

## The cost of equity: what happens in absent equity market countries?

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### Abstract

**Purpose:** *This study aims to provide a practical approach to assess the cost of equity from the perspective of a foreign investor in a country with absent equity market such as Albania.*

**Approach:** *The study approach is chosen based on literature review and data availability. We have used a combined methodology considering the modified model of the classical CAPM according to Mariscal and Lee (1993) and Damodaran (2003).*

**Findings:** *The analysis reveal a large spread of beta coefficients, which indicates a high level of risk, which combined with the market risk premium and the macroeconomic risk premium result in a high cost of equity (27.26%).*

**Research limitations:** *Lack of equity markets, use of accounting information, short time data series (5 years) are the main limitations of the study.*

**Value:** *This is the first study conducted in the Albanian market regarding the cost of equity. The study contributes to existing research and practice in the field of business valuation, especially for countries with absent equity markets. It would be very helpful to*

*potential investors, business owners and managers, and also to practitioners.*

**Key words:** cost of equity, beta coefficient, market risk premium, country risk premium, CAPM.

## 1. INTRODUCTION

Cost of equity is a crucial factor in financial decision-making due to its relevance in discounting future flows, equity valuation, calculation of the weighted average cost of capital, etc. The first studies concerning asset valuation have been carried out in developed countries and have been further disseminated in empirical studies in emerging and developing countries. Finance scholars use several models for valuing stock prices in emerging markets, and most of these models are based on the CAPM model, despite some scholars' objections to the classical method. Choosing the right asset valuation model is complex decision which requires complex analysis and judgement.

Both practitioners and scholars have developed several methods to calculate the cost of equity. The choice and implementation of different models in practice usually depends on the level of segmentation of financial markets. It is generally accepted that emerging markets are not fully correlated with developed ones due to market inefficiencies, limited diversification opportunities, and other economic and political characteristics. Therefore the application of the CAPM model created by Sharpe (1964) and Lintner (1965) may be difficult in these countries. When referring to countries like Albania, where there is no existing equity market, the market segmentation becomes even greater, and consequently the need to adapt alternative models of the CAPM.

One specific element that should be taken into consideration in developing countries is whether or not to add a premium to the additional risk arising from investment in these countries. There are many authors who argue that investors will ask for additional reward based on government's financial failure risk in developing countries. Since other macroeconomic risks (inflation, exchange rates, etc.) can be incorporated in adjusting future cash flows, it is better and easier

that this risk be included in the cost of equity (Mariscal and Lee, 1993; Godfrey and Espinosa, 1996; Lessard, 1996).

This paper aims to bring a brief review and a practical approach in calculating the cost of equity for businesses in Albania. The paper is structured as follows: next section summarises the literature related to different models for calculation of the cost of equity; in the third section we have described the data and the study approach, while the methodology is explained in details and step by step in the fourth section, combined also with analysis and results. Conclusions and recommendations for further research are summarized in the last section.

## **2. LITERATURE REVIEW**

The first studies concerning asset valuation have been carried out in developed countries and have been further disseminated in empirical studies in emerging and developing countries. It should be mentioned that we have not identified any published study (based on an extensive literature review) referring to cost of equity calculation in developing countries that have no equity market, such as Albania.<sup>1</sup> For this reason, we will take in consideration the literature referring the cost of equity in developing countries (despite the segmentation of market).

Calculation of the cost of equity is the centre of the financial theory and practice. Sharpe (1964) and Lintner (1965) presented the asset valuation model, CAPM, which explains the balance between risk and return on an asset. According to them, the return on investment is linearly positively linked to the market risk premium, which represents the systemic risk that affects the return of the market.

