

THEORETICAL CONCEPTIONS OF OPTIMAL CAPITAL STRUCTURE

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Abstract:

Is there an optimal capital structure in a company? There is no definite answer to that question. There are many theoretical conceptions in which authors try to indicate a way to determine an optimal capital structure. Most of them are based on the assumption that the optimal capital structure is the one that provides the maximum company value. In practice, however, there are many problems with its determination. The problems already start on the stage of defining the notion of capital and they also occur in the area of capital selection, its valuation, evaluation of its cost and influence on company value. The purpose of the hereby article is to present the basic problems connected with determining the optimal capital structure. The article is of character of theoretical-cognitive study. When defining the scale of the research subject, firstly, it was attempted to concentrate on the issues of relatively permanent cognitive values, emphasizing ambiguous notions and the ones interpreted in a different way and to present the content having its reflection in the international scientific publications. As the result of the research conducted, the theoretical problem was indicated which constitutes a starting point for further empirical studies in the area of company finance management, especially capital management.

Keywords: capital, capital structure, company value, education, management.

1. INTRODUCTION

Each economic activity requires capital engagement. Capital is necessary for financing assets constituting first company equipment, it determines company's production capability (manufacturing, trade, services) in the course of conducting activity, enables financing development enterprises. The need for capital engagement on each stage of company activity rises a problem of selecting the type of capital and determining its sources, what directly translates into a creation of specific capital structure. The finance theory is not able to determine a universal formula which would enable an indication of a target optimal capital structure for a particular company. Research on the way of indicating an optimal capital structure and its influence on company value have triggered a creation of range of theories. The problem with this issue was stated by Christopher J. Bliss (1975) in the following way: 'when economists reach an agreement on the issue of capital, soon they will reach an agreement in all the other issues' (Bliss, 1975). In the article, on the basis of literature study of the subject, there are theoretical aspects presented concerning an optimal capital structure. The objective of the article is an attempt of systemization of the attitudes towards the problem. The article is of character of theoretical-cognitive studies. When defining the scale of the research subject, firstly, it was attempted to concentrate on the issues of relatively permanent cognitive values, emphasizing ambiguous conceptions and the ones interpreted in a different way and to present the content having its reflection in the international scientific publications.

2. CAPITAL NOTION AND TYPES

In the contemporary economic sciences capital notion is treated dually: as heterogeneous assets and homogeneous, discrete capital (Dobija, 2003, pp. 187-190). It stems from understanding the basic capital functions and concerns a differentiation of two categories. The first one is assets which serve an active role and remain on the side of balance sheet assets, the second one – capital, playing a passive role and having its reflection in the sources of assets financing, that is balance sheet liabilities. The research conducted in the hereby article was based on the second conception. Capital, as an economic category, is subjected to numerous classifications, however, from the point of view of the research undertaken in this article, a vital division is its basic one – into equity and foreign capital. Equity is the capital provided by the owners of the company or worked out by the company itself in the course of the activity conducted. A specific feature of equity is its open-ended character. Foreign capital is meant as the sources being at company's disposal for a particular time in connection with incurred debt. The use of foreign capital in the company in many cases is linked with the necessity of paying interest to creditors. In turn, foreign capital is divided into long- and short-term. Foreign long-term capital is meant as the sources for which the deadline of the last payment of installment, established on the balance sheet date, comes later than one year. However, short-term capital is the sources provided for the company for a period shorter than a year. In frames of this classification of capital there is also fixed capital which has a special significance in the analysis of capital structure. Fixed capital is defined as long-term capital engaged in the company. It consists of equity and long-term foreign capital (Szczepankowski, 2004, p. 91). Moreover, fixed assets should be financed by this capital. It results from a low pace of change into cash of these asset elements. In turn, the part of fixed capital which after covering fixed assets may also finance current assets, is called net operating or working capital. This capital indicates the risk level connected with financing current assets. Consequently, there may be three levels distinguished on which net operating capital may be shaped (Dębski, 2005, pp. 237-238). Operating capital may take the following values:

- positive – it means that some part of current assets is financed by fixed capital, what contributes to decreasing the risk of financial liquidity loss but at the same time prevents from investing the engaged fixed capital into more profitable fixed assets (Pyka, 2007, p. 28),
- neutral (zero) – it means that current assets are fully financed by short-term capital. Such situation usually occurs temporarily in companies,
- negative – it means that fixed capital is not sufficient for covering fixed assets and because of this, these assets are also partly financed by short-term capital. At that time there is a high risk of financial liquidity loss in the company, as in the moment of short-term liabilities repayment deadline the change of fixed assets elements into cash may turn out to be impossible due to a slow pace of exchange.

