

CONSIDERATIONS REGARDING METHODS AND VALUATION MODELS OF EQUITY COST OF THE COMPANIES¹

Mihai Nedelescu*

Abstract

For the enterprises, capitals are fewer and fewer and more expensive, and the expected profit in conditions of fierce competition, are more difficult, being accompanied by increasing risks more difficult to predict. The cost is the highest risk element, which accompanies the capital, because, is in inverse proportion to the profit: a higher cost leads to a lower profit. For attracting the sources of capital, a firm must spend certain sums, which are proportional to their price. The content of this paper tries an efficiency of financial structure for companies based on the minimizing of finance costs. In the purpose of efficiency of financial structure has followed the costs for variant of financial structure through point out models of analyses and assemble the costs recommended by international and national specialty literature.

Keywords: *capital cost, financial structure, financial sources, financial cost, efficiency.*

JEL Classification: G31, G32.

1. Introduction

At the enterprise level, managers must ensure necessary capital to lower costs and organize work in order to obtain the expected profit by all interested. „*Knowing from where to get capitals on time and at the lowest costs, where to place the smallest risks and how to get the desired profit as a result of their use to satisfy all the actors on the company stage is a real fascination.*“ [Stancu I. (1998)] In this vision, an enterprise to be able to ensure the financial stability, it must provide an "optimal capital structure", which aims mainly to minimize the cost of financing. [Davies, D. (2002)]

Improvement of optimal financing structure is itself a source of profit, reflected by increasing the share of cheap capitals. [Kuber, M (1992)]

Regardless their nature, all the capitals have a cost. The cost is the highest risk element, which accompanies the capital, because, is in inverse proportion to the profit: a higher cost leads to a lower profit. The capital is a product with a price and a cost supported by the user. For attracting the sources of capital, a firm must spend certain sums, which are proportional to their price. The respective expenses

¹ Presented article at the 6th Edition of “Implications of Globalization and Integration into the European Union on Financing and Development of Foreign Trade” Conference, November 23-24, 2012, Romanian-American University, Bucharest

* Author is Lecturer of Corporate Finance at the Romanian-American University, Bucharest. E-mail address: nedelescumihai@yahoo.com

represent the average of the marketing cost of the sources of capital, i.e. of the loans and the authorised share capital and equity.

The price level can influence buying or, on the contrary, giving up on a product. The price level ultimately influences the firm's ability to maintain on the market. [Preda, O. (2007)]

The financial institutions seek to settle the price in order to cover all the costs implied by the product development and promotion, making a profit in the same time. [Preda, O., Furdui I. (2009)]

2. Conceptual aspects of financing costs

A problem of great importance in the analyzing and evaluation of financial sources constitute the financial lever effect of capital about the financial costs of company. *"Can the company affect their costs, in a favorable or unfavorable way, by the diversity of the financial sources used?"* [Burton, Kolb, DeMong (2005)]

The financial cost keeps a direct bundle between the elaborating of capital structure and his financial structure. Has economic sense that the company tries to minimize the financial cost. The capital costs and the other costs, share a common characteristic in that of they can reduce the dividend size paid to stockholders.

If this financial costs can be affected by his capital structure, then the structure management capital is clear an important element of company's financial management.

The manner of introduction for the analyzing investments of project models from the investments expenses point of view is represented by the financial costs of capital. The cost of capital account concerns in evaluation of any investment project as much as integral financial from capital account, and mix financial.

Bet on literature there are a variety of criteria for selecting sources of financing for enterprises which the cost of capital is the most important criterion for their election. Without knowing this cost it can't follow maximizing the enterprise value. So in order to reduce the cost of capital, managers want permanent improvement of capital structure in favor of those financing sources who required as small remuneration of capital. The company has many possibilities of internationalization activity, but the variant chosen will be the one that best fits his/her interests in terms of risk and uncertainty. [Stănescu M.C., 2013]

To determine the cost of capitals, experts recommend using several methods of estimation, each of them having certain limitations regarding their application. The methods regarded in the literature as being the most relevant for establishing the cost of capital are: Gordon-Shapiro model of constant growth, differentiated growth patterns: DCF method (Discounted cash-flow), Bates model, Holt model, Molodovski model, CAPM (Capital asset pricing model) [Tobin (1958), Treynor (1961), Sharpe (1964), Lintner (1965), Mossin (1966), Brennan (1970), Black, Jensen, Scholes, Mayers (1972), Treynor, Black, Fama, MacBeth, Blume and Friend (1973), Solnik and Black (1974), Roll (1977), Ross (1977), Stambaugh (1982), Shanken, Kandel and Stambaugh (1987), Fama and French (1996), Dimson and Mussavian (1998)], APT method (Arbitrage pricing theory) [Ross (1976), Roll and Ross (1980), Chen, Roll și Ross (1986)].