Finance scholars use several models for estimating stock prices in developing markets, and most of these models are based on CAPM, despite some scholars' objections to this method. The choice and implementation of different models in practice depends on the level of segmentation of financial markets. In the case of fully integrated financial markets, the CAPM is modified to what is called the Global CAPM (G-CAPM). This model assumes that the investor in

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<sup>1</sup> The list of countries without stock exchange:

each of these markets has the same access to the market at the same cost (O'Brien, 2005). However, the application of this model to developing countries is challenging, as the markets of these countries are more segmented and have some barriers that reduce efficiency (Harvey, 1995; Bekaert and Harvey, 1995). For this reason, most of scholars support the application of the Local CAPM (L-CAPM) in these markets. As specified by Bekaert and Harvey (1995), L-CAPM applies to cases where the model built by Sharpe (1964), Lintner (1965) and Black (1972) is tested on a single market index. In practice, this model is based on data from the developing country's own market and takes into account a premium for the increased risk due to the fact of investing in a developing country. The elements that can be taken as a basis for risk premium are: political and social aspects that may adversely affect the company's performance, the likelihood of expropriation, barriers to free capital movement, the risk of financial failure of the government, inflation risk, etc.

The main problem with the use of L-CAPM is the overestimation of the cost of equity. Erb et al. (1995) have shown that macroeconomic risk is involved to a certain extent in market risk. According to the findings of this study, the country's macroeconomic risk explains on average 40% of the variance of the market return fluctuations. In this way, the inclusion of the macroeconomic risk premium in the CAPM equation doubles the risk of the country, since it is included in the market risk premium (Godfrey and Espinosa, 1996).

Pereiro (2001) has adjusted the dual market risk effect by adjusting the term of market risk with the factor  $(1-R_i^2)$ , where  $R_i^2$  is the determination coefficient of regression between the fluctuation of the company's returns and the country risk variance (AL-CAPM). This factor expresses the fraction of the volatility of company returns that is explained by the macroeconomic risk. One of the main problems of applying this adjusted model, AL-CAPM, is the difficulty of creating long data series of beta and market returns in developing countries, as well as their sustainability and reliability. Therefore, we often face negative market risk premiums (Pereiro, 2006). Other authors have tried to improve this problem by using models that combine data in global and local level (Hybrid CAPM model, H-CAPM). Lessard (1996) considered the US market as a global market and used the American market premiums adjusted to the developing countries betas to

calculate risk premiums in those countries. The beta was calculated as the sensitivity of stock returns in the developing country to stock returns in the US market.

One of the biggest challenges and problems in applying the CAPM model is measurement of the beta coefficient. In the standard version of the CAPM model, historical data on stock prices should be recognized for calculating this coefficient. This information is difficult or impossible in some cases, especially in developing countries. For this reason, literature suggests the application of different approximations in calculating betas. Damodaran (2003) suggests that there are three methods: Accounting beta, fundamental beta and bottom-up beta. The accounting beta is used when information on stock prices is not accessible. As an approximate technique, the net profit variations of companies, regressed by the profit variation of an index (such as S & P 500), can be used for calculating the beta. The slope of regression represents the company's accounting beta. This is a very practical and simple way to be implemented especially in markets with lack of information, but at the same time there are some disadvantages associated with the limited time series (company profits are on an annual basis); differences arising from the use of various auditors of financial statements and accounting methods; failure to incorporate external market data, etc. (Damodaran, 2003). The fundamental beta, according to Damodaran (2003), refers to the calculations of Beaver, Kettler and Scholes (1970), where beta is determined as a function of some indicators such as: the variation coefficient of operating income, debt ratio, profit growth and total assets accounting value. Whereas bottom-up betas can be used in cases of identifying comparable companies listed on stock exchange and replicating the betas of these companies to unlisted companies in the same sector.

Although beta coefficient is a measurement of the systemic risk in the CAPM model, companies operating in developing countries are exposed to additional risks compared to companies in developed countries. Consequently, investors require higher returns, as well as the cost of capital needs to be modified taking into account the added risk, particularly the country risk. However, not all companies are equally exposed to this risk.

