

MAIN ASPECTS OF THE COST OF CAPITAL

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The paper deals with the problem of creating an optimal capital structure of company. One of the most important criteria, when deciding between equity and debt, is cost of capital. This article describes equity, debt and ways of calculation the cost of particular capital components. Cost of equity is generally given by expectations of investors and can be therefore higher than cost of debt which is contractually agreed before investment.

Keywords: Cost of capital, Capital structure, Equity, Debt.

1 Introduction

Capital refers to the financial resources of funds that businesses, individuals, or governments need in order to pursue a business enterprise or implement an investment project. The process of gaining capital necessary for doing business activities is business financing. A real problem is to create an optimal capital structure, which means to choose an optimal ratio of debt and equity capital. Generally speaking, the optimal capital structure is considered to be that which minimizes the value of the weighted average cost of capital, WACC and, consequently, maximizes the value of the firm. One of the most important criteria, when deciding between equity and debt, is cost of capital. We generally know two basic forms of capital: debt and equity [3, p. 6].

Debt – it is capital draw down by bank loans or issuing the bonds. The firm must therefore promise to make payments over the period that the loan is outstanding (interest payments in the case of bank loan or coupon payments in the case of bonds) until the debt matures, at which point the original sum borrowed will need to be repaid.

Equity – firms issue shares, representing a claim on the value of the firm after debt has been repaid. Shareholders receive dividend payments from the firm and can also benefit from any increase in the value of shares.

The structure and quantity of capital should be adjusted according to company's needs and other specific factors. Corporate capital structure reflects firm's history of exogenous shocks to profits and asset values as well as its financing and distribution policies. This dynamic perspective on capital structure originates from Donaldson's field studies (1969) [4] and Myers' theory (1984) [10]. Other economists who characterized optimal dynamic investment were Fisher, Heinkel and Zechner (1989) [5], Leland (1984) [8] and Leland and Toft (1996) [9]. Financial decisions are usually made with the sole aim of maximizing shareholder wealth. But Donaldson's study emphasized goals such as organizational survival and growth, objectives which can conflict directly with the maximization of shareholder wealth [6, p. 4].

According standard textbooks we estimate firm's cost of capital as weighted average of the expected returns on its securities. This approach is straightforward for individual firms since the mix of securities in a firm's capital structure and the rates it pays on various forms of debt are known.

According to investors, cost of capital is considered as expected yield resulting from particular investment. It is the minimum return that company has to achieve when investing. If it doesn't, the investment is ineffective and value of the firm declines. From the debtor's point of view, cost of debt is the cost that he has to pay for gaining and using the capital. In financial decision making the cost of capital is used for [12, p. 157]:

- to determine the discount rate when calculating the effectiveness of an investment project,
- as criterion for creating an optimal capital structure of company,
- as average marginal cost of capital when calculating an optimal amount of capital expenditures,
- in the selection process of appropriate source of financing the investment for estimating the present value of cash flows,
- yield methods of valuation.

2 Risk and Cost of Capital

Investment risk is a part of the investment value by discount rate which reflects the cost of capital. Cost of capital has to correspond to risk taking by investor. Subject investing in a country has to take a risk of particular country, risk of specific sector and risk of company.

Generally we know two basic kinds of risk [3, p. 321]:

- a) **Systematic risk (market risk)** – it is same for all subjects and given by macroeconomic situation of country. We cannot diversify it (only if we'd invest in more than one country). It is the risk of the loss of the portfolio value caused by price changes of assets in financial markets. Whereas specific risk results from concrete situation in particular company, market risk is influenced by macroeconomic events (for example Growth in gross domestic product – GDP is faster than expected, interest rates rise, the local currency appreciates, the rate of inflation falls etc.).
- b) **Unsystematic risk (specific risk)** – is the risk of particular investment project, company or sector. We can diversify it by creating a portfolio. The specific risk consists of four parts: managerial, operational, financial and advance risk.
 - **Managerial risk** – means the possibility that managers of company won't be competent and will lead the firm to insolvency. Such a risk often occurs in the new companies that may have a problem to succeed in financial markets.
 - **Operational risk** – risk that firm won't be able to produce enough revenue to cover the fixed costs of its activities. It relates to active side of the firm's balance sheet.
 - **Financial risk** – relates to passive side of the firm's balance sheet and it is the risk that firm won't be able to cover the fixed costs such as fixed interest payments.
 - **Advance risk** – depends on investor's requirements for assets of the company in bankruptcy. Generally it means the order in which the investors' requirements will be satisfied.

However there exist many other classifications of risk (for example operational and financial risk).

3 Cost of Debt Quantification

Cost of debt occurs most often as an interest rate paid by company to its investors (creditors). When company uses debt for financing its activities, there is also necessary to pay interests. Interests of debt can decrease the tax base. This effect of decreasing tax obligation of company is called the debt shield. When specifying the discount rate there is a rule that the longer is the time until maturity of capital, the higher discount rate investor requires. Company uses various forms of capital from various sources of financing and therefore the ways of calculating the costs of particular kind of capital are different [7, p. 54].