Table no.1 Models and studies used in financial theory to determine the cost of own capitals of enterprise.

Gordon & Shapiro Model	The model is applicable to companies who require a policy of increasing dividends with a constant rate. The model has the disadvantage of unrealistic hypotheses, but is frequently used in practice due to the advantage of simplicity. The most disputable hypothesis is that of a constant growth rate of infinite duration. [Gordon & Shapiro (1956)]
Gordon & Shapiro Model (differentiated growth model)	The model takes into consideration two periods in the life of the company, which is a short period with an increase variable of dividends and an unlimited period with a constant growth rate of dividends. It thus requires forecasting dividends and steady growth rate. The cost of capital is determined by successive trials and interpolation. Also, it is used the sensitivity analysis for assessing the time when the dividends growth rate becomes constant.
Bates Model	Integrates factors that influence the market price of an action, meaning the cost of capital, the growth rate of the company, the distribution rate of dividends and the stock indicator PER of industry in which acts the company. Bates removes the restrictive hypothesis of constant growth rate and that of an alternation of periods with uniform growth or constant or zero. Solution of the equation represents the cost of equity determined by successive trials and interpolation. [Stancu (2007)]
Molodovski Model	Modolovwski introduces in its turn an economic growth with characteristics that it wants to be closer to the reality. Thereby Modolowski raising is characterized by three periods of growth characterized by the following rates: g_1, g_2, g_0 , where $g_1 > g_2$. These periods are appropriate to accelerated growth, temperate and stability, the stability being considered as having an unlimited horizon of time. And in this model reappears the hypothesis of infinite growth, forced by the complexity of growth model to offer a final formula with practical application. [Dragota (2006)]
Holt Model	Starts from the duration of recover (DUR), in number of years, of a current course, through net profit per action, through the PER, duration which is adjusted by the rate of profitability of equity. Based on various simulations and interpolations on profit growth rate, the current PER and an estimated recovering duration, can be calculated capital cost. [Stancu (2007)]

Capital Assets Pricing Model (CAPM)	<p>CAPM is used to estimate the cost of equity based on profitability of a balanced portfolio of shares on the stock market. In this model, the cost of equity expresses the hoped average annual rate of profitability of an investment on stock market for the acquisition of actions in a certain field of activity. Although the CAPM seems to have a high degree of accuracy and give the precise estimates for the cost of equity under conditions of perfect market, there are problems of its application. The formula uses a profitability of market average based on a diversified portfolio, but shareholders have not always such a portfolio, they being interested not by the market risk, but rather by a total risk which can't be appreciated with the β coefficient help. [Sharpe W (1965)]</p>
Build-up CAPM	<p>This model considers that the expected profitability of equity has two components, the degree of zero risk rate and the risk premium. Risk premium, in its turn, is composed by another three components: equity risk premium, the premium linked to the size of the company and the risk premium specific to the company. Corresponding to the terms of economic and political instability of each country, is determined a specific risk premium of the respective company.</p> <p>One of the novelties elements of this model is that the risk-free rate of profitability includes the estimated inflation for the period of maturity of governmental title. Also, as in case of the classical model, for estimating this rate it is used the historical data determined by Ibbotson Associates agency. Latest empirical studies have demonstrated that the degree of risk and implicitly the cost of capital, increase with increasing the company size, which explains the need to take into consideration this variable to estimate profitability on equity. [Patt (2002)]</p>
Arbitrage Pricing Theory (APT)	<p>The APT model differs from the CAPM by the fact that for measuring the systematic risk, don't use only one coefficient β but many coefficients β, which expresses the profitability sensitivity of an action of a listed company, to the modification of economic factors influence as: industrial production indices, the basic real rate, inflation rate on short term, inflation rate in long term and the failure risk of bonds yields rate of company at maturity. This model of estimating the cost of equity is based on a more realistic hypothesis according to which the profitability of an asset is determined by common factors of systematic risk as well as the specific risk factors that may be eliminated by diversifying the portfolio of titles. [Ross (1976)]</p>

Thus, the analyze purpose is to offer points of view to ensure the manager's financial decision, and on the base of the investment, representing one of the fundamental index that guides the company's financial activity. In theory they are a lot of analyses under restriction assumptions, from, the analyses in oblige company, the analyses of investment project financed integral from capital account, the analyses of investment project on company's structure.

