the profitability of its capital (i.e. return on equity), and – in terms of tax effect – on the amount and cost of its debt, as well as the tax rate applicable to its profit.

According to one of the assumptions made by the Modigliani–Miller theory, companies may be divided into classes based on equivalent income (F. Modigliani, M.H. Miller, 1958). Therefore, all shares or bonds of companies belonging to one and the same class are equivalent, fungible, as well as identical in terms of yield and risk. They can differ only in scale, i.e. represent unequal shares in assets or liabilities, respectively, if calculated per share or bond. The profitability of shares and bonds of different classes may be different, but the reasons for such differences are not explained. Let's try to explain it. The very possibility of classifying companies based on income means, firstly, that the differences in income level are stable. Otherwise, the composition of classes must change constantly. If, for example, the composition of classes changes during the valuation of a company, then such classification is unlikely to prove useful.

Secondly, when proving Theorem 2 on independence of the value of a company from the structure of its capital, Modigliani and Miller assumed the existence of arbitrage. In doing so, they did not take into account the factor of tax savings from the use of borrowed capital. Therefore, ROE differences existing in companies of different classes and accepted by the authors as a fact should be not only stable, but also independent from arbitrage. Other differences in ROE of companies are due to individual factors, which obviously are significantly more mobile than collective factors. It is important that all stable differences between companies in terms of profitability cannot be eliminated on the basis of arbitrage transactions. Therefore, they should be taken into account.

When the main provisions of the Modigliani–Miller theory were being formulated, the differences between company classes distinguished by the level of profitability were relatively constant and stable.

Nowadays, such differences may be due to the different level of investment risk, the ability to influence market prices which results from the level of production monopolization and the market share of a company, the ability of a company's management to consistently manage its value according to the developed strategy, as well as due to the availability of innovations and the stage of their cycle.

2.1. Accounting for the Impact of Differences in Profitability and the Risk of Organizations on their Market Value: a Comparison of the Modigliani–Miller and BFO Approaches

F. Modigliani and M. Miller did not specifically explore the issue related to the level of differences in the profitability of different company classes. This can partly be explained by the fact that when their theory was being formulated, all the main factors that could affect the market value of a company were closely interrelated and their effect on the company value mostly concerned one area (e.g., the risk factor was largely related to the size of companies). The risk of a small, rapidly growing company with insignificant equity is usually regarded as much higher than the risk of a stable large company with a relatively long history of development.

The basic economic metrics of such a company are more stable compared to those of a small growing company, respectively, from the prospective of Capital Asset Pricing Model (CAPM) developed by W. Sharp (Sharp W.F., 1964), when the Modigliani–Miller theory was being formulated, the required risk premium to the level of risk–free rate will be less than that of a small growing company. Market capitalization at the required rate of profitability for a large company, normally, will be relatively higher than that of a small or medium–sized enterprise.

Therefore, the ratio of the market capitalization of assets to the profit value of a large and stable company will be higher than that of a small or medium–sized growing enterprise. Or otherwise, a large company with the same average rate of profitability (in terms of profit/assets ratio) as that of a small or medium–sized enterprise per unit of profit, in addition to the capitalization of their assets usually has some kind of a premium for less risk compared to small or medium–sized companies. There is no such premium in formula (1). The Modigliani–Miller theory does not define it, although the risk factor in is implicitly present in the theory and is reflected in the differentiation of

profitability rates of different classes of enterprises, which cannot be eliminated by arbitrage. The focus on a more detailed analysis and accounting of risks when assessing the capitalization and value of companies is present in the BFO theory. The authors of this theory are seriously concerned with the problem of improving the effectiveness of risk management due to more instability in the world economy and finance. However, the mechanism for accounting the impact of risks on the value of companies requires that the applied solutions be specified. It is important that the BFO theory's principles create much more opportunities for solving this problem than the Modigliani–Miller theory.

2.3 Problems of Accounting for the Influence of the Monopolization Factor on the Firm's Market Value

The monopolization of a company and its ability to influence market prices is a factor that undoubtedly affect its profitability rate. In a large company, the ability to influence market prices is usually higher than that of a small or medium-sized enterprise. However, this ability is not reflected in the formula. Technically, it can be argued that the ability of a large company to influence market prices is already present in the Modigliani–Miller formula (1), since the profitability of such a company will be higher than that of smaller ones. This assumption will be true if we consider that companies have been operating on the market for an infinitely long period of time and that the average rate of their profit, which has developed over some finite period of time at the initial stage of a company's existence, will remain at the same level in the future as well. However, in practice this may not be so at all.

