SCENARIOS OF GROUNDING THE FINANCIAL STRUCTURE OF THE ENTERPRISE

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In conformity with the basis objective of the financial function of the enterprise, the managers' preoccupation is to continuously increase the value of the enterprise, in order to maximize it proportional to the structure of the actives it is formed of. If the objective of maximizing the enterprise value is aimed for each investment project that is to be created through obtaining an updated flat value as high as possible, the enterprise considered as a sum of investment projects will increase in value. But the updated flat value is higher either due to the obtaining of some higher flat cash-flows, or to the registration of a balanced medium cost of the invested capital as low as possible, a balanced medium cost which represents the update rate of the flat cash-flows of the investment.

Therefore, the creation of an optimal financial structure of the invested capital will allow the act of minimizing the balanced medium cost of the capital and implicitly the act of maximizing the enterprise value.

As a result, there exists interdependence between the *capitals' costs – financial structure* and that is why the issue of optimizing the capital structure makes the object of *the capital structure policy*, being an issue of financial management which differentiates, from the point of view of the efficiency, the competitors with similar financial efforts.

The optimization of the financial structure implies the establishment of that combination between the borrowed and owned capitals, in terms of profitability and risk, which is to maximize the value of the enterprise's actions[1].

Theoretically, we can speak about an optimum between actions and debts, but there has not been found a *magic formula* with which we can calculate the perfect ratio between the two. Yet, in the basis of the combinations' analysis that functioned properly in the past and of the combinations made by the companies which had success at a certain point, and considering the cyclic evolution of the economic activity, it is observed the fact that the maintaining of a reduced degree of indebting makes more bearable the process of undergoing a regress period. Therefore, the financial manager can not decide upon a permanent financial structure, but he has to continuously revise the ratio between the financing through personal capitals and through debts, so that the capital structure be adequate. The conclusion is that the capital structures are dynamic.

Even if it hasn't been found an accessible formula for the establishment of the optimal financial structure, there exists a helping guide for managers entitled **the FRICTO[2] guide**, an acronym which comes from the English denomination of the operations to follow in order to choose the capital structure: **flexibility, risk, income, control, timing, other:**

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[1] Opritescu, M. Sichigea, N. Dracea, M.- The financial management of the enterprise, Dova Publishing House, Craiova, 1996, page 240

[2] Silbiger, S.-MBA in 10 days, Andreco Educational Group Publishing House, the second edition, Bucharest, 2006, pages 215-216

• **Flexibility** that is how much flexibility does the manager need in order to cope with some unpredictable events, such as new competitors or actions taken against the enterprise?

• **Risk**, what risk degree does the manager accept when he confronts himself with predictable events, such as the decline area of the business cycle, the strikes or the penury of raw materials? In certain domains (the demand of toys is strongly influenced by the production of cartoons for children), the cautious managers should be prepared for a breakdown of the sales and that is why the ratio *debts/personal capitals*, should be lower;

• **Income,** what level of the interests and dividends can be sustained by the income of the enterprise? The financial manager has to elaborate pertinent previsions of the cash-flows in order to establish the level of payments that the enterprise can make;

• **Control,** to what extent does the manager wish to share out the property right on the enterprise with investors outside of it, especially in the case of smaller companies in which the main shareholder is the manager?

• **Timing,** that is to what degree is the enterprise overvalued on the capital market or does the capital market offer attractive interests' loans? If the manager believes that the company's stock are overvalued then he should launch a new emission of stock, and if, on the contrary, they are too cheap, then he should buy them back, therefore decreasing or increasing the degree of financing by indebting;

•**Other,** respectively, the decision of financing through personal capitals made by the manager is influenced by the banks' refusal to loan the enterprise as a result of a high degree of plunging into debt, or of the usage of some inaccessible interests for the enterprise endure ability level.