3. Methods and models to assess the cost of equity of the company

The cost of equity is difficult to determine because it is not directly observable on the market as is the case of loaned capitals. To determine the cost of equity, experts recommend using several methods of estimation, each of them having certain limits regarding their application. Methods regarded in the specialty literature to be the most relevant for establishing the cost of capital are: Gordon-Shapiro model of constant growth, differentiated growth models: CAPM (Capital asset pricing model) [Lintner (1965)], APT (Arbitrage pricing theory).

3.1. Gordon & Shapiro model

Gordon & Shapiro model (1956) which involves a series of restrictive hypothesis: absence of fiscality and costs with transactions of bonds on the market; permanent growth of the dividends with a constant annual rate; amortization equal to the maintenance investments production capacity; investments obtained only from reinvesting the profit; infinite life duration of the emitting company.

According to the model of constant growth Gordon & Shapiro, if it predicts the fact that dividends will grow at a constant rate, then the price of the action becomes $P_0 = \frac{Div_1}{k_e - g}$ so it follows that $k_e = \frac{Div_1}{P_0} + g$. So the rate of profitability of equity depends on dividend yield ($\frac{Div_1}{P_0}$) and the estimated growth rate.

Determination of yield of dividends based on market data is relatively simple, but estimation of constant growth rate is difficult, which will lead to the success or the failure of this method [Harpern (1998)]. If growth rates from the past were relatively stable and the investors expect a continuation of the past data, the growth rate g can be calculated based on historical data of the company, taking into consideration either the rate of growth of dividends or on the earnings per share. Otherwise it requires an internal or external estimation of the rate of growth that intervenes in calculating the cost of equity.

Considering that the distribution of dividends rate is constant and the rate of profitability of new investment projects is equal to estimated profitability for the entire capital of the enterprise (ROE), the cost of equity has the following formula:

$$k_e = \frac{Div_1}{P_0} + \gamma \times ROE \quad [1]$$

Later, Gordon & Shapiro improved the model (the differentiate growth model) taking into consideration two periods of the enterprise life, that is a short period with

a variable growth of the dividends and an unlimited period with a constant growth rate of the dividends. The capital cost is determined by repeated and interpolating trials.

So it is recommended using the differentiated growth model, according to which the value of one share: [Dumitrescu, Dragotă, Ciobanu (2002)]

$$V_0 = \sum_{t=1}^{\infty} \frac{Div_t}{(1+k_e)^t} + \frac{Div_n + P_n}{(1+k_e)^t} \quad [2]$$

$$\text{where: } P_0 = Div_n \times \frac{1+k}{k_e-g}$$

n = number of years of variable growth;

$n + 1, \dots, \infty$ = number of years of growth with constant g .

The model Gordon & Shapiro has the disadvantage of certain unrealistic hypotheses, but is frequently used in practice due to the advantage of simplicity. Most debatable hypothesis is that of a growth constant rate on infinite period. Besides the teaching and historical importance, this model represented a starting point for the elaboration of some relevant models, like those of *Bates*, *Molodovsky* or *Holt*, which through the undertaken researches are trying to remedy the inconveniences generated by the cost analysis model developed by Gordon & Shapiro.

Bates model. Going on the line of Gordon & Shapiro model, Bates tries a finer shaping of economic growth of the company. He acts only in the direction to relaxing the hypothesis of constant and infinite economic growth, for the rest by acting in the same system of hypotheses of Gordon & Shapiro model, both the specific and the characteristic general to the whole financial theory. The financial increase described by Bates has two periods equivalent to momentum and economic stability, characterized by two growth rates (g). [Stancu (2007)]

