

DO HIGH VALUE COMPANIES HAVE LOWER FINANCING COSTS? AN ANALYSIS ON ROMANIAN LISTED COMPANIES

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Abstract

Every company follows the maximization of its shareholder's wealth. The optimum structure of the financing sources is the one that leads to the maximization of the value of that company's stocks. This paper aims to analyse whether the cost of capital can influence the value of a company using as proxy the Tobin Q ratio. The analysis was conducted using a sample of 41 listed companies on the Bucharest Stock Exchange on an eight year period. After determining the weighted-average cost of capital I used a model of panel data with fixed effects in order to model its influence on the value of a company using as proxy the Tobin Q ratio. According to the results obtained, an increasing WACC is associated with an increase in Tobin Q ratio. If the market considers the company as having a high value by overestimating it, this may lead to the conclusions that the company is highly profitable and also can afford to pay a higher cost for the capital used. These results are in line with previous studies performed for listed companies on other financial markets.

Keywords: Weighted-average cost of capital, cost of equity, cost of debt, valuation, Tobin Q

INTRODUCTION

Any company follows the maximization of its shareholder's wealth that can be achieved by minimizing its costs. But it is known that each increase on the assets side of the balance sheet occurs simultaneously with an increase in the capital and liabilities side. The main factor taken into account by the management of a company when deciding which financing strategy to adopt is the cost of capital (for both equity and debt). In practice, a company cannot finance its activities from a single source, but can combine them in order to obtain the optimal structure.

So, the appropriate mix of own funds and borrowings is modelled based on the cost for the procurement of this resources.

This paper aims to analyse if a higher cost of capital may be associated with a high value company. Thus, the analysis starts by estimating the cost of financing identified by the weighted average cost of capital (WACC) for the companies listed on Bucharest Stock Exchange followed by the correlation analysis between WACC and the value of the company using as proxy the Tobin Q ratio.

The current study contains in section 2, a presentation of the relevant literature on this topic. In section 4 are presented the results obtained according to the methodology illustrated in section 3. In section 5, there are presented the limitations of this study and in section 5 are drawn some conclusions and future directions of research.

LITERATURE REVIEW

Due to the fact that in practice a company cannot finance its activity only from own sources, the cost of capital has to reflect the average cost of all the financing sources used. In the capital structure can be included borrowings, preferred stocks, reinvested earnings or new issues of ordinary shares. The difficulty for the managers is to identify the appropriate mix of types of capital which minimize the cost of financing for the company and, therefore, maximizes its value. The overall cost of financing is estimated based on the cost of each financing source and the percentage considered for its use. The market interest rates or the values obtained by calculating the yields-to-maturity are some of the proxies that can be used for the cost of debt in order to determine the cost of capital.

Serious difficulties arise when estimating the cost of equity. In the researches that aim to estimate the cost of equity are used various models such as Build-up, Gordon Shapiro, the Capital Assets Pricing Model (CAPM) and the tri-factorial model Fama-French. One of the most used methods, although it received many critics, is CAPM, introduced by Sharpe (1964) and Lintner (1965).

Zhi Da, Guo and Jagannathan (2012) argued that the empirical evidences against CAPM does not invalidate its use for estimating the cost of capital for various investment projects, provided that the associated options to be evaluated separately for the capital allocation. According to them, CAPM cannot provide a reasonable estimate of the expected return of a company's stocks because their value is influenced not only by the on-going projects, but also by the possibility to modify current projects or to adopt new ones. Their results showed that the value of a company is determined by the present value of its projects but also by the way in which the company is expected to exercise its options to take, reject or postpone a

project, or to modify or terminate a project in which it is currently involved, and this may be an important explanation for the low performance of CAPM in estimating the firm's stock rate of return.

According to the results obtained by Giaccotto, Golec and Vernon (2011), CAPM underestimate the cost of capital for some of the companies analysed from the pharmaceutical sector by up to 2.8% because it implicitly assumes that the cash flows follow a random walk trend. According to their findings, CAPM underestimate or overestimate the real cost because, as showed by their empirical analysis, the growth rates of the companies cash-flows is following a process characterized either by impulse or by mean reversion.

According to the hypothesis of Modigliani-Miller (1958), two identical firms belonging to the same risk class with the same cash flows, must have the same value even if the capital structure is different. Two companies are belonging to the same class of risk if their cash flows are correlated and also the industry in which the company operates may be a proxy of the risk class.