Cost of debt can be calculated as:

$$K_d = \text{Interest payments} / \text{debt} \quad (1)$$

Where debt is represented by bank loans, short-term borrowings, bonds, overdrafts and other loans and debts for which firm pays interests. In case of debt, the business in receipt of finance is contractually committed to repayment of the original finance at some later date, together with additional payments in the meantime. Payments by a company to honor its contractual

obligations to the providers of such finance have a priority call on the company's resources over shareholder dividends. And also investors who provide debt have no right to any other payments over and above these contractually committed payments. Providers of debt, unlike equity investors, do not benefit in the event that a business performs well [11, p. 99]. It is necessary to keep in mind that in cost of debt are reflected also taxes. Interest payments are part of costs and therefore decrease the tax base.

$$K_d = i \cdot (1 - T) \quad (2)$$

Where:

K_d – cost of debt

i – interest rate

T – tax rate

Cost of bonds – is given by such an interest rate when sum of present value of the bond interest income and present value of bond nominal price is equal to its market price [12, p. 161]:

$$C = \sum_{t=1}^n \frac{i_t}{(1+i)^t} + \frac{N}{(1+i)^n} \quad (3)$$

Where:

C – market price of bond

i_t – interest on bond in each year

N – nominal price of bond

T – years of bond maturity

i – required rate of return to maturity (cost of debt before taxes)

4 Cost of Equity Quantification

There is no clearly defined contractual cost of raising capital through issuing equity, the most common source of capital for companies. The payments that companies must make to shareholders are not contractually defined, but it doesn't mean that equity finance is free. Because the payments that equity investors receive are not determined on a contractual basis, and because equity investors receive payments only after debt payments have been made, equity finance is more expensive than debt finance – companies need to reward equity investors for bearing a higher level of risk than debt investors [11, p. 6].

The opportunity cost of equity investment – opportunity cost means that investor can choose among a range of opportunities when deciding whether to invest his money as equity in a company (he could for example lend it to a bank, company or invest in an enterprise himself). An investor behaving rationally will therefore choose to invest in the equity of an enterprise only if he believes that this is actually the best option in the market [2, p. 318]. It means, that in order to gain equity capital form an individual, a firm must convince him, that the return on such an equity investment will be at least as great as the return on the best alternative opportunity foregone. Cost of equity is therefore given by investors' expectations.

The choice of method to determine the cost of equity depends on the specific conditions of company (size of enterprise, legal form, in the case of joint-stock company is important whether it is traded on the capital market, etc). We know some models that can be used to quantify the cost of equity:

- Capital Asset Pricing Model (CAPM)
- Dividend discount model
- Arbitrage Pricing Theory
- The Fama-French Three Factor Model
- Modular models
- Analysis of risk
- Expert method of determining the cost of capital

The most commonly used model for calculating the cost of equity is **CAPM** (Capital Asset Pricing Model) and it assumes that the cost of equity for any investment will increase only with the extent of systematic risk to which the investment exposes the equity investor. CAPM is formulated on the basis of a number of assumptions [3, p. 504]:

- investors are risk-averse individuals seeking to maximize their wealth,

- investors have homogeneous expectations,
- investors can borrow or lend at the risk-free rate,
- all assets are liquid,
- asset markets are frictionless and all investors have access to perfect information,
- there are no taxes, transaction costs, or other market imperfections.

Most of these assumptions are not real but still, this is the most used way by businesses, investors, and share analysts, to calculate the cost of equity. CAPM gives the formula as:

$$K_e = R_f + \beta_e * EMRP \quad (4)$$

Where:

K_e – Cost of equity

R_f – Risk-free rate

β_e – Equity beta of investment

EMRP – Equity market risk premium

5 Weighted Average Cost of Capital

Weighted average cost of capital is the weighted average calculated from individual costs of particular parts of capital. Weights are the ratios of these parts. The calculation of average cost of capital is derived from the formula:

$$WACC = w_1 \cdot k_1 + w_2 \cdot k_2 + \dots + w_n \cdot k_n = \sum_{i=1}^n w_i \cdot k_i \quad (5)$$

Where:

WACC – weighted average cost of capital

w_i – percentage ratio of i-kind of capital

k_i – cost of i-kind of capital

n – number of kinds of capital

We can substitute optional number of capitals into this formula and calculate their weighted average. The condition is that we have to know the ratios of individual kinds of capital on the total amount of capital. Most finance textbooks (Benninga and Sarig, 1997; Brealey; Myers and Marcus, 1996; Copeland; Koller and Murrin, 1994; Damodaran, 1996; Gallagher and Andrew, 2000; Van Home, 1998; Weston and Copeland, 1992) present the Weighted Average Cost of Capital WACC calculation as [11, p. 2]:

$$WACC = K_e \cdot \frac{E}{V} + K_d \cdot (1 - T) \cdot \frac{D}{V} \quad (6)$$

Where:

K_e – Cost of equity

K_d – Cost of debt

E – market value of equity

D – market value of debt

T – corporate tax rate

V – market value of equity plus market value of debt

With rising amount of debt rises also the cost of debt because debt providers require higher yield for taking the risk. They face a significantly different risk profile by comparison with equity investors. The fact that interest costs are paid out of corporate incomes before taxation, and take priority over payments to equity investors, reduces the risk to which debt providers are exposed. Interest costs are determined at the outset of the borrowing and are more likely to be paid than dividend payments. However, cost of equity is generally higher than cost of debt. It also rises with rising debt. Investors in equity of enterprise take higher risk and therefore require higher rate of return.

6 Conclusion

Companies obtain capital from shareholders (equity) and lenders (debt). Both types of capital come at a cost because investors require a return to reflect the opportunity cost associated with committing their money over a period of time. For debt this cost is the rate of interest that the lender charges – this varies with the amount of risk to which the lender is exposed. In the case of equity, it is more complicated to calculate the cost. Companies do not have a contractual obligation to reward shareholders at a specified rate. The cost of equity is the return on investment that

shareholders expect to receive. There are some methods how to quantify the cost of equity. The most commonly used is model CAPM. If we can estimate ratios of particular kinds of capital we can calculate the cost of capital. For this purpose we generally use the formula of weighted average cost of capital (WACC).

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