The financial structure optimization, after following the stages assumed by the guide, can be accomplished by two means: *the analysis of the installments' dynamics of financial structure* and *the theory of Modigliani and Miller.*

The financial structure installments/rates represent the orientation parameters which are to lead the enterprise regarding the act of influencing the level of efficiency of the financial sources cost, but are also hints for potential creditors regarding the risk of regaining the loaned capitals.

Therefore, there are calculated and interpreted various financial structure rates, of which we can mention:

• The rate of global indebting = Total debts / Personal capitals, its level has to be sub unitary, as low as possible. As long as the level of indebting increases, there takes place a decrease of the stock course on the market. The banks will demand a higher interest rate, which can lead to the ceasing of loaning if the indebting level is considered critical. At the same time, the indebting increase will progressively diminish the enterprise profitableness, the stockholders having to give up a significant part of the dividends and capitalize the profit as a premise of the future dividend increase, a fact reflected by the Gordon and Shapiro pattern of spotting the stock course;

• the rate of financial autonomy =Debts>1year/Personalcapitals, which offers hints to the enterprise permanent capitals structure, respectively, to the ratio in which there can be found the medium and long time loans and personal capitals.

Complementarily, there can also be used helpful rates in the analysis, which do not strictly refer to the structure of the balance sheet liabilities, as such:

• The degree of gross self-financing = the gross self-financing/ Investments, a rate which expresses how much of the investment value is being covered from the enterprise internal resources (flat profit and redemption);

• The degree of flat self-financing = the flat self-financing/ Investments, a rate which expresses how much of the

investments value is being financed from the flat profit dedicated to the development;

•The investments rate = Investments/ Value added, expresses the enterprise tendency to invest, giving a estimation regarding the enterprise development as a result of the policy of investments;

• The rate of keeping the = Gross self-financing/ personal resources Value added, expresses the tendency of enterprise saving, also capitalize it proportional to the created richness (the value added).

The interpretation of each of these rates suggests one or another important aspect of financing and the structure of this financing. Yet, in order to increase the degree of exactness of the analysis results and implicitly of the substantiation of future strategic decisions, it is also necessary that other aggregated indicators be calculated in order to multicriterial express the influence of various financing sources and at the same time, establish in a more realistic way the enterprise position on the market.

The theory of Modigliani and Miller substantiates the logical relation between the capital's balanced medium cost and the financing structure in two hypotheses:

• Under the hypothesis of the absence of taxing, case in which the financing structure produces no incidence on the capital's balanced medium cost;

• Under the hypothesis of the existence of taxing, when the financing structure can increase the enterprise value.

In the absence of taxing, the authors based their conclusions on a set of hypothesis which characterize the perfect market (the access on the market equal for all the investors, their information level being identical, no costs for the process of transaction on the market), but taking into consideration the couple profitableness-risk, as there also exist on the market possibilities of non-risk profit, and the operations done by the investors by assuming supplementary risks aim at increasing the investment efficiency when the market is imbalanced.

When the market is imbalanced, the investors will sell stock from the indebted enterprise and buy stock at the non-indebted enterprise (arbitration operations) until the elimination of profit possibilities, a state registered when the values of the two enterprises are equal and when the balanced on the market is accomplished. The equality of the two enterprises' values is accompanied by the one of the capital's balanced medium cost, the conclusion of the two economists, Modigliani and Miller, being the one of the *neutrality* of the financing structure that is the capital's balanced medium cost is independent from the financing structure. The income permitted by the contraction of some loans with a lower cost rate is always entirely absorbed by the supplementary cost stimulated by the financial risk bonus demanded by the indebted enterprise shareholders as a result of the incorporated financial risk.

Under this hypothesis, the financing decision does not induce the way of sharing the income between shareholders and creditors, and the notion of optimal financial structure looses its relevance.

Under the hypothesis of taxation, the financial structure is not neutral anymore, because as long as the interest is deductible in the calculation of the taxable profit, the financial structure influences the enterprise value. In order to confirm this hypothesis's conclusions, it is being started from the means of creating the enterprise flat profit and especially from the drawing up of the consequences of taxation on the value of the two categories of enterprises, non-indebted and indebted.