Mariscal and Lee (1993) included for the first time in calculation of the cost of equity the macroeconomic risk variable (also

called the country's risk premium) measured as a difference between the government bond rate of a developing country (converted in US dollars) with the treasury bill rate issued in the US. This indicator modifies the Global CAPM, especially when referring to estimations in non-developed markets. This adjusted model has also affected the models used by Damodaran (2003), Godfrey and Espinosa (1996).

Mariscal and Lee (1993) suggested that the macroeconomic risk premium should be added in order to increase the accuracy of calculating the cost of equity compared to the simple application of the Global CAPM model. According to Harvey (1995), capital returns in emerging markets are not fully correlated to those of developed markets, however the direct application of the standard CAPM model would lead to lower returns than those observed in practice. Meanwhile, the inclusion of macroeconomic risk factor in the model brings conclusions that are logically and practically more acceptable. There is extensive evidence on the importance of macroeconomic risk premium in developing financial markets. The mostly used measurement of country risk among academics and practitioners is the margin of interest between a global bond issued by the government of a developed country and a similar bond issued by the government of a developing country with the same currency and maturity (Godfrey and Espinosa, 1996 Lessard, 1996).

*The best model?* There is not a single answer to this question. Choosing the right asset valuation model is not a very simple decision due to the importance of cost of capital in decision making. Valuation is always considered as a mix of science and judgement, therefore various models exist and are used by researchers and practitioners. Nevertheless researchers are more likely to choose models that are statistically significant, whereas practitioners prefer simple models (Pereiro, 2006).

### **3. DATA AND STUDY APPROACH**

This paper aims to provide a practical approach to assess the cost of equity in Albania in 2015 from the perspective of a foreign investor. The study refers to a portfolio of 50 trading companies operating in our country, using secondary data for the period 2011-2015. We have used a combined methodology based on the modified model of the classical CAPM according to Mariscal and Lee (1993) and Damodaran

(2003). The combination of the two models was made due to lack equity market in our country<sup>2</sup>. It should be noted that no other study in this field is done in our country.

The study aims to calculate the cost equity, hence the required rate of return of a foreign investor seeking to invest in the trade sector in our country. The study is conducted in two levels: at individual company level and sector level (based on selected portfolio of companies).

According to the Mariscal and Lee (1993) model, the company's cost of equity (or return on investment)  $k_i$  is calculated as follows:

$$k_i = r_f + \beta_i(r_M - r_f) + CRP \quad (1)$$

where the required indicators, calculation method, and sources of information are given in the following table:

**Table 1. List of variables**

Variable	Description	Calculation	Source of data
$r_f$	Risk free rate	12 month treasury bill rate	Bank of Albania
$\beta_i$	Beta	$\beta_i = \frac{\Delta EAT_i}{\Delta EAT_M}$ $\Delta EAT_i$ - Change in net profit of company $i$ for two consecutive years; $\Delta EAT_M$ - Change in net profit of sector (market) for two consecutive years	Financial Statements (2011-2015) downloaded from National Business Centre Structural Survey of Economic Enterprises (INSTAT- Institute of Statistics, 2011-2015)
$r_M$	Market return	$r_M = ROE_p$ $ROE_p$ - average return on capital for the portfolio	Financial Statements (2011-2015) downloaded from National Business Centre
$CRP$	Country risk premium <sup>3</sup>	Interest margin between 5 year Albanian Government bond and 5 year German Government bond (issued in Euro)	Thomson Reuters Eikon

<sup>2</sup> Albanian Securities Exchange (ALSE) was licensed in 2017 as the first Albanian securities exchange with private capital, but till now only government securities have been traded and there is no private company listed to trade shares.

<sup>3</sup> Macroeconomic risk will only refer to the risk of government financial failure, considering that other risk factors (inflation, exchange rates, etc.) are elements that should be involved in adjusting future flows rather than the rate of discount when used in business/asset valuation.

