## CRITICISM OF DIFFERENT RETURN REQUIREMENTS IN THE CASE OF CAPITALS OF VARIOUS ORIGINS

Managerial decision preparing methods provide information mainly for top managers, their aim is to assist managers in making the most solidly based managerial decisions possible and to provide for the information needs of resource managers as much as possible. These relevant data and pieces of information provide the best possible conduct of business in a given economic environment under given conditions (Kilger, 1992; Castello et al, 2001).

The methodologies of these managerial decision making preparations since they are not basically financial decisions are based on the theories determined primarily by micro-economics and management sciences (corporate and business economics, management economics) and take into account these while elaborating their methods used in decision founding (Chikán, 2008). A fundamental starting point in managerial decision-making preparation is the concept of Marxian average profit and the derived normal profit, which can be used as bases to calculate the estimation of minimum profit requirement for the capital, employed in the enterprise. Marxian extra profit and its micro-economic derivate, the economic profit, are essential from the aspect of profitability and economical limit point judgement (Du. Plessis et al, 1981). The knowledge of the extent of the above-mentioned normal profit or extra profit is indispensable for managers to make relevant decisions and to follow return requirement as economic directive (Vroom-McCann, 2009; Southwick, 1985).

Another problem is that financial approach methods consider the interest costs of loans, but not taxes to be paid, as a return on investment in investment profitability calculations. This means that the profit after tax, the depreciation and the interest costs are together considered as the net profit of the project which is inaccurate, of course – while, from economic aspects, the profit before tax, the depreciation and the interest costs together constitute for the net profit. It is not necessary to estimate the tax to be paid since the profit of a given project does not necessarily result in tax liability on overall company level (Gänßlen et al, 2012).

Certain authors (Illés, 2008) think that the problem is that the special methodological solutions of financial literature go beyond the boundaries of finance and we see a dominance of decision-preparing models that are methodologically not in harmony with microeconomic and business economic principles (Witt-Witt, 1993).

The existence of the above-mentioned problem is proven by the international routine that managerial accountancy disciplines are usually taught by experts of accountancy and finance although this subject belongs to business sciences. The problem originates from the misinterpretation of the English word "accounting". Accounting primarily means financial accounting, but it can mean business accounting as well which inevitably belongs to the business sphere (Atkinson, 2012). Instead of "managerial accountancy" we should use the term "managerial business economics" since this subject deals with - according to the authors - business planning, costs, performance and assessment methods, through financial

and non-financial indicators, which are integral parts of value creating processes during the operation of a company.

Due to the increasing significance of financial issues and the overgrowth of the subject, the opinions posing different demands in connection with the profit of shareholder's capital (own capital) and loan capital are becoming increasingly problematic. The doctrines of differentiated return requirements give a false notion for the readers (even worse, for university students) that says it is enough if loans create a lower profit than own capitals (Du Plessis et al, 1981; Katits, 2002; Szabó, 2004). These doctrines suggest that long-term tied-up own capitals must realize more profit than foreign capitals tied-up in the same project (business environment). Let us examine these problems more closely.

## The weighted average cost of capital (WACC) formula

In some technical literature it is called weighted average cost of capital rate (Brealey-Myers, 2000) while in others it is called corporate average cost of capital (Illés, 2002). Companies usually calculate weighted average cost of capital in order to determine a *discountrate*, which is appropriate for assessing investment proposals. The discount rate (average corporate cost of capital) is the weighted average of the individual costs of different financing resources. The proportion of individual financing resources inside the capital structure creates these weights. In summary we can say, the discount rate used during the assessment of investment proposals is the weighted average cost of capital that reflects, in percentages, how much an additional unit of capital of given composition costs for the company. In general, weighted average cost of capital can be composed in the following way:

$$\mathbf{r_{WACC} = E_S \times i + E_h \times i_k(1\text{-tax rate})}$$

$E_S$ = proportion of own capital in the capital structure

i = cost of own capital

$E_h$ = proportion of loan capital in the capital structure

$i_k$ = cost of loan capital (cost of interest)

The weighted average cost of capital in the above-mentioned form can be found in many forms in technical literature, but they essentially have the same content (Brealy-Mayers, 2000; Illés, 2008).

In the following we analyse the general form of WACC from the aspect of finance and we also analyse the capital use costs and profit requirements in connection with capital parts of different origins.