The incidence of taxation on the flat profit appears as such:

	Enterprise N (non-indebted)	**Enterprise I (indebted)**
Gross result from exploitation	RBE	RBE
Interest	0	$R_F D$
Current gross result	RBE	RBE - $R_F D$
Flat(after taxation) result (profit)	RBE(1-T)	(RBE – $R_F D$)(1-T)

in which:
R_F = the non-risk profitableness rate
D = the loaned capital (debts)
T = the tax share on the profit

By the updating of the flat profit depending on the rate of profitableness correspondent to the shareholders, that is the rate of the personal capital cost (Rc), on an indefinite time horizon, it is obtained the value of the non-indebted enterprise (Vn), as it follows:

$$\mathbf{V_N} = \frac{RBE(1-T)}{R_C}$$

For the unindebted enterprise, the flows generated by the exploitation period must assure both the remuneration of the stockholders, and of the creditors, thus:

- (RBE - R_FD)(1-T) – the gross profit for the stockholders

+

- R_FD - the interest for the creditors

= RBE(1-T) + TR_FD- the due exploitation flows

The due exploitation flows comprise two components:

- RBE(1-T), equal to the gross profit after the taxes at the indebted enterprise N, which must be put up-to-date at the same rate , R_C;
- TR_FD, equal to the economy of duty on interest, that is an unrisky component that can be brought up-to-date with the rate of the free risk profitableness.

So, the value of the indebted enterprise (V_I) is determined through the bringing up-to-date of the categories of flows, thus:

$$V_I = \frac{RBE(1-T)}{R_C} + \frac{TR_F D}{R_F},$$

or

$$\mathbf{V_I = V_N + TD}$$

So, $V_I > V_N$, the value of the indebted enterprise is bigger than the value of the unindebted enterprise with the up-to-date value of the tax economies on interest, (TD).

The optimization of the financial structure in the conditions of the taxation of the profit lies in the indebting, as much as possible, to the maximum. But, the rate of the profitableness demanded by the stockholders is bigger to be able to also cover the financial risk of indebting. As such, in the calculation, there must also be taken into consideration the incidence of the bankruptcy risk as following the enterprise's incapacity to honour on time all the payment obligations, and also the costs associated to the bankruptcy.

These costs are either legal or administrative costs, or opportunity costs, connected to the loss of confidence of the providers or the creditors of the enterprise, mainly of the banks.

The taking into consideration of the bankruptcy risk caused by the increase of the proportions of the indebting, which determine the bank to redraw any money availability appeared in the client's account as dates of payment of the loans' reimbursement, modifies the calculation relation of the value of the indebted enterprise with the

up-to-date value of the bankruptcy cost, $VA_{CF,}$ thus:

$$\mathbf{V_I = V_N + TD - VA_{CF}}$$

For the maximization of the value of the indebted enterprise, there must be followed the realization of a compromise between the up-to-date values of the tax economies on paid interests and the losses entailed by the up-to-date value of the bankruptcy cost.

Though, the determination of the average minimum level-headed cost of the capital, which takes into consideration the measurement of the bankruptcy risk and which allows the maximization of the value of the enterprise is a complicated essay. This is mostly realized in a pragmatic manner. The managers of the enterprise must search and, following the analyses, must establish that financial structure that realizes the objective of the maximization of the enterprise's value.

The substantiating of the decision concerning the structure of capital means the crossing of two stages:

- the calculation of the capital's overage level-headed cost (CMPC);
- the evaluation of the free cash flows, the value of the enterprise.

The financing decisions follow an optimum combination between the issued actions (drawn capital) and the enterprise's debts, resulted from loans.

The capital's overage level-headed cost (CMPC) is calculated by the following relation:

$$\mathbf{CMPC = Rc}\frac{C}{C+D}\mathbf{+ rd}\frac{D}{C+D},$$

where:

Rc= the rate of the cost of the proper capital (the profitableness demanded by the stockholders;

C = proper capitals (market value);

D = capital loaned on medium and long term (the market value of debts);

rd = the rate of the liability cost (rd= d(1-T); d=interest rate; T= tax quota of profit).