3. CAPITAL STRUCTURE AND ITS ROLE IN COMPANY FINANCE MANAGEMENT

In the considerations concerning company finance management the problem of capital structure serves an important role. The amount and structure of capital decide both about conducting the present activity and its economic effects as well as about the financing possibilities of investment and restructuring undertakings, also affecting effectiveness of these undertakings and determining company value. Therefore, it is important to determine the capital structure precisely. In the finance literature, there is no unification in terms of defining capital structure in the company, however, the notion of capital structure, liabilities structure and financing sources structure is used interchangeably. Nevertheless, they are not fully equivalent notions. Consequently, their essence should be explained.

Capital structure is most often defined as a relation of foreign capital to equity (Janasz, 2010, p.35). However, in many publications it is stated that capital structure is not equivalent with liabilities structure. According to this approach, in frames of capital structure there should not be debts included which the company does not pay interest on (that is trade payables, tax liabilities, amounts due to remuneration, etc.). Taking this into account, it is assumed that in company's capital structure there are the payables included which the interest is paid on as well as equity. When investing capital in the company, its creditors and owners take the possible incomes to obtain into consideration, that is interest, dividends and capital gains stemming from the increase of equity value. If capital understanding is limited to debt burdened with interest and equity, then net assets will be financed by this capital, that is assets decreased with the value of current liabilities not burdened with interest. Capital understood in such way is the value lower than the balance sheet sum (total assets or liabilities) (Duliniec, 2001, p.17). According to R. Masulis, R. Higgins, S. Ross and others (Masulis, 1998, p. 1; Higgins, 1992, pp. 344-345; Ross, Westerfiels & Jaffe, 1996, p. 4) capital structure is equivalent to liabilities structure in the balance sheet of company which is also called the financing structure at the same time. In turn, according to E. Helfert (Helfert, 1994, pp. 482-483) as well as J. Downes and J. Goodman (Downes & Goodman, 1991, p. 60), capital structure is only reflected in the configuration of fixed capital, that is relation of equity and long-term foreign capital. According to their approach, short-term capital engaged in the company is undergoing constant changes and in a long term does not decide about the capital structure. Another approach towards defining capital structure is presented by R. Brealey and S. Myers, they identify it with the structure of securities issued by the company, dividing them into debt and owner securities (Brealey & Myers, 1991, p. 397). In the hereby article capital structure is identified with liabilities structure. Consequently, the research object is the relation of equity and long-short-term foreign capital.

4. THEORIES OF CAPITAL STRUCTURE

The theory dealing with the problem of mutual cost-benefit relations connected with introducing foreign capital into company in the context of capital structure optimization in the company is called the static trade-off theory (Myers, 1984, p.575). In frames of this theory it is assumed that the value of assets and total capital invested in the company is constant and with this assumption, the optimal capital structure is searched which would provide the highest company value. According to the static trade-off theory, the company that uses foreign capital has its value shaped depending on both tax benefits (resulting from including the interest into tax costs) as well as on financial difficulties stemming from the risk of insolvency, that accompanies the use of foreign capital (Stohs & Mauer, 1996, pp. 279-313). According to the above, the value of company using foreign capital may be showed in the following way (Janasz, 2010, 35):

$$V_{cf} = V_e + PV_{tb} - PV_{fd}$$

where:

V_{cf} – value of company using foreign capital,

V_e – value of company financed mostly by equity,

PV_{tb} – present value of tax benefits connected with interest payment on foreign capital,

PV_{fd} – present value of cost of financial difficulties.

The issue of shaping the capital structure also manifests its reflection in many other theories and it is one of the basic, still discussed problems of financial economy and of increasing the company value. In literature there may be a few suggestions found concerning a classification of capital structure theories. They may be divided into two groups. On one hand, there are theories which assume the existence of optimal capital structure, on the other hand, there are theories which postulate that there is no well defined purpose of capital structure selection. In the first group, there is, among others, the

static tradeoff model, based on assumptions by F. Modigliani and M. Miller (Modigliani & Miller, 1958, pp. 261-297), signaling theory, agency theory, free cash flow theory. In the static tradeoff theory it is assumed that the capital structure may be optimal only when the marginal value of tax benefits from additional debt was equal to marginal value of the cost of financial difficulties resulting from the additional debt.

In the second group of capital structure theories there is the pecking order theory which bases on the assumption that there is no optimal structure (Vasiliou, Eriotis & Daskalakis, 2009). According to this theory, companies prefer internal financing (income, amortization) and only in a situation when internal cash flow is not sufficient for activity financing, they reach for foreign capital (loans, credits). As a last resort, they launch own external financing, for example conducting shares issuance. According to this approach, it is not possible to define financial leverage in a good way because it has no distinguishing into own internal and external capital among which the first one is preferred in a first turn and the second one takes the last place in pecking order (Jurkowski, 2005, p. 297). The order of using sources which constitute the company financing structure is confirmed by the theories linking making investment and financial decisions. According to them, when financing material investments, the company prefers using internal to external capital (Myers & Majluf, 1984). Preference of internal capital mostly results from the willingness to omit the financial market and maintaining control over company's resources. There may even be quite brave theses found that obtaining foreign capital by the company does not have an influence on its value, as a positive effect of financial leverage is eliminated by negative information concerning company's debt and its financial situation (Jensen & Meckling, 1976).