In the knowledge of the general formula of WACC (Table 2), we can say that if the profit from a new project is enough to cover the cost of interest calculated using an interest rate of the loan used (reduced by the tax rate), and if it provides a high enough return on invested own capital, then it meets return requirements (the project is economical).

Let us look at an actual example how to calculate WACC. The capital structure of a business enterprise consists of 50% own and 50% foreign capital (loan). The risk free interest rate is ($i_h$) 7.5%, market risk premium is ($i_p$) 3.5%, factor β is 1.1. The company gets the loan at an interest rate ($i_k$) of 10 % and the corporate tax rate is 20%.

**Table 2**

**WACC elements and their costs**

| WACC elements | Contents |
|---|---|
| Costs of own capital (i) | Risk-free interest rate + (market risk premium × individual risk factor) = cost of own capital $i_h + (i_p \times \beta) = i$ |
| Profit demands of entrepreneurs ($i_v$) | $i_v = i_p \times \beta$ |
| Cost of foreign capital | Risk-free interest rate + credit risk premium above risk-free return = cost of loan capital $i_h + i_e = i_k$ |
| Expected return on own capital | The proportion of own capital in the capital structure × cost of own capital$E_S \times i$ |
| Cost of loan capital after tax | $i_k(1 - \text{tax rate})$ |
| Expected return on loan capital | $E_h \times i_k(1 - \text{tax rate})$ |
| Weighted average cost of capital (WACC) | $r_{WACC} = E_S \times i + E_h \times i_k(1 - \text{tax rate})$ |

*Source: created by author*

**Table 3**

**Determining the WACC of the business enterprise in the example**

| Name | Calculation |
|---|---|
| Cost of own capital | $i = i_h + (i_p \times \beta)$<br>$i = 7.5\% + (3.5\% \times 1.1) = 7.5\% + 3.85\%$<br>$i = 11.35\%$ |
| Cost of foreign capital | $10\% = 7.5\% + i_e \rightarrow i_e = 10\text{-}7.5 = 2.5\%$<br>$i_k = 10\%$ |
| Expected return on own capital | $E_S \times i = 0.5 \times 11.35 = 5.67\%$ |
| Expected return on foreign capital | $E_h \times i_k(1 - 0.2) = 0.5 \times 10 \times 0.8 =$<br>$= 0.5 \times 8 = 4.0\%$ |
| WACC value (return on all capital) | $r_{WACC} = E_S \times i + E_h \times i_k(1 - \text{tax rate}) =$<br>$= 5.67\% + 4.0\% = 9.67\%$ |

*Source: created by author*

The WACC value estimated in the table determines the discount rate used for investment-profitability calculations as we have already mentioned. On the following pages we are going to introduce the discount rates constructed based on the principles of economics.

### The return of equity rate included as discount factor

Economic sciences consider the fact that fixed assets are capable of creating profit independent from the source these assets come from and from the interest paid based on capital as a principle since this is how it is done in economy in reality (Tétényi-Gyulai, 2001). In accordance with the above-mentioned principle, the profitability rate that can be used as discount factor has two components: the cost of capital use and the return requirement of entrepreneurs (Illés, 2008).

The cost of capital use is the return rate that can be reached risk free if invented into government securities that is the long-term reference return of government securities. This rate can be used as the usage cost of own capital without restrictions but not as the cost of foreign capital. Since the owner of foreign capital (credit, loan) takesrisks when investing it (primary risk taker, primary risk), the cost of which is integrated into the interest rate of the credit or loan. Loan interest is the sum of the reference return of long-term government securities and the cost of primary risk.

This, however, leads to the fact that (under normal economic conditions) the interest rate of the loan will be higher than the usage cost of own capital. Economic experts know that business enterprises are never risk free. The so-called return requirement of entrepreneurs is used to quantify the cost of risk taken by the company. The value of return requirement by entrepreneurs is essentially the same in the case of own and foreign capital.The returns requirement on own capital has only one component since it means the cost of risks taken by the entrepreneur projected on own capital. The risk cost on foreign capital charged by the enterprise because of the secondary risk-taking role is lower than the one on own capital since the creditor and the enterprise (the borrower) share the costs of risk taking.