Bates model integrates the factors influencing the market price of a share, meaning the cost of equity (k_e), the growth rate of the enterprise (g), the rate of distribution of dividends (d) and stock market indicator forecast PER of industry in which acts company. According to the model, PER from the basic period may be determined using the formula: [Dumitrescu, Dragotă, Ciobanu (2002)]

$$\frac{PER_0}{A} = \frac{(d \times B + PER_n)}{A} \quad [3]$$

$$\text{where: } A = \left(\frac{1+k_e}{1+g}\right)^n \text{ and } B = (1+g) \times \left(\frac{1-A}{g-k_e}\right)$$

A and B represents multipliers for who were determined pre-calculated tables of Bates model that are used by investors for various simulations of influence factors of stock market course, after that it can establish and compare the initial value of PER with medium PER of the market, in purposes of the selection of investment in the most profitable shares. Bates model eliminates the restrictive hypothesis of constant growth rate g and that of alternating periods with uniform growth, either constant or zero. The solution of this equation of degree n represent the cost of equity k_e , determined by successive attempts and by interpolation.

Molodovski model. Example of Bates approach is taken over by Molodovsky, who introduces in its turn an economic increase with characteristics that will be closer to the reality. Thus the Molodovsky increase is characterized by three increasing periods characterized by next rates: g_1, g_2, g_0 where $g_1 > g_2$. These periods are appropriate to the accelerated, temperate growth and stability, the stability being considered as having an horizon of unlimited time. In this model reappears the hypothesis of infinite growth, forced by the complexity of the increase model, to offer a final formula with practical application. [Dragotă (2006)]

Formula of company value from Molodovsky model will be: [Dumitrescu, Dragotă (2000)]

$$V_0 = \sum_{t=1}^{n_1} \frac{Div_0 \times (1 + g_1)^t}{(1 + k_e)^t} \times \sum_{t=n_1+1}^{n_2} \left(\frac{1 + g_2}{1 + k_e} \right)^t + \frac{Div_0}{(1 + k_e)^{n_1+n_2}} \times \sum_{t=n_1+n_2+1}^{\infty} \frac{1}{(1 + k_e)^t} \quad [4]$$

By means of two new relations, the author introduces instead of absolute values V_0 and Div_0 , rates PER and d , the last being the rate of distribution of dividends: $V_t = PER_t \times P_{net}$, $Div_t = d \times P_{net}$ and by passing to the limit, we obtain: [Dumitrescu, Dragotă, Ciobanu (2002)]

$$\begin{aligned} PER_0 &= d \\ &\times \left\{ \frac{1 + g_1}{k_e - g_1} \times \left[1 - \left(\frac{1 + g_1}{1 + k_e} \right)^{n_1} \right] + \frac{1 + g_2}{(1 + k_e)(k_e - g_2)} \left(1 - \left(\frac{1 + g_2}{1 + k_e} \right)^{n_2} \right) \right. \\ &\left. + \frac{1}{k_e(1 + k_e)^{n_1+n_2}} \right\} \end{aligned} \quad [5]$$

We notice the disappearance of terms that appear in the model of Bates, PER_n , due to reintroducing the infinite growth hypothesis, but also a more complex dependence of growth rates that will raise new problems of estimation and foresight.

Holt model starts from the recovery period (DUR), into number of years, of the actual course, by the net profit per share, through the PER, which duration is adjusted with the profitability rate of equity according to the formula: [Brezeanu, Prajisteanu, Bostinaru (2002)]

$$DUR = \frac{\ln \left(1 - PER_0 \times \frac{k_e - g}{1 + k_e} \right)}{\ln \left(\frac{1 + g}{1 + k_e} \right)} \quad [6]$$

where: DUR = recovery time, and has reached to the equation: [Stancu (1997)]

$$\begin{aligned} 1 - PER_0 \times \frac{k_e - g}{1 + k_e} &= \left(\frac{1 + g}{1 + k_e} \right)^{DUR} \end{aligned} \quad [7]$$

In the case of Holt's model, DUR indicator offers us the image of company potential to cushion the investment of shareholders as soon as possible, and k_e represents the rate required by shareholders by PER and through this recovery period. Based on various simulations and interpolations on the increase rate of company profit, the actual PER and the duration of estimated overload, can be calculated the cost of equity as a solution to the above equation.