At sector level, the above formula undergoes the following changes:

$$k_p = r_f + \beta_p (r_M - r_f) + CRP \quad (2)$$

where:

$k_p$  - Cost of equity for portfolio

$\beta_p$  - Beta of portfolio

All other components are the same (Table 1). The only difference between the two formulas refers to the calculation of the portfolio beta, which is calculated based on the formula:

$$\beta_p = \sum_{i=1}^{50} \beta_i * w_i \quad (3)$$

#### Paper limitations:

1. The use of financial statements as a data source in Albania is a major challenge due to the difficulty of accessing information, data chronology and their reliability. The financial statements were obtained from the National Business Center database due to the lack of a legal obligation for companies to publish them. Even though we have used only audited financial statements, high informality in our country may affect the database.
2. The use of longer time series (more than 5 years), and the inclusion of a more representative number of companies in the sector could lead to more accurate conclusions.
3. The lack of equity market makes it impossible to verify the results of the study, therefore they can be considered only as theoretical findings.

## 4. DATA ANALYSIS AND PROCESSING

### 4.1. Calculation of risk-free rate

The risk-free rate is considered the average 1-year treasury bill rate issued by the Bank of Albania for the 5 years period, which averages 3.4%.

$$r_f = 3.4\%$$

### 4.2. Calculation of beta coefficient

The risk is expressed through the accounting beta coefficient (Damodaran, 2003), which is calculated as the rate of volatility of each



of the companies' net profits for the 5 years period under review against the volatility of the sector's net profits for the same period.

$$\Delta EAT_i = \alpha + \beta_i * \Delta EAT_M + \varepsilon$$

where:

$\Delta EAT_i$  - the annual change of net profit for each company for two consecutive years (in %);

$\alpha$  - regression coefficient;

$\beta_i$ - beta coefficient;

$\Delta EAT_M$  - annual change of net profit for the sector for two consecutive years (in %);

$\varepsilon$  - regression error term

Since the CAPM model can be applied to both individual assets and portfolios, we have initially calculated a beta coefficient for each company by linearly regressing the changes in net profit of each company with the sector (4 observations in total for each regression, 50 regressions in total), and then, to find the beta of the portfolio, we have used the formula (3).

The depended variable is  $\Delta EAT_i$ , the independent variable is  $\Delta EAT_M$ . Below is just one of the 50 calculations we have made for each of the selected companies:

Regression Statistics	
Multiple R	0.9723124
R Square	0.9453914
Adjusted R Square	0.9180872
Standard Error	0.031291
Observations	4

ANOVA					
	df	SS	MS	F	significance F
Regression	1	0.033902	0.033902	34.6243	0.02768758
Residual	2	0.001958	0.000979		
Total	3	0.03586			

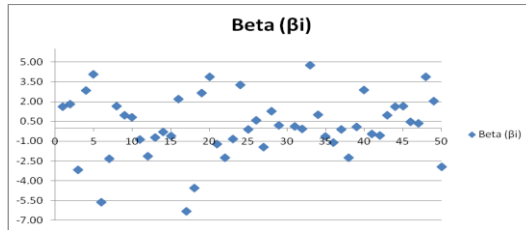
	Coefficients	Standard Err	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	-0.1067876	0.017008	-6.27881	0.02444	-0.1799655	-0.0336098	-0.1799655	-0.0336098
X Variable 1	0.461165	0.078373	5.884242	0.027688	0.12395368	0.79837631	0.12395368	0.79837631

According to this data, we can see that the model is statistically significant at 95% confidence level and the Beta for the company is 0.4612.

$$\Delta EAT_i = -0.1068 + 0.4612 * \Delta EAT_M$$

This means that the profits of this company fluctuate in the same direction with the market, but to a lesser extent than the market profits. The same procedure has been used to calculate the betas of each of the 50 companies and their distribution is shown in the following graph:

**Chart 1. Distribution of beta coefficient for each company**



Source: Data processed by authors

As shown in the graph, there is a huge distribution of beta coefficients and there are big differences between companies. This is due to the use of accounting data and significant fluctuations in company profits and losses.