**Table 4**

**Components of calculative interest rate**

| Elements of calculative interest rate | Content |
|---|---|
| Usage cost of own capital ($i_h$) | Risk-free rate of interest ($i_h$) |
| Return requirement of own capital by entrepreneurs ($i_v$) | Market risk premium×individual risk factor = return requirement of own capital by entrepreneurs ($i_p \times \beta = i_v$) |
| Usage cost of foreign capital($i_h$) | Risk-free rate of interest ($i_h$) |
| Interest rate of foreign capital (price) | Risk-free rate of interest+primary risk cost = interest rate of foreign capital ($i_h + i_e = i_k$) |
| The primary risk cost of foreign capital | Interest rate of foreign capital – risk-free rate of interest = primary risk cost ($i_k - i_h = i_e$) |
| The secondary risk cost of foreign capital | Calculative rate of interest – interest rate of foreign capital = secondary risk cost ($i - i_k = i_m$) |
| Return requirement on foreign capital by entrepreneurs | Primary risk cost + secondary risk cost = return requirement of own capital by entrepreneurs ($i_e + i_m = i_v$) |
| Expected profit of own capital (return requirement) | The proportion of own capital in the capital structure × calculative rate of interest ($E_S \times i$); ($E_S \times (i_h + i_v)$) |
| Interest cost of foreign capital (profitability requirement) | The proportion of foreign capital in the capital structure × loan interest ($E_h \times i_k$); ($E_h \times (i_h + i_e)$) |
| The overall secondary risk cost of foreign capital (return requirement) | The proportion of foreign capital in the capital structure × secondary risk cost ($E_h \times i_m$); ($E_h \times (i - i_k)$) |
| Expected profit of foreign capital (profitability and return requirement) | Interest cost of foreign capital+ secondary risk cost of foreign capital ($E_h \times i_k$) + ($E_h \times i_m$) |
| Expected profit of all capital | Expected return on own capital+ expected return on foreign capital ($E_S \times i$) + ($E_h \times i_k + E_h \times i_m$) |

*Source: created by author*

This means that the return requirement of entrepreneurs on foreign capital has "two components": the primary risk taken by the creditor and the cost of the secondary risk taken by the borrower. Of course, the sum of the rates of primary and secondary risk cost on foreign capital is exactly the same as the value of risk cost of own capital.According to the facts listed above, the formula used as the discount factor used in economics can be described in the following way:

$$\mathbf{i = i_h + i_v}$$

i= calculative interest rate

$i_h$= reference rate of return of long-term government securities (risk-free interest rate)

$i_v$= return requirement of entrepreneurs (risk cost)

While analysing the formula of calculative rate of interest, we can come to the conclusion that if the profit from a new project covers the cost of the used loan, the cost of secondary risk-taking of entrepreneurs as well as the return requirement on own capital according to the calculative rate of interest, we can say it meets return requirements (the project is profitable) (Table 5).

**Table 5**

**Determining the calculative rate of interest of the business enterprise in the example**

| Name | Calculation |
|---|---|
| Cost of own capital | $i = i_h + (i_p \times \beta)$<br>$i = 7.5\% + (3.5\% \times 1.1) = 7.5\% + 3.85\%$<br>$i = 11.35\ \%$ |
| Interest cost of foreign capital | $i_k = 10\%$ |
| The secondary risk cost of foreign capital | $i - i_k = i_m$<br>$i_m = 11.35 - 10 = 1.35\%$ |
| Cost of foreign capital | $i = i_k + i_m$<br>$i = 10\% + 1.35\% = 11.35\%$ |
| Expected return on own capital | $E_S \times i = 0.5 \times 11.35 = 5.67\%$ |
| Expected return on foreign capital | $E_h \times i_k + E_h \times i_m = E_h(i_k + i_m) = 0.5 \times (10 + 1.35) = 5.68\%$ |
| The return on all capital | $i = E_S \times i + E_h \times i_k + E_h \times i_m = 5.67\% + 5\% + 0.68\% = 11.35\%$ |

*Source: created by author*

The data in Table 3 and 4 show that there is a difference of 1.68% between the calculative rate of interest used as discount rate and the value of WACC of the same project, in favour of calculative rate of interest.

**Evaluating a project with discount projects calculated in two different ways**

The WACC value estimated in the financial approach is 9.67%, while the calculative interest rate calculated from the aspect of management is 11.35%.

We use the above-mentioned values as discount rates during the assessment of the next project. A business enterprise realizes a 55 million HUF investment with a planned lifetime of 6 years.

According to calculations a profit of 12.93 million HUF will be created annually during operation life (Table 6).