Apart from the aforementioned ones, there are also other classifications of capital structure theory among which are the following ones: theory of taxation, theory of transaction cost and theory of information cost (Duliniec, 2000, p. 502).

5. INDICATING AN OPTIMAL CAPITAL STRUCTURE

The research on capital structure has been conducted by two American scientists: F. Modigliani and M.H. Miller. In the second half of 20th century they proposed first model solutions, described as MM models from initials of their names. They based their research concerning capital structure on the following assumptions (Modigliani & Miller, 1958):

- particular companies may be classified into the groups of a different risk level (risk class). The companies in the same group are burdened with the same degree of operational risk, measured as a standard deviation of equity profitability ratio,
- securities issuance and cost connected with their servicing are not included in the cost analysis, securities are optionally divided and information about the capital market is commonly available out of charge,
- there are no taxes,
- companies do not go bankrupt and for this reason interest on capital is the same for everyone because the interest rate on the capital market is deprived of risk.

On the basis of such assumptions the two theorems were formulated. The first one says postulates that company value does not depend on capital structure and weighted average cost of capital (WACC) does not depend on the amount of debt and is equal to the cost of company's equity not using foreign capital, being in the same risk group. Company value in this case is determined on the grounds of the following formula (Pluta, 2000, p. 120):

$$V_U = V_L = \text{EBIT} / \text{WACC} = \text{EBIT} / C_{eU},$$

where:

- V_U – value of company not using foreign capital (unlevered firm),
- V_L – value of company using foreign capital (levered firm),
- C_{eU} – equity capital cost of company not using foreign capital (unlevered firm),
- EBIT- net operational income (earnings before income tax),
- WACC – weighted average cost of capital.

The second theorem of MM model without taxes relates to a mathematical dependence between changes in the cost of equity capital depending on the degree of foreign capital financing in the company. The formula describing the second MM theorem is following (Shin-Ichi, 2010):

$$C_{eL} = C_{eU} + (C_{eU} - k_d) (D/E),$$

where:

C_{eL} – cost of equity capital of company using foreign capital (levered firm),
 C_d – cost of foreign capital (debt),
 D/E – debt to equity ratio.

According to the above, benefits achieved due to the use of cheaper foreign capital (C_d) are reduced by the increase of equity capital (C_e). Therefore, obtaining foreign capital by the company will not influence on the value of weighted average cost of capital and at the same time, on company value.

After introducing income tax to the MM model, the value of levered company is exceeding the value of company only financed by the equity capital (Leland, 1994, pp. 1213-1252). The difference is the value of so called tax shield, also called deferred tax – DT. It is the amount of tax savings connected with decreasing the basis for income tax with debt. Such dependence may be described as follows:

$$V_L = V_U + DT.$$

Company value without the participation of foreign capital (V_U) may be calculated from the following formula:

$$V_U = E = EBIT(1-T)/C_{eU}.$$

The second theorem in MM model with income tax, similarly to the model without tax, concerns the amount of cost of equity. This cost (C_{eL}) is equal to the cost of equity in the unlevered company and risk premium which in this case does not depend on the difference between the cost of company's equity not levered with the cost of foreign capital, tax rate and amount of foreign capital engagement rate, what may be described in the following formula:

$$C_{eL} = C_{eU} + (C_{eU} - C_d) (1-T) (D/E),$$

According to the above, the cost of equity is rising along with the value of debt involved. However, in this case the pace of cost of capital increase is slower than in MM model without tax. The value of the pace rise decrease is described in this model using the expression (1-T).

In 1977 M.H. Miller suggested another version of the model allowing to indicate the optimal capital structure. This version also included personal taxes paid by investors apart from the corporate income tax. According to this approach, company value financed mostly by equity is indicated by the formula (Miller, 1977, pp. 261-275):

$$V_U = EBIT (1-T_c) (1-T_e)/C_{eU},$$

where:

T_c – corporate income tax rate,
 T_e – shareholders' income tax rate.

However, in case of financing by foreign capital, company value is a sum of value of unlevered company and additional value obtained due to tax savings, according to the formula (Levati, Qiu, & Mahagaonkar, 2012):

$$V_L = V_U + [1 - (1-T_c) (1-T_e)/(1-T_d)]D,$$

where:

T_d – income tax rate for foreign capital providers.