The models Bates, Molodovski and Holt are very complex, but is considered to be operational in conditions of more restrictive hypotheses, which gives them increased flexibility corresponding to complex business environment of the company. [Stancu (2007)]

3.2. Capital assets pricing model (CAPM)

CAPM model [Sharpe 1965] is used to estimate the own capital cost based on the return of a balanced stock portfolio on the stock market. In this model, the ownership equity cost expresses the expected annual average rate of the effectiveness of an investment on the stock market for acquiring stock in a certain activity field. Although CAPM model seems to have a high accuracy level and to render precise estimation for the ownership equity costs in condition of perfect market, there are certain problems when applied. The formula uses an average return of the market based on a diverse portfolio, but shareholders do not always have such a portfolio, being interested not in the market risk but rather in a general risk which cannot be estimated with the β coefficient.

At the basis of CAPM model are a series of hypotheses, such as:

- The investors are building their portfolios from financial assets such as shares, bonds and can borrow and grant credits at an interest rate risk-free.
- Investors have a behavior of Markowitz type, therefore the portfolios held by them are efficient or are located on an efficient frontier.
- Investors have homogenous expectations, that's why they estimated identical distributions for future profitability.
- The time horizon of investments is the same for all investors.
- There are no transaction costs or other charges afferent to the acquisition, respectively the sale of financial assets.
- Inflation rate is considered zero or if is different from zero, it can be considered perfectly anticipated.

The CAPM model is used to estimate the cost of equity based on profitability of a balanced portfolio of shares on the stock market. In this model, the cost of equity expresses the anual average rate of profitability of an investment on stock market for shares acquisition in a particular field of activity. [Dragota (2009)]

Calculation formula for k_e is: [Fama, French (2004)]

$$k_e = R_f + \beta \times (R_m - R_f) \quad [8]$$

where: R_f = profitability rate without risk;

β = systematic risk of investment (risk coefficient of the action);

R_m = average rate of profitability on stock market;

$(R_m - R_f)$ = market risk premium.

To apply the CAPM for estimating the cost of equity of an enterprise is required follow the following steps to determine the right CAPM: [Harpen (2008)]

1. It is estimated risk-free profitability rate (*risk-free rate*), R_f ;
2. It is estimated anticipated risk premium, RPM, the average rate of profitability on stock market minus risk-free profitability rate;
3. Is it estimated beta coefficient of assets, β , which is used as an index of assets risk. First index refers to beta coefficient of first order of company;
4. Are replaced previous values in CAPM equation, for estimating the required profit rate of concerned assets: $k_e = R_f + \beta \times RP_M$ From equation one can see that the estimating of k_e value by the CAPM method starts from risk-free interest rate, R_f , to which are added a risk premium equal to the risk premium on market, RP_M , increased or minimize so as to reflect the specific risk of those assets according to its beta coefficient.

Although the CAPM model seems to have a high degree of accuracy and give precise estimates for the cost of equity under conditions of perfect market, there are problems of its application. The formula uses an average profitability of a market based on a diversified portfolio, but shareholders have not always such a portfolio, they are not interested in market risk, but rather by a total risk that can't be appreciated with the β coefficient help. Also, it is unclear if the rate of profitability of governmental titles should be used on short or long term, and systematic risk and risk premium on market are difficult to determine. [Dragota (2009)]

Build-up CAPM model considers that the expected return of the ownership equity has two components: the rate for zero risk degree and the risk premium. The risk premium itself is formed of three components: the capital risk premium, the risk premium of the enterprise dimension and the enterprise associated risk premium. According to the conditions of economic and political instability of each country, a risk premium specific to that enterprise is determined.

According to this model, the cost of equity is determined by the formula:

$$E(R_i) = R_f + RP_m + RP_s + RP_u \quad [9]$$

where: $E(R_i)$ = profitability rate expected for the i action;

R_f = profitability rate for zero risk at date of valuation;

RP_m = general risk premium for market;

RP_u = risk premium attributed to a specific company or industry.

One of the innovative elements of this model is that the return rate without risk includes the expected inflation for the maturity term of the governmental title. Also, as in the classical model, to estimate this rate as in the case of the classical model, historical data issued by the Ibbotson Associates agency are used. Recent empirical studies demonstrated that the risk degree and thus the capital cost grows with the growth of the enterprise dimension, which explains the necessity to take this variable into consideration when estimation the return of the ownership equity.