**Table 6**

**Net present values in accordance with different discount rates**

| Years | CF | $D^t$ (9.67%) | $NPV_1$ | $D^t$ (11.35%) | $NPV_2$ |
|---|---|---|---|---|---|
| *0* | -55.000 | 1.00000 | -55.000 | 1.00000 | -55.000 |
| *1* | 12.930 | 0.91183 | 11.790 | 0.89807 | 11.612 |
| *2* | 12.930 | 0.83143 | 10.750 | 0.80653 | 10.428 |
| *3* | 12.930 | 0.75812 | 9.802 | 0.72432 | 9.365 |
| *4* | 12.930 | 0.69127 | 8.938 | 0.65049 | 8.411 |
| *5* | 12.930 | 0.63032 | 8.150 | 0.58418 | 7.553 |
| *6* | 12.930 | 0.57474 | 7.431 | 0.52464 | 6.784 |
| *Altogether* | - | - | +1.861 | - | -847 |

*Source: created by author*

Estimation of the inner rate of return (IRR): q = 12.93/55.00 = 0.235 from the table (6 years): 10.8%; NPV = – 55 + (12.93/0.235) = –55 + 55 = 0.

The results of the calculations in Table 6 show, that if the WACC value is used as discount rate, the investment is economical. Moreover, apart from the nominal return of the invested amount, not only the return requirement estimated from the normal profit rate is returned, but we can expect the creation of an excess return in addition to the return requirement.

If we create the discount rate with the help of the calculative interest rate, the project is not economical since it does not perform the return requirement expected by the company. The inner rate of return of the analysed investment is 10.8%, the value of which is independent from the resource structure of the project. This proves that the origin of capital has no effect on the extent of the return created. The objectivity of the IRR method is proven by the fact that it can provide the monitoring of real management processes and the actual results can be reflected more precisely.

The value of the repayment factor (q = 0.239) calculated with the help of calculative interest rate (11.35%) provides two important pieces of information for decision makers. On the one hand, it shows that 16.6% the of acquisition cost is amortization resource, intended to provide nominal return, if profitability requirement is transmitted by calculative interest rate, duration is 6 years and the accounting is linear to gross value. On the other hand, it provides the information that the project has to produce the return requirement, which is 7.2% (0.239-0.167) of the invested amount, in addition to amortization, otherwise the conditions of profitability are not guaranteed.

In summary we can say, that from the aspect of profitability assessment, resource structure, loan interest rate and corporate tax rate are of secondary importance.

## CONCLUSIONS AND SUGGESTIONS

1) Comparisons from the technical literature of finance and business management show that models and methodologies used for calculating return requirements differ in many important aspects (consideration of taxes to be paid,

the raison d'etre of differentiated profit requirement in decision making, the role of resource structure in return requirement determination). The main problem is that during decision preparation on top manager level, profit requirements constructed using a financial approach are used as normative values for characterising management processes, which may lead to fundamentally incorrect managerial decisions.

2) The theory of weighted average cost of capital used in finance widely suggests that if the interest rate of foreign capital (credit, loan), reduced by tax, is produced by the loan, it is enough return requirement, while, at the same time, shareholders' equity (own capital) must realize a higher profit. As a consequence, if decision makers make decisions based on the profit requirement, they can "take too much upon themselves" from the aspect of borrowing, the loan does not even have to produce the interest rate, which may increase the indebtedness of the business enterprise unreasonably and may cause serious liquidity problems as a side effect.

We do not suggest using threshold values meaning return requirement in connection with value creation process calculated by differentiated profit requirement during top manager decision preparation because their use is objectionable.

3) Profit requirement models (generally used in management) treat financial resources of any origin equally from the aspect of management, since the real profitability of the topic (and naturally the profit requirement) is not determined by the resource structure, but by the extent of risk-free profit and risk premium available in the given economic environment. We can always calculate higher normative threshold values with the help of more expressive profit requirement models so management principles pose stricter requirements towards the project, which is essential from the aspect of economic success.

4) It is hard to accept from the aspect of economics because it contradicts the logic of management that as the indebtedness of a business enterprise increases (the proportion of foreign capital increases in the overall resource structure), the WACC value used as discount rate, gradually decreases. In real management the higher risk cost caused by indebtedness must be produced by the resource causing the risk. In such cases there is "illogicality" because an ever lower risk cost is determined as opposed to the greater risk caused by the growing loan rate.

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