In the CMPC calculation, there must be taken the market value of proper capitals and debts, because the market is the real measure of the value that the owners of shares and debentures give to their investments. The cost of debts is an explicit cost, reflected in the account of profit and loss of interests, commissions and other banking expenses, deductible expenses in the calculation of the taxable profit. In the conditions in which the enterprise operates with various loans, the rate of the liability cost, **rd**, is that tax of bringing up-to-date, that determines the equality of the sum of the contracted debts with the flows of funds (the annuities=the reimbursement rate+ the annual interest) brought up-to-date with this rate:

$$\mathbf{D =} \sum_{i=1}^{n} \frac{Ai}{(1+rd)^{i}},$$

where:

Ai = annuities;

n = date of payment in years.

Being known: D, Ai and n, the rate of the liability cost rd is determined through successive essays and then through linear interpolation.

More difficult to be calculated is the cost of the proper capital, perceived as the profitableness rate demanded by the stock-holders. This depends on the size of the future profit and on the decision of the General Meeting of the Stock-Holders concerning the proportion of the distribution of the gross profit for dividends.

So, the cost of the proper capital is calculated according to predictable elements but with a high probabilistic degree of realization. The cost of the proper capital concerns the total amount of proper capitals, indifferently to their origin, external (through contribution of capital) or internal (from auto-financing, through the capitalization of a part from the gross profit remained after the taxation) and is determined either through the model of the up-to-date dividends with the particular model of Gordon and Shapiro, or through the

equilibrium model of financial assets (Capital Asset Pricing Model-CAPM).

Gordon and Shapiro's model is a simplified variant of the model of the up-to-date value, according to which the price (the rate of exchange) of a share is equal to the up-to-date value of the future cash flows that it generates: the dividends during a certain period of time and residual value (the selling rate at the end of this period). The used up-to-date rate is the profitableness rate demanded by the stock-holders, taking into consideration the perspectives of the enterprise and the risk that these incorporate.

According to the general up-to-date model, the price or the up-to-date rate of exchange of the shares (P_0) is following one:

$$\mathbf{P_0} = \sum_{i=1}^{n} \frac{Di}{(1+Rc)^i} + \frac{Pn}{(1+Rc)^n},$$

where:

Di = the share dividend anticipated on the investment horizon (n);

Rc = the profitableness rate demanded by the stock-holders (the rate of the proper capitals cost);

Pn = the re-selling rate of the share after **n** years.

As the general model (Irving Fisher's formula) supposes the difficult estimation of the dividends during the given period of exploitation of the investment, as the even more difficult estimation of the selling rate of the shares after **n** years, Gordon and Shapiro proposed a more simplified model that takes into consideration the dividend for the following year (D_1) and a constant rate of the increase of the dividend on an infinite horizon (g):

$$\mathbf{P_0} = \frac{D1}{Rc - g}$$

It results that the cost rate of the proper capital, Rc, is:

$$\mathbf{Rc} = \frac{D1}{P_0} + g$$

In Gordon and Shapiro's model, the cost of proper capitals contains two components:

- the efficiency of the shares, $\frac{D1}{P_0}$ (the dividend of share);
- the increase of the dividend on share, g.

Paradoxically, the rate of the cost of proper capitals doesn't depend on the dividend politics, but on the perspectives of the enterprise' economy and its characteristics, expressed in terms of risk. According to the model, a high increase rate of the dividend on share doesn't imply a higher capital cost, because there is compensation between the components of efficiency and increase. A bigger distribution of dividends diminishes the increase and vice versa, a higher capitalization of the profit accelerates the increase.

The evaluation of the cost of proper capitals through this model put, mainly, the problem of the estimation of the increase rate of the dividend, **g**.