In frames of the presented model, Miller stated that the value of tax shield is shaped by the corporate, shareholders and capital providers' income tax rate (T_c , T_e , T_d) and by the market debt value (D). Miller's model works properly with the assumption of market equilibrium existence.

When analyzing MM model with income tax and Miller's model, one may come to conclusion that companies should maximize the value of debt rate (Brennan & Schwartz, 1978, pp. 103-114). In contrary, such approach is rarely met in companies. This phenomena may be explained using the exchange model (Galai, 1998, pp. 143-157). Exchange model includes, similarly to MM model with income tax, the effect of taxes influence on company value but it also takes representativeness cost and financial failure (bankruptcy) cost into account. Exchange model relates to a common regularity, according to which the company increasing debt rate must spare a greater part of operational income for interest payment. Furthermore, the amount of expected operational income is not certain and variable and debt cost is constant. Consequently, the increase of debt rate triggers risk rise in a situation in which the amount of operational income may be not sufficient for interest payment (Morris & Shin, 2004).

According to exchange model, the value of company financed by the foreign capital, additionally including present value (PV) of cost of representativeness (CR) and present value of expected bankruptcy cost (CB) is as follows (Pluta, 2000):

$$V_L = V_U + DT - PV[E(CB)] - PV(CR).$$

Company value grows along with the increase of debt ratio but after a particular debt level it starts to decrease because of the rise of bankruptcy cost (Gilson, 1997, pp. 161-196).

Bankruptcy cost is the cost accompanying the insolvency process. It may be divided into direct and indirect cost (Warner, 1977, pp. 337-347). The first group includes court cost, lawyers remuneration, administration expenses and others. Indirect cost on the other hand is the reflection of losses caused in the results of expected activity stoppage. The company in this period often decreases the quality of its products, sells some assets out. Both customers and contractors are afraid of problems which may be connected with a transaction with such company, especially in the area of making payments, determining the conditions of crediting, etc. (Leland & Toft, 1996, pp. 987-1019).

The second type of cost occurring in the exchange model is the representativeness cost. This cost is linked to the conditions set by foreign capital providers concerning the policy used by them. Capital providers want to be certain that the policy realized by the financed company allows to pay interest off on the debt incurred. For this purpose they often sign contracts which entitle them to take control over the activity of financed company, limiting the freedom of making decisions in some areas of company's activity, e.g. limiting sales of fixed assets, amount of dividend paid, possibility of incurring new debt, etc. The control of capital provider may also come to sending the representatives of capital providers to participation in the board or board of supervisors of the financed company. The cost of representativeness is then a cost of activity monitoring of financed company (borne by the company) and cost connected with the lost effectiveness of the board. The more debt is incurred by the company, the bigger influence on its activity is demanded by capital providers. Therefore, the company may maintain a low level of debt rate in order to reduce the cost of representativeness.

An interesting of development of MM theory was the model by H. DeAngelo and R. Masulis (Masulis, 1988, p. 1). The essence of their considerations were tax shields without interest and their influence on company value. They indicated in their work that the company having a tax shield without interest may have the same value as the other ones not using the effect of high financial leverage; it is connected with a substitute character of connection between the tax shield and investment shield, what points to such a selection of debt level which is negatively connected with the tax shields of substitute character. At the same time, each decrease of investment tax shield should cause a growth in company's debt. The aforementioned researchers concluded on this basis that the companies which have a lower level of investment shield also prefer a bigger share of foreign capital in financing.

The problem of the optimal capital structure was also attempted to be solved in practice by Groth and Anderson. They provided practical indications thanks to which the company may determine how close it is to the optimal capital structure (Groth & Anderson, 1997). However, such indications are grounded on information coming from the capital market. In case of companies not listed on stock exchange such analysis is not very reliable (McClure, Clayton & Hofler, 1999, pp. 141-164).

6. CONCLUSIONS

The theories presented above, despite a great substantial value, do not explain the problem of capital structure in a sufficient way. Therefore, some research is still conducted on their basis. One of the most interesting research directions on this matter is a dynamic approach to capital structure (Goldstein & Leland, 2001, pp. 483-512). In contrary to other theories, in this approach the decisions about relation between debt and equity are considered as dynamic decisions, being a reaction to changes in company value (Fisher, Heinkel & Zechner, 1989, pp. 19-40). Furthermore, in this approach there are only the decisions considered about increasing the debt level as its decrease may be connected with high transaction cost. This could seriously discourage managers from decreasing company's debt.

The issues raised in the hereby article come from the foundations of capital structure theory and they only constitute a starting point for further research. In face of the great number of problems occurring in the issue of optimal capital structure it seems that this theory will be still developing. A special significance in this matter have empirical studies conducted in some particular companies and industries. They allow to verify the thesis set by theoreticians and to come to new conclusions.

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