Table no.2 Empirical studies about analyzing the CAPM model

Tobin (1958)	<p>An important contribution to the development of the CAPM model had it J. Tobin, who launched hypothesis of risk-free asset. This hypothesis has attracted other important elements in the development of subsequent models with valuable applications in financial theory: existence of certain interest rate that includes inflation and is not affected by interest risk; perfect liquidity of the money market, which involves the possibility to buy and sell indefinitely government securities at the same interest rate.</p> <p>Introducing the risk-free asset in the portfolio changes the efficient frontier shape from a parable to a right, resulting for each efficient combination of risky assets a dominating portfolio. Tobin introduces on next to objective decision of investment in risky assets based on utility maximization and that of the subjective investor's, which depends on the risk profil of each. So each investor will have an option that determines the maximization of subjective utility which takes into account the marginal rate of substitution risk-profitability each specific. [Tobin (1958)]</p>
Treynor (1961)	<p>Treynor model is based on assets valuation theory and is focused on the incorporation of risk in the market value of the assets, being introduced the insurable concept (insurable risks have a negligible effect on the cost of capital). This model shows that the risk premium for an investment is proportional to the covariance between investment and total investment on market. [Treynor (1961)]</p>
Sharpe (1964)	<p>Sharpe aims to determine a relation between assets prices and their risk characteristics in attempt to construct a theory of capital market balance in risk conditions. He notes that through diversification, a large part of the specific risk of an asset can be removed, and as a result of this risk can't influence significantly the asset price. [Sharpe (1964)]</p>
Lintner (1965) Mossin (1966)	<p>Lintner and Mossin come and improve the CAPM model, so the result model is that of homogeneous expectations of investors about profitability. [Lintner (1965) Mossin (1966)]</p>
Brennan (1970)	<p>Brennan shows that the structure of original CAPM model is maintained when it is introduced in the equation the taxation.</p>
Black, Jensen & Scholes (1972)	<p>The Black is trying to relax the hypotheses that support the CAPM. This shows how the model should be adapted when loans without risk are not possible. His version is known as CAPM with beta zero. The main limit of Black's model is related to hypothesis that on market are allowed short selling transactions.</p>

Mayers (1972)	Show that when the portfolio of market doesn't includes transacted assets, the CAPM model doesn't modify structure.
Treynor & Black (1973)	The portfolio is seen as a mix between a passive portfolio (stock index fund type) and an active portfolio relying on the relative performance of individual securities. Treynor-Black model shows how best to construct such portfolios, making connection between CAPM and Simplified Model for Portfolio Analysis of Sharpe (1963).
Fama & MacBeth (1973) Blume & Friend (1973)	They observed the relation linearity between profitability and beta coefficient. They also find out that the intersection and slope of the relation vary on different subperiods, which don't respect the traditional form of CAPM. This behavior also proven by later studies can be explained by CAPM with beta zero.
Solnik & Black (1974)	According to their researches, CAPM model can be extended to encompass international investments.
Roll (1977)	Roll demonstrates that market as has been defined in teoretical CAPM model, is not an exclusive market of shares, the stock index should include bonds, real assets, human capital and everything else, tangible or intangible, that represents a form of wealth. Roll affirm that the market portfolio used in the study of Black Jensen Scholes definitely is not the real one, and more, if real portfolio isn't known with any certainty, CAPM can't be tested. In Roll's opinion, CAPM tests represents, at most, tests of portfolio efficiency that approximates best the portfolio of real market according to the criterion average-dispersion, and can not be drawn conclusions behind their perform about CAPM validity.
Ross (1977)	Ross showed that for the CAPM model to be valid, it is necessary: a) the existence of a risk-free asset, or b) be allowed short selling transactions. If isn't respected any of the two requirements the CAPM model can not be applied in financial assets valuation. [Ross (1977)]
Stambaugh (1982)	An answer to Roll's criticism is using the portfolios that approximate best the market portfolio, portfolios that include extended sets of assets like bonds and real assets.
Shanken (1987) Kandel & Stambaugh (1987)	Roll's critique was attacked by Shanken, Kandel and Stambaugh by arguing that even if the stock market is not the one on which the real market portfolio is formed, it must be correlated with real market, even in this meaning they find proofs that the CAPM is not valid.
Fama & French (1996) Dimson & Mussavian (1998)	Empirical tests led to the determination of other risk factors affecting profitability measures. These factors include the ratio price/earnings, company size, the ratio between carrying value and market value [Fama, French (1996)] and a variety of other influences on titles prices (Dimson, Mussavian).