This estimation is realized either through the estimation of past tendencies, or through the modelling of the profitableness expected by the stock-holders, the financial profitableness, R_f. If the gross profit is entirely re-invested, the increase rate of the dividend will be equal to the financial profitableness. But if from the gross profit is retained a quota, **b**, for the capitalization (auto-financing), the increase rate of dividend will be:

$$\mathbf{g = b*R_f}$$

From the analyses on the financial markets, it is noticed that there is a indirect correlation between the profitableness of investments and the incorporated risk.

The equilibrium model of the financial assets emphasizes the connection between the level of profitableness and the level of the risk and the evaluates risk premium for the investor, thus:

$$R_c = R_f + ß_s *(R_m - R_f),$$

where:
R_f = the free risk profitableness rate;
$ß_s$ = the risk value, it measures the sensibility of the profitableness rate of a title towards the average profitableness of the market;
R_m = the average profitableness of the financial market;
$ß_s *(R_m - R_f)$ = the risk premium.

The cost of proper capitals is extremely dependent on the financial lever of the enterprise, respectively the ratio between the loaned capital and the proper capital ($\frac{D}{C}$). As the lever means risk, in the calculation it is taken the factor "beta", **ß$_s$**, which takes different values for different levers and which is published by the stock market for the quoted enterprises. The financiers start from the current value of "beta" and re-calculate it for an unleveled degree, **ß$_u$**, step A, after which they can be calculate the corresponding value of every hypothetical capital structure, **ß$_l$**, step B, thus:

- Step A: the zero obligation degree

$$ß_u = \frac{ßl}{1 + (1 - T)\frac{D}{C}}$$

- Step B: with a certain obligation degree

$$ß_l = ß_u * 1 + (1 - T)\frac{D}{C}$$

l = capital structure with lever (with debts);
u = capital structure without lever (without debts).

For the fundament of the decision of forming the financial structure of an enterprise quoted to the stock market, we consider a scenario in three hypotheses: 0% or 25% or 50% liability degree, on the basis of the data in evidence and of the calculations, resulting the following situation:

-Thousands lei-

Crt. No.	Indicators	Liability scenarios		
		0%	25%	50%
1	**The accounting value of the debts indicator -%**	**0**	**25**	**50**
2	The accounting value of debts	0	2.500	5.000
3	The accounting value of proper capitals	10.000	7.500	5.000
4	The market value of debts	0	2.500	5.000
5	The market value of proper capitals	10.000	8.350	6.700
6	**The market value of the indicator of debts - rd. 3/(rd. 3+ rd. 4) - %**	**0**	**23**	**43**
7	The interest rate of the contracted credits (d)-%	0	10	10
8	The tax quota on profit -%	16	16	16
9	**The rate of liability cost (rd) – rd = d(1-T) -%**	**0**	**8**	**8**
10	Beta without lever (**ß$_u$**)	0.8	0,8	0,8
11	**Beta with lever (ß$_l$)**	**0,8**	**1,0**	**1,3**
12	The rate of the free risk profitableness -%	8	8	8
13	The average profitableness of the market -%	15	15	15
14	**The cost of proper capitals (Rc)** $R_c = R_f + ß_s *(R_m - R_f)$	**0,136**	**0,15**	**0,171**
15	**The medium level-headed capital cost (CMPC)** $CMPC = Rc\frac{C}{C+D} + rd\frac{D}{C+D}$	**0,136**	**0,134**	**0,132**
16	The annual cash flow before the payment of interests and taxation (the available cash flow)	3.000	3.000	3.000
17	**The value of the enterprise**	**22.059**	**22.388**	**22.727**

The capital structure that minimizes the minimum level-headed capital cost is: 50% proper capitals and 50% loans. This thing is also reflected in the value of the enterprise, which registers an increase because of the lever effect of liability. The increase would have been even more obvious if the taxation quota on profit had been bigger, respectively if the fiscal advantage, the tax economy determined by the deductibility of the resulted interest, had been bigger.

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