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Opinion

Recent Development of Modigliani-Miller Theory

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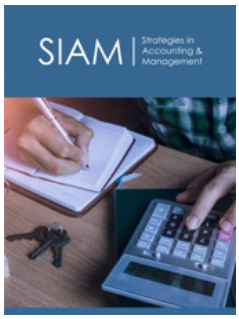

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One of the most important problems of financial management is the problem of the cost of capital and the capital structure of the company. Management of the company's capital structure (the ratio between the equity and debt capital of the company) allows the company's management to solve the main task - to increase the value of the company. This also applies to the problem of the optimal capital structure, which is one of the most important problems to be solved in financial management: i.e. with the capital structure, minimizing the weighted average cost of capital, WACC and maximizing the capitalization of the company, V. The first quantitative study of the impact of a company's capital structure on its (company's) financial performance was the work of Nobel laureates Modigliani and Miller [1-3]. Prior to their work, there was a traditional approach based on the analysis of empirical data. In 2008, a modern theory of the cost of capital and capital structure, the Brusov-Filatova-Orekhova (BFO) theory [4], was developed, which made the Modigliani-Miller theory a particular case of the BFO theory. Within the framework of the BFO theory, which is valid for companies of arbitrary age, many qualitatively new effects are found that are absent in the Modigliani-Miller theory, which is valid only for perpetual companies. The BFO theory destroyed some of the main existing principles of financial management, including the world-famous trade-off theory, which for many decades was considered the cornerstone of the formation of an optimal capital structure for a company. Brusov–Filatova–Orekhova proved the inconsistency of the trade-off theory and found the reason for this (section 4 of the monograph [4]). Despite the obvious shortcomings of the Modigliani-Miller theory, it is still widely used in the West. Over the past couple of years, we have generalized the Modigliani-Miller theory, taking into account some practical conditions for the functioning of companies: advance payments of income tax; frequent income tax payments; variable profit of the company, etc [5-9]. All this expands the applicability of the Modigliani-Miller theory in real economic practice.

Below we shortly discuss some of obtained very important results. In [9], the Modigliani–Miller theory was generalized to the case of paying income tax with an arbitrary frequency (monthly, quarterly, semiannually, or annually). This is one of the conditions for the real functioning of companies. The main idea was that more frequent payments of income tax affect all the main financial indicators of the company and lead to important consequences. A combination of analytical and numerical methods was used: theoretically, all the main formulas of the modified Modigliani-Miller theory were derived, and according to these formulas, the dependences of the company's main financial indicators on the frequency of income tax payments, on the level of leverage, and other parameters of MS Excel were studied. It is shown

that: (1) more frequent income tax payments change all Modigliani-Miller theorems, statements and formulas; (2) all key financial indicators, such as the weighted average cost of capital (WACC), the capitalization of the company V, the cost of equity ke, depend on the frequency of income tax payments; (3) when income tax is paid more often than once a year, as is the case in practice, WACC, company capitalization, V and the cost of equity ke depend on the cost of debt, kd, while in the classical Modigliani theory Miller with annual income tax payments, all these parameters do not depend on kd; (4) using the results obtained, the company, within the framework of the current tax legislation, could choose the number of income tax payments: it turns out that more frequent income tax payments are beneficial to both parties, the tax regulator and the company.

In [9] for the first time the Modigliani-Miller theory has been generalized for the case of variable profit, which expands significantly the application of this theory in practice. The possible areas of the application of this theory cover but not limited by corporate finance, business valuation, taxation, investments, ratings, etc. It has been shown that all theorems, statements and all formulas by Modigliani and Miller significantly change. The theoretical and numerical (by MS Excel) study have been combined. The analysis of obtained results shows that the weighted average cost of capital, WACC is not more the discount rate, the role of the discount rate transfers to WACC–g (where g is growing rate). WACC increases with g, while real discount rates WACC–g and k0–g decrease with g. This company value increases with g. The tilt angle of the equity cost ke(L) increases with g. This could modify the dividend policy of the company, because the equity cost is equal to the economically justified value of dividends. It has been discovered the qualitatively new effect in corporate finance: at rate $g < g^*$ the slope of the curve ke(L) turns out to be negative that could alters the principles of the company's dividend policy significantly. The generalized theory of Modigliani-Miller, taking into account some practical conditions for the functioning of companies: advance payments on income tax [5]; frequent income tax payments [9]; variable profit of the company [9], were applied by us in corporate finance, in investments, in the ratings of non-financial issuers [6] and project ratings and give qualitatively new results.

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