In order to calculate the portfolio beta we also need the respective portfolio weights. In conclusion, the calculated betas and weights for all companies are given in the following table:

**Table 2. Beta coefficient calculation for portfolio**

Company (i)	Beta ( $\beta_i$ )	Weight ( $w_i$ )	$\beta_i * w_i$	Company (i)	Beta ( $\beta_i$ )	Weight ( $w_i$ )	$\beta_i * w_i$
1	1.6312	1.494%	0.0244	26	0.5807	0.003%	0.0000
2	1.8046	0.318%	0.0057	27	-1.4639	0.075%	-0.0011
3	-3.1539	0.803%	-0.0253	28	1.2822	3.692%	0.0473
4	2.8412	0.009%	0.0003	29	0.1853	1.122%	0.0021
5	4.0535	0.177%	0.0072	30	-7.0048	0.387%	-0.0271
6	-5.6136	0.046%	-0.0026	31	0.1309	8.292%	0.0109
7	-2.3429	0.137%	-0.0032	32	-0.0745	0.134%	-0.0001
8	1.6514	27.000%	0.4459	33	4.7767	12.824%	0.6125
9	0.9566	0.000%	0.0000	34	1.0178	0.359%	0.0037
10	0.8022	0.043%	0.0003	35	-0.6379	1.836%	-0.0117
11	-0.8737	0.064%	-0.0006	36	-1.0846	1.652%	-0.0179
12	-2.1260	0.051%	-0.0011	37	-0.1225	0.344%	-0.0004
13	-0.7140	0.069%	-0.0005	38	-2.2665	0.354%	-0.0080
14	-0.3091	1.690%	-0.0052	39	0.0841	0.429%	0.0004
15	-0.6069	14.255%	-0.0865	40	2.8878	0.482%	0.0139
16	2.1748	0.207%	0.0045	41	-0.4325	2.993%	-0.0129
17	-6.3141	0.056%	-0.0035	42	-0.5640	0.286%	-0.0016
18	-4.5472	0.014%	-0.0007	43	0.9804	0.000%	0.0000
19	2.6674	4.066%	0.1085	44	1.6348	0.157%	0.0026
20	3.8713	1.459%	0.0565	45	1.6431	0.386%	0.0063
21	-1.2168	0.107%	-0.0013	46	0.4612	1.392%	0.0064
22	-2.2562	1.767%	-0.0399	47	0.3708	0.270%	0.0010
23	-0.8532	0.157%	-0.0013	48	3.8647	0.106%	0.0041

24	3.2806	5.797%	0.1902	49	2.0379	0.091%	0.0019
25	-0.1033	1.892%	-0.0020	50	-2.9560	0.261%	-0.0077

Source: Data processed by authors

The sum of the fourth and eighth column gives us the weighted portfolio beta:

$$\beta_P = \sum_{i=1}^{50} \beta_i * w_i = 1.2942$$

#### 4.3. Calculation of the average market return

It is difficult to calculate the market portfolio return due to the lack of equity market in our country. As an approximate indicator we have used the average return on equity (ROE) of the portfolio of the selected companies which is 19.71%.

$$r_M = ROE_P = \frac{\text{Net profit}}{\text{Shareholder equity}} = 19.71\%$$

where:

$r_M$  - average market return;

$ROE_P$  - average return on equity for the portfolio of companies.

#### 4.4. Calculation of country risk premium (CRP)

Since so far we have only considered the internal risk, as widely suggested by the literature, we should also consider the systemic risk of our country.