Later, Ross (1988) has improved the traditional risk class concept introduced by Modigliani and Miller and proposed a new perspective which involves the use of returns instead of cash flows in order to group companies, believing that as long as companies have the same exposure to the systematic risk, those are belonging to the same risk class no matter whether their cash flows are correlated or not.

Recently, Brown, Lajbcygier and Wong (2012) have proposed the use of risk classes known as basis assets instead of grouping by industry or asset price models developed by grouping companies that have a common risk exposure. The study starts from the thesis of Ross. Empirically, the analysis showed that basis assets lead to a proper estimate of the cost of capital compared with the method based on grouping by industry, being able to accurately estimate the cost of capital with fewer errors. The procedure involves finding the basis asset to which the company belongs, estimating the return of the basis asset and its use as ex-ante cost of capital.

According to the study of Tashfeen and Liton (2010), who have tested the relation between the weighted-average cost of equity for a sample of listed commercial banks that operate in Bangladesh and their stocks estimated rate of return, the expected return may increase if the cost of capital is reduced.

Also, the results obtained by Mohamad and Saad (2012) for a sample of companies listed on the Malaysian Stock Exchange showed a significant relationship between the cost of capital of a company and its value.

METHODOLOGY

The study intends to model the impact of the weighted-average cost of capital of a company on its value using a sample of 41 listed companies on the Bucharest Stock Exchange.

The Data

The sample of companies used for this paper was selected from the Bucharest Stock Exchange (BSE) website and consists of all companies of which stocks were tradable on the regulated market at the end of 2013.

The selected variables were: the total book value of debt, the market capitalization, the value of the fixed assets, current assets and prepayments, the three-month average interest rate for loans granted in RON on the interbank market ROBOR3M (Romanian Interbank Offer Rate) – the value recorded for the last day of the year, the daily closing price of the companies' stocks, the daily closing price of the BET index and the yields of the government bonds issued between 2006 and 2013.

The financial information was collected from the annual reports provided for the companies in the sample and published on the BSE website. The average interest rate ROBOR3M was collected from the National Bank of Romania website and the yields of the government bonds were obtained from the Ministry of Public Finance website. The closing price of stocks of the selected companies was collected from the website of the Financial Investment Services Company Romintrade S.A while the closing prices for the BET index and the value of the market capitalization for the Romanian listed companies were available on the BSE website. In the sample were kept only the companies for which data was available for the entire time interval. Therefore, the sample consists of data for 41 companies ranging from 2006 to 2013 (328 observations).

Determining the weighted-average cost of capital (WACC)

WACC is determined as the weighted-average of the costs of the financing sources that a company use performing its business. The optimum structure of the financing sources is the one that lead to the maximization of the value of the company's stocks.

For the purposes of this study, given the lack of information regarding the manner in which each company is financing its activity, I assumed that the companies from the sample use only borrowings and ordinary shares.

In this specific case, the formula for determining the weighted-average cost of capital is:

$$WACC = w_e k_e + w_d (1 - \tau) k_d \quad (1)$$

with $w_e = \frac{E}{V}$, $w_d = \frac{D}{V}$ and $V = D + E$

where w_d , w_e = the weights used for debt and equity of the total amount of the financing sources, τ = the taxation rate, k_e = the cost of equity, $k_d(1 - \tau)$ = the cost of debt, E = the market value of equity, D = the market value of debt, V = the market value of the company.

According to the literature in this domain, the market value of debt is obtained by multiplying the number of bonds issued by a company with the market price of each bond. Because of the lack of information on the bonds issued by each company from the sample, I considered the book value of debt for each company as a proxy for this indicator.

The market value of equity (the market capitalization) is obtained by multiplying the number of stocks of a company with the market price of one stock. The value of the market capitalization for the Romanian listed companies is available on the BSE website.

The cost of debt is the interest rate of new loans contracted by the company minus the value of tax savings due to the fact that the interest expenses are deductible. As a proxy for the interest rates available for the companies, I used the value recorded for the last day of the year for the three-month average interest rate for loans granted in RON on the interbank market ROBOR3M (Romanian Interbank Offer Rate). In Romania, the taxation rate equals 16%.

The cost of equity is the cost of the shareholder's funds. According to the literature there are various methods for estimating this indicator. For the purposes of the current study, I estimated the cost of equity for each company from the sample using the Capital Assets Pricing Model (CAPM).