3.3. Arbitrage pricing theory (APT)

Ross (1976) developed the APT model like an alternative model for CAPM. Idea of APT is that only a small number of systematic influences affects medium profitabilities of long-term securities. APT is a multifactorial model opposed to the unifactorial market model of Sharpe's, its multifactorial characteristic allowing an asset to have not just one but several measures of systematic risk. Each measure reflects the asset sensitivity to corresponding influence factor. This aspect of APT seems similar to multiple beta coefficients of Merton's CAPM model, but the resemblance is apparent because APT rather highlights an arbitration relation than a condition of equilibrium. If assets don't have a specific risk than the expected profitability of any asset is a linear function dependent only on expected profitability of other assets. [Stancu (1999)]

When the assets contain specific risk, it's possible a portfolio formation in which this to be diversified. To achieve a complete diversification of the specific risk, a portfolio should include an infinite number of titles, with a finite set of assets, the APT restriction of valuation maintaining the validity only approximately.

APT model (Ross 1976) is different from the CAPM model because, in order to measure the systematic risk, it does not use one single β coefficient but several β coefficients which shows the return sensibility of a stock of a listed enterprise when exposed to modified influential economic factors. This model of estimating the ownership capital cost is based on the more realist hypothesis that the rehabilitation of an asset is determined by common factors of systematic risk, as well as by specific risk factors that can be culled through diversification of the title portfolio.

Table no.3 Empirical studies regarding the APT model analysis

The APT model	
Ross (1976)	The APT model has developed as an alternative to the CAPM. APT is a multifactorial model opposed to the Sharpe's model, its multifactorial characteristic allowing to an asset to have not just one but several measures of systematic risk. Each measure reflects the asset sensitivity to corresponding influence factor. [Stancu (2007)]
Roll & Ross (1980)	They use factorial analysis, a statistical technique that allows them to deduct factors from data on titles profitability. The results indicate the existence of four factors influencing the assets prices on capital market. The advantage is that the determining factors explain a high proportion of risks during the considered period. The reverse is that factors usually have not economic interpretation.
Chen, Roll & Ross (1986)	An alternative to factorial analysis is to use macroeconomic variables as risk factors. They find that shares prices are related to: industrial production growth, changing profitability gap between long-term government bonds and short-term bond, risk premium modification of risky bonds to risk-free bonds, the changes of expected inflation. After taking into account of these factors, stock market indices have no longer impact on profitability of normal individual shares.

Studies recommends taking in consideration five factors that influence systematic risk: [Copeland, Koller, Murrin (2000)]

- Industrial production index at macroeconomic level;
- Short-term interest rate;
- The inflation rate is calculated based on variation of general index of prices;
- The risk of failure, determined as the difference between the profitability of bonds on long-term with rating of AAA and that of bonds with BAA rating;
- Inflation, measured as difference between the interest rate at government bonds on long-term and the interest rate on short-term government bonds.

The APT model is a valuable development, which liberates valuation models that followed CAPM's of one of the hypotheses that have encumbered both the reasoning and empirical testing results of the latter. The multifactorial dependence suffers from the drawback of unidentified factors which determine the evolution of profitability.

4. Conclusion

In conclusion regardless their nature, all the capitals have a cost. The cost is the highest risk element, which accompanies the capital, because, is in inverse proportion to the profit: a higher cost leads to a lower profit. The capital is a product with a price and a cost supported by the user. For attracting the sources of capital, a firm must spend certain sums, which are proportional to their price. The respective expenses represent the average of the marketing cost of the sources of capital, i.e. of the loans and the authorised share capital and equity.

Thus, the analyze purpose is to offer points of view to ensure the manager's financial decision, and on the base of the investment, representing one of the fundamental index that guides the company's financial activity. In theory they are a lot of analyses under restriction assumptions, from, the analyses in oblige company, the analyses of investment project financed integral from capital account, the analyses of investment project on company's structure.

In Romania, the transparency and the completitude of financial information are in continuous development, but they found in the incipient phase. Thus, to have a necessary detailed information for the elaboration of a global study must be taken real information of financial indexes that should dovetail in the fundamental way with the one asked by theory. The main problem that it has to meet and offered as an example is the publishing of data about the debt and expenses with the rates. Thus the debts are not detailed after their nature in financial and exploitation, the majority of information referring generic to the sum of debt. In the expenses case, from the total of expenses are distinguished only the exploitation expenses, but for a fundamental analyses of loan capital costs is necessary a detail at the credit contracts level with the banks, about what the data are practically non existing.