During the initial stage of a large company's development or during the initial stage of its penetration into a certain commodity market, it may not intentionally form a monopoly premium to the price by following average prices in the industry or by forming a price according to the following formula: "costs plus average (industry customary) profit". However, after strengthening its market positions, in the future the company may pretty much set a price above the average price or above the price according to the following formula: "costs plus average profit". If we proceed from an assumption made by the BFO theory that in fact companies have a finite lifecycle during which they can repeatedly change their pricing policy, each time acting for their own benefit, it is obvious that unlike a company which is not capable of influencing market prices actively, a large company, which has the ability to influence market prices even having similar

profitability rates at some stage, can translate such ability into additional earnings. Thus, with other things being equal, the market price of such a company should be higher.

So, a company that has the ability to actively influence market prices should have some premium to the price, which reflects only the factors taken into consideration in the Modigliani–Miller formula.

2.4. Problems of Adapting the Method of Assessing Market Value to the Need to Take into Account Additional Factors

The Modigliani–Miller theory proceeds from the assumption that the market value of a company is determined by certain conditions that are standard for the class of companies to which it belongs. Consequently, it is unable to actively influence its market value beyond those factors that are reflected in formula (1).

A. Damodaran believes that it is possible to increase the value of a company: by raising the amount of cash flows generated by current investments; augmenting the expected rate of profit growth; prolonging the period of a rapid growth; reducing the cost of raising capital. However, very few companies achieve a sustainable increase in their value: for this, all parts of the company must act in coordination by pursuing a single strategic goal. However, even coordinated actions by no means always lead to an increase in value: the result largely depends on the reaction of competitors. If the actions taken and the reaction of competitors are favorable for increasing the value, financial markets do not always recognize and adequately assess these actions: often the first reaction of the markets is negative, and it is only in the long run when the market corrects the situation (Aswath Damodaran, 2002).

3. ANALYSIS AND RESULTS

It is evident that the financial management hypothesis on the effectiveness of markets is only true for simple reactive actions of the market players, where such actions are not related to the implementation of complex strategies, the consequences of which can be fully seen only in the future, given favorable circumstances. If the market does not give a quick and unequivocal reaction to the actions of factors capable of leading to an increase in the company's market value, this means that the effect of such factors is of a probabilistic nature. Hence, one may consider the

contribution of these factors to an increase in the value of a company only as an additional possibility for the company's appreciation. However, the consideration of such possibility cannot but contain a subjective element. The probability of an increase in the company's value, no matter how large it may technically be, can materialize only if the company's management has developed an appropriate strategy for increasing the value, organized the use of those factors that can actually lead to an increase in the value in particular circumstances and ensured coordination and control of actions in all organizational units of the company in order to resolve a common issue. If the company's management does not follow this path, then there is a zero probability that the company's value will rise under all favorable circumstances.

3.1. Accounting for the Influence of the Subjective Element on the Risk Assessment and Firm Valuation

If the implementation of a strategy for increasing the value of a company within the established timeframe results in a possible increase in the value by " ΔV ", provided that the circumstances are favorable, then the probability of successful implementation of the strategy, taking into account the possible responses of competitors, is equal to " p ". In that case, in order to assess the effect of such appreciation possibility on the value of a company, we should also take into account a subjective element associated with the readiness of a company's management to develop and implement a strategy for increasing the value, as well as their ability to follow this strategy in various circumstances and with the strength of a subjective desire to implement this strategy. This subjective effect, as it seems to us, may be estimated based on the focus coefficient of " η ", which should reflect all aspects of the subjective element and vary from zero to one.

Then the effect of the strategy for increasing a company's value may be expressed as follows:

$$\Delta V \cdot p \cdot \eta \quad (3)$$

The coefficient " η ", however, likewise other components of the formula, may be estimated by expertise. However, the accuracy and adequacy of an expert will depend on what knowledge he or she possesses in respect of the company's internal information: knowledge about whether there is a strategy for managing the company's value, about the

ability and will of its management to implement this strategy, as well as about the extent to which competitors are committed to their own value enhancing strategies, about their capabilities and ability to create obstacles to the implementation of the strategy by the company being evaluated and thus ensuring priorities for their own strategies. It is obviously that no potential investor who does not have such inside information can independently assess this component of the company's value.

The inclusion of " η " coefficient into the analysis of a company's value may to some extent account for such phenomena as "soap bubbles" or sudden growth of the company's market capitalization. Possibilities to increase or, vice versa, decrease the market value of a company reflect objective possibilities that arise, exist and disappear when running the company. However, while the coefficient of subjective focus on the use of growth opportunities or, conversely, blocking the possibility of a depreciation (loss in value) is small, such opportunities are not taken into account by the market, but are present as some kind of imaginary, virtual values. Challenges or additional opportunities may become relevant, as well as the level of their awareness and assessment may increase. If the focus coefficient reaches a certain threshold value and there is an increase in the level and breadth of awareness with regard to challenges and opportunities which become sort of existent in the mass consciousness, then the market gives a sudden assessment of the value change that it has not noticed before.