The formula used for determining the cost of equity is:

$$k_{eit} = r_{ft} + \beta_{it} * [E(R_{Mt}) - r_{ft}] \quad (2)$$

where: r_{ft} =the risk-free interest rate on year t , β_{it} =the slope of the market model equation for company i on year t , $E(R_{Mt})$ =the return of the market portfolio on year t ;

The risk-free rate was considered as the average of the yields of the government bonds issued in each observed year.

In order to determine the β indicator for each company, I estimated the slope of the market model equation (which describes the relationship between the return of an asset and the market return):

$$R_{it} = \alpha_i + \beta_i \cdot R_{Mt} + \varepsilon_{it} \quad (3)$$

where R_{it} = the return of share i on time t , R_{Mt} = the market return on time t , β_i = the volatility coefficient, α_i = the constant term, ε_{it} = the residual term on time t .

For estimating the model that describes the relationship between the rates of return for the shares of the companies from the data sample depending and the market return I used the daily closing price of each stock and of the BET index for the timeframe between 2006 and 2013. The BET index (Bucharest Exchange Trading index) is the reference index of the Romanian capital market consisting of ten most traded companies on the regulated market of BSE, which makes its return appropriate to use as a proxy for the market return. The returns were calculated based on the closing price without taking into consideration the dividends. The estimation of the slope of the market model equation was conducted using the specific function provided by MS Office Excel 2007.

Influence of the financing costs on the value of the company

In order to model the influence of the weighted-average cost of capital on the value of a company, I used a model of panel data given the limitation of the data sample of only 328 observations. The analysis was conducted using Eviews 8 by estimating a panel data model by pooled ordinary least squares. The best model to be used was selected based on the results obtained for the Hausman test which gives the possibility to select the one that is the most appropriate for the sample, between the fixed effect model and the random effect model.

The equation of a panel data model can be written as follows:

$$y_{it} = \alpha + X_{it}\beta + \mu_i + \vartheta_{it}, \quad i = 1, \dots, T; t = 1, \dots, T \quad (4)$$

where i = the cross-section dimension, t = the time-series dimension, α, β = coefficients of the equation, X_{it} = the observation it on the explanatory variables, μ_{it} = the unobservable individual-specific effect and ϑ_{it} = the remainder disturbance.

For this analysis I considered the weighted-average cost of capital as independent variable. As dependent variable I used the Tobin Q ratio as a proxy for the value of a company. The dependent variable was determined according to the following formula:

$$TobinQ = \frac{MVE + BVD}{TA} \quad (5)$$

where MVE = the market value of equity, BVD = the book value of debt, TA = the total assets. The Tobin Q ratio was introduced by William Brainard and James Tobin (1968). A value greater than 1 suggests that the company's value might be overestimated (the market value of the company is greater than the value of its total assets). This indicator may help an investor in taking the appropriate investment decision.

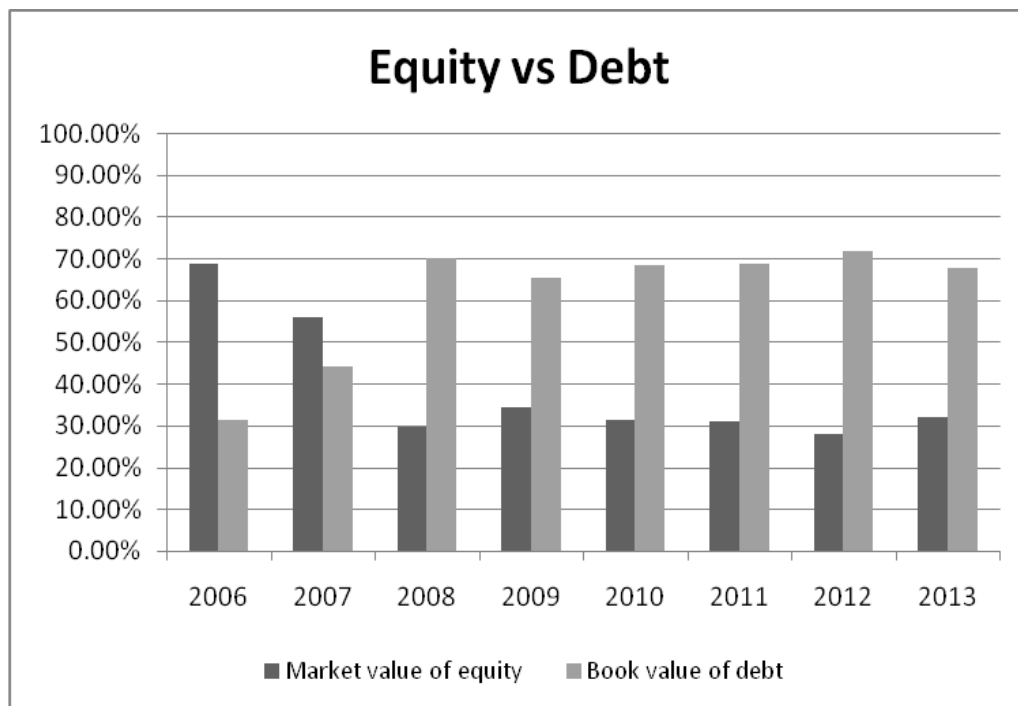
The value of total assets was calculated for each company by cumulating the values of the fixed assets, the current assets and prepayments. For the market value of equity I used the value of the market capitalization available on the BSE website.

