

RATE OF COSTS ON INVESTMENT CAPITAL IN EMERGING MARKETS

Oleg Tereshchenko

SHEE "Vadym Hetman Kyiv National University", Ukraine

Nataliya Voloshaniuk

Kryviy Rih Economic Institute of SHEE "Vadym Hetman Kyiv National University", Ukraine

Dmytro Savchuk

Chernivtsi National University named after Yuriy Fedkovych, Ukraine

Abstract. *To date, there is no adequate methodology for calculating the discount rate that would satisfy most financial analysts. The most common approach to determining the discount rate is to use the weighted average cost of capital (WACC) algorithm. The calculation of capital costs (discount rates) in emerging market countries (EM) is characterized by a number of problems related to the information inefficiency of the capital market, instability of demand for products, inflation, macroeconomic and legal uncertainty and a lack of proper payment discipline. Even more complex are the corresponding calculations during the financial crisis, accompanied by hyperinflation, a fall or significant fluctuations in the rate of the national monetary unit, trade wars, and the collapse of the banking system.*

Especially problematic for emerging markets is the calculation of the cost of equity (investment) capital. In developed markets, the classical CAPM model is used for these purposes. Taking into account the lack of an effective capital market in EM-related countries, it is quite difficult to determine the standard parameters of the model (risk-free rate of return, market risk premium, beta factor).

Significant problems also lie in the sources and shadow schemes for paying high premiums for the risks of investing capital in EM. The aim of the paper is to substantiate recommendations on the procedure for calculating the rate of costs for own (investment) capital, taking into account the specifics of corporate activities in countries related to EM.

Keywords: *beta factor, CAPM, discount rate, market risk premium, risk-free rate of return, WACC.*

Introduction

The cost of equity corresponds to the expected rate of return on investment by investors. It is an integrated expression of a set of factors embodying market expectations regarding the risks of investing in a particular asset, taking into account the profitability of the market as a whole, and depends on interest rates in world and local financial markets, the risks of financing a particular

enterprise. With an efficient capital market, this fee can be calculated directly and corresponds to investors' incomes, which are formed from the dividends received and profits in the form of growth in the market rate of corporate rights, in particular, shares. The problem is that in the countries with emerging markets (EM), securities of only a small number of enterprises are listed on stock exchanges. In addition, the capital market in such countries is mostly inefficient. A significant number of companies use shadow remuneration schemes for owners. Clarification of the cost of capital for most enterprises is a rather problematic task.

A similar problem also arises in the countries with developed markets when calculating the cost of equity for non-public companies. In theory and practice, there are two approaches to calculating the cost of equity for enterprises whose securities do not have circulation in developed capital markets: the use of CAPM modifications and an expert method based on a subjective calculation of risk charges using special allowances. However, so far no adequate solution has been found to this topical problem in science and practice. The purpose of the proposed research is to clarify the peculiarities of calculating the cost of own (investment) capital, taking into account the peculiarities of corporate activities in the countries related to EM.

Research results

The countries related to EM have a significant amount of shadow economy. It can be assumed that the largest share of the income of the shadow economy is formed precisely due to the concealment of fees for its capital. The cost of equity in the overwhelming majority is implicit (hidden or shadow). Information about them in the official statements is incomplete, or completely absent. They can be determined by resorting to indirect methods (models). However, models, ideal from a theoretical point of view, in their pure form have no practical application to EM, since they act only with rather restrictive assumptions. According to the well-known CAPM model, the investor's expected rate of return on investments in an enterprise depends on the risk-free rate of return, the average rate of return on the capital market and the systematic risk of investing in a particular asset.

The problem is that all the parameters that are included in the CAPM can only be calculated under the condition of a more or less efficient capital market. To determine them, it is necessary to process a significant array of information, as well as to apply rather contradictory methods of calculation. In the case of calculating model parameters for countries with emerging markets, additional difficulties arise due to the lack of a reliable database, high volatility of the local stock market or its illiquidity, legal and macroeconomic uncertainty, and a