The only way to manage the obvious effects of a change in the value of companies is to measure and track the hidden opportunities for changing the value initially as virtual or imaginary ones, tracking their dynamics and the degree of awareness as per the focus coefficients. Undoubtedly, the theory requires that a careful study should be conducted with regard to the processes and mechanisms of transforming the imaginary or virtual effects of a value change into real ones, as well as that the values of parameters and coefficients at which the transformation effects are triggered (i.e. activated) should be det.

There exist no methods to eliminate the asymmetry of economic information distribution and the impact of such asymmetry on the possibility of generating extra income by those who own additional information, who have sufficient qualifications and expertise to correctly interpret and profitably use the inside information of a specific nature. In order to assess the impact of value

enhancing strategies on the value of a company, one should not only to have access to inside information, but also to have the knowledge and experience required for its adequate assessment. Some elements of the necessary inside information never become fully available to the public, e.g., knowledge and ideas of the company management's immediate entourage and consultants regarding their personal and professional qualities and abilities to implement particular strategies. However, it is possible and necessary to raise the question of how to, as far as possible, regulate the transition from individual to mass awareness of a probable drop or increase in the company's value, in order to minimize the adverse effects for companies or the economy as a whole.

3.2. The Possibility of Accounting for the Impact of Non-Economic Indicators on the Firm's Value

There is yet another possible approach to assessing the value of companies – from the perspective of a balanced scorecard system theory (R.S. Kaplan and D. P. Norton, 1992). When using this approach for improving the governance of a company, a system of metrics is established, which includes not only financial and economic metrics indicators, but also other metrics that affect the performance of companies. Therefore, such system enables to better manage the company, including its strategy. Increasing the value of companies is also a strategy, and therefore a balanced scorecard system can help improve the ultimate results of this strategy, i.e. increase the value of a company, augment the likelihood of such increase and enhance the company management's focus on increasing its value.

Using a balanced scorecard system, you can better manage the achievement of any final and interim results that are necessary for managing the value of a company: profit, costs, the quality of products or services, the level of qualifications and responsibilities of staff, productivity, the competitiveness of products, etc. Therefore, the balanced scorecard system may be regarded as a universal tool for improving the effectiveness of company value management. For each area or particular way to increasing the value of a company, the effect of a balanced scorecard system may be assessed based on how the value has increased, the likelihood of implementing a particular area of the value increasing strategy has grown, as well as based on how the company management's focus on the final result, i.e. increasing the company value, has been enhanced.

The valuation of a company is also affected by whether it has innovations, as well as by the current stage of its innovation cycle. This can be factored in through planning and forecasting innovations, modeling cause–effect relations (Niven P.R. 2002), assessing the impact of these relations on the main areas where the company value is increased.

The implementation of innovations usually results in a stable excess of return on invested capital over the average level of ROE among companies belonging to the same class. However, such excess occurs only at the stage of mass production of a new item or at the stage of assimilation of a novel technology in mass production.

4. CONCLUSION

These are just a few examples of the need for a radical departure from the Modigliani–Miller theory principles, as well as for a transition to the new principles of justifying the optimal structure of a company's capital and value. The BFO theory is important not only because it can be used to more accurately determine the optimal structure of a company's capital and value. It is important that the transition to new principles of solving applied problems affords new and additional opportunities for further improvement of the company valuation theory. Based on the Brusov–Filatova–Orehova (BFO) theory principles, you will be able to more accurately determine the value of a company within a certain period of its lifecycle, to factor in additional effects on the company's value from its value increasing and other strategies, since they ultimately affect the company's value, as well as to take into account innovations and other processes because, in one way or another, they affect the company's value. Particular tools and methods for solving these problems may differ, which by no means belittles the importance of new company valuation principles and approaches developed under the BFO theory.

By using the example of two principles on which the theory, the accounting and valuation of a company within a limited time of its lifecycle are based; the orientation towards a more complete and differentiated risk assessment and accounting in the course of running a company and managing its market value, we have identified additional opportunities for improving the company valuation and the management of risks arising from such principles.

According to these principles, one should factor in and assess all material possible effects that are formed in the course of running a company on its value, even if such effects do not explicitly materialize until a certain point of time, are not taken into account during the market valuation and are present in the valuation as some kind of a virtual, imaginary value. Changes in the calculation of such virtual values of a company value may suggest that risks have accumulated both at the micro and macro level of economy. Studying the mechanisms created in the course of running a company and aimed at transforming the virtual values of its value into real positive or negative changes in the value can be an important tool for enhancing the effectiveness of risk management in companies and economic systems.

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