ANALYSIS AND EMPIRICAL RESULTS

First, in order to better understand the financing structure adopted by companies listed on BSE, the cumulated market value of equity for the companies from the sample was plotted against the cumulated book value of the debt, for each analysed year.

According to Figure 1, before the start of the financial crisis in 2008 the listed companies from the selected sample used in particular shares issuing in order to finance their business activity. After the start of the financial crisis, characterized also by the collapse of the stock prices, borrowings held the largest share in the financing structure.

Figure 1. Sources of financing: Equity vs. Debt



Source: BSE website, annual reports, author's calculations

In order to proceed to estimate the equation of the panel data model, I started by generating the correlation matrix (Table 1). The correlation coefficients show only a weak positive correlation between Tobin Q and WACC which makes the selection of variables appropriate for estimating the model.

Table 1. Correlation matrix

	<i>Tobin Q</i>	<i>WACC</i>
<i>Tobin Q</i>	1.000000	0.163232
<i>WACC</i>	0.163232	1.000000

I used the results provided by the Hausman test to choose the best suitable model to estimate. According to the results for the value of the probability, as illustrated in Table 2, the appropriate model to estimate is the model with fixed effects (the null hypothesis of the test can be rejected; H_0 : the random effect model is appropriate).

Table 2. Hausman test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	4.662559	1	0.0308

Then, I estimate the equation illustrated below using Eviews 8:

$$\text{TOBIN_Q} = C(1) \cdot \text{WACC} + C(2) + [CX=F] \quad (6)$$

The coefficient of the explanatory variable and the constant term are statistically significant considering a significance threshold of 5% (as it can be seen in Table 3).

Table 3. The estimation output

Variable	Coefficient	t-Statistic	Prob.
WACC	0.466230	3.016254	0.0028
C	1.033317	26.80533	0.0000
R-squared		0.266412	
F-statistic		2.533279	
Prob(F-statistic)		0.000004	

Because of the value of the probability associated with the F-statistic test, the model is correctly specified (prob. < 0.05). According to the estimation output, there is a positive correlation between the weighted-average cost of capital and the Tobin Q ratio, used as proxy for the value of a company. Also, the value of R-squared shows that WACC influences the value of the company on a small but not negligible extent, by 26.64%. The result shows that there are also other variables that influence the value of a company, as expected, but an increase of the WACC with 1% generates an increase in the value of the company with 0.466230%.

An increasing WACC is associated with an increase in Tobin Q ratio which means that the market gives a high value to that company and this may be a signal that the market

perceives the company as a profitable one. From the economic point of view this may suggest that only a highly efficient and profitable company may afford to pay a higher cost for its financing sources.

LIMITATIONS OF THIS STUDY

The results of this study may be distorted due to the limitations of the model. Thus, the proxies used for the cost of debt and for the cost of equity, the considered structure of the companies financing sources (only equity from ordinary shareholders and borrowings) or the small length of the data sample may have an influence on the conclusions obtained from this analysis. It is important to take into account also the critics of the formula used for calculating the weighted-average cost of capital.

Moreover, the analysis is performed on companies listed on the Bucharest Stock Exchange so that the results may be influenced by the particularities of the Romanian financial market. The results were obtained without taking into account the differences between industries - such analysis may relieve different results between the indicators for different industry, considering the particularities of each of them.

CONCLUSIONS

According to the results obtained on the current study an increase in Tobin Q (the value of a company) can be explained by an increase in WACC. These results are in line with previous studies performed for listed companies on other financial markets.

Given the small value of R-squared, the value of a company is influenced by other factors too, but it is important to take into account that if the market considers the company as having a high value by overestimating it, this may lead to the conclusion that the company is highly profitable and also can afford to pay a higher cost for the capital used.

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