References

- Brezeanu, P., Prajisteanu, B., Bostinaru, A., *Diagnostic financiar: instrumente de analiză financiară*, Editura Economică, București, 2002.
- Burton A. Kolb, Richard F. DeMong, *Principles of Financial Management*, Irwin, 2005.
- Davies, D., *The art of managing finance*, Mc Graw-Hill Book Company, New York, 2002.
- Dragotă, V., *Evaluarea acțiunilor societăților comerciale*, Editura Economică, București, 2006.
- Dragotă V. (coord), Dragotă M., Dămian O.A., Stoian A., Mitrică E., Lăcătuș C.M., Manăte D., Țătu L., Hândoreanu C.A. *Gestiunea portofoliului de valori mobiliare*, Ediția a doua, Editura Economică, București, 2009.
- Dumitrescu, D., Dragotă, V., Ciobanu, A., *Evaluarea întreprinderilor*, Ediția a II-a, Editura Economică, București, 2002.
- Fama, French, *Multifactor Explanations of Assets Pricing Anomalies*, The Journal of Finance, 1996, vol. 51, no.1.
- Fama, French, *Value versus Growth: International Evidence*, The Journal of Finance, 1999.
- Eugene F. Fama, Kenneth R. French, *The Capital Asset Pricing Model: Theory and Evidence*, The Journal of Economic Perspectives, Vol. 18, No. 3. (Summer, 2004), pag. 25-46.
- Gordon, M.; Shapiro, E., *Capital equipment analysis: the required rate of profit*, Management of Science, Vol.3, 1956.
- Harper, P., Weston, J.F. Brigham, E.F., *Finanțe Manageriale, Modelul canadian*, Editura Economică, București, 1998.
- Kuber, M., *Management consulting*, Editura AMCOR, București, 1992, pag. 274.
- Lintner, J., *Security Prices, Risk and Maximal Gains from Diversification*, The Journal of Finance, vol. XX, No. 4, December 1965.
- Lintner, J. *The Valuation of Risk Assets and the Selection of the Risky Investments in Stock Portfolios and Capital Budgets*, The Review of Economics and Statistics, 1965, pp 13-37.
- McKinsey & Company, Inc., T.Copeland, T.Koller și J.Murrin, *Valuation Measuring and Managing the Value of Companies*, John Wiley & Sons INC., 2000.
- Mossin, J., *Equilibrium in a Capital Asset Market*, Econometrica, 1966, pp 768-783.
- Pratt, S.P., *Cost of Capital – Estimation and Applications*, John Wiley & Sons INC., 2002.
- Preda, O., *Elemente de marketing international*, Editura Eurobit, Timisoara, 2007, pag. 65.
- Preda, O., Furdui I., *Elemente de marketing financiar bancar*, Editura Universitară, București, 2009, pag.119.
- Ross, S., *The Arbitrage Theory of Capital Asset Pricing*, Journal of Economic Theory, dec., 1976, pp.343-362.
- Ross, S., *The Capital Asset Pricing Model (CAPM), Short Sell Restriction and Related Issues*, The Journal of Finance, Vol. 32, No 1, 1977, pp 177-183.
- Sharpe, W., *Capital assets pricing: a theory of market equilibrium under conditions of risk*, The Journal of Finance, vol. XIX, no.3, September, 1964.

Stancu, I., *Finanțe. Teoria piețelor financiare. Finanțele întreprinderilor. Analiza și gestiunea financiară*, Editura Economică, București, 1998.

Stancu, I. (editor), *Articole fundamentale în teoria financiară*, DOFIN, București 1999.

Stancu, I., *Finanțe. Piețe financiare și gestiunea portofoliului. Investiții directe și finanțarea lor. Analiza și gestiunea financiară a întreprinderii*, Ediția a IV-a, Editura Economică, București, 2007.

Stănescu M.C., Analysis of the impact of Foreign Direct Investment performance on Romanian Economy, *Metalurgia International*, ISSN 1582-2214, vol XVIII , No 4-2013, pag 242-249.

Tobin, J., *Liquidity preference as behavior toward risk*, *The Review of Economic Studies*, vol. XXV, February, 1958.

Treynor, J., *Toward a Theory of the Market of Risky Assets*, unpublished manuscript, 1961.