In order to express the macroeconomic risk at country level, the interest rate of the Albanian government bond issued in euro and the German government bond with the same maturity was considered.<sup>4</sup> The German government bond is rated AAA by international rating agencies and can therefore be used as a benchmark in calculating this indicator.

$$\begin{aligned} CRP &= \text{Bond interest margin} \\ &= \text{Albanian bond coupon rate} - \text{German bond coupon rate} \\ &= 5.75\% - 3\% = 2.75\% \end{aligned}$$

<sup>4</sup> Data from Thomson Reuters Eikon, accessed on 05/05/2018

This means that a foreign investor who wants to invest in Albania will require a minimum return of 2.75% higher than investing in Germany.

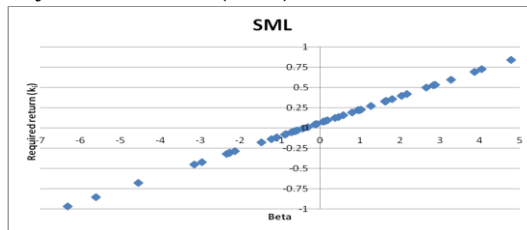
#### 4.5. Calculation of the cost of equity for each company and portfolio

Based on the above calculations, we can calculate the cost of equity for each company based on the following relationship:

$$\begin{aligned} k_i &= r_f + \beta_i(r_M - r_f) + CRP \\ &= 3.4\% + \beta_i(19.71\% - 3.4\%) + 2.75\% \\ &= 3.4\% + \beta_i * 16.31\% + 2.75\% \end{aligned}$$

The relationship that exists between individual betas and required returns represents the Security Market Line (SML), which is shown in the following chart:

**Chart 2. Security Market Line (SML)**



Source: Data processed by authors

The negative values of the cost of equity (Chart 2) result from the large negative values of beta coefficients for some companies, resulting from the high volatility of companies' net profits to sector profits.

If an investor does not prefer to invest in individual companies, but in the portfolio of best trading companies in Albania, the minimum required return is:

$$\begin{aligned} k_P &= r_f + \beta_P(r_M - r_f) + CRP \\ &= 3.4\% + 1.2942(19.71\% - 3.4\%) + 2.75\% \\ &= 27.26\% \end{aligned}$$

As shown by the result, the cost of equity is relatively high and this is due to the high level of market risk premium (16.31%).

## 5. CONCLUSIONS

The calculation of the cost of equity is an important aspect of both study and practise in finance field due to its importance and usage in discounting future cash flows, financial valuation of companies, calculation of cost of capital, etc. Scholars have developed alternative approaches compared to the classical (standard) CAPM model, which generally has resulted in some difficulties when applying in practice, especially in segmented and not very liquid markets.

This paper aimed to calculate the cost of equity for 50 companies operating in the trade sector in Albania from the perspective of a foreign investor. The calculations were based on the models suggested by Mariscal and Lee (1993) and Damodaran (2003) with some approximations due to the lack of equity market in our country.

The analysis revealed a large spread of beta coefficients, which indicates the high volatility of company profits against the sector's own profits, thus reflecting a high level of risk. At the same time, the return on equity of the selected companies is relatively high (19.71%), mostly due to the low levels of capital invested in these companies.

The analysis showed that based on the modified CAPM application, the cost of equity in the case of trading companies in Albania is high (27.26%), due to the high level of market risk premium and the macroeconomic risk premium required to invest in a developing country such as Albania. This is an expected result based also in literature which emphasis that investors in developing countries will require higher rate of returns due to additional risk. Based on KPMG survey for 2015, the cost of equity used in Germany, Austria and Switzerland was 8.1% - 8.5% (depending on industry).

It is a huge gap in scientific research related to business valuation aspects in countries with absent equity markets, therefore there is room for further studies, which would be very helpful to potential investors, business owners and managers, practitioners, and also would enrich the literature in asset valuation field. Although several national and international consultancy firms that operate in Albania offer services of business valuation, it is needed a deeper and scientific based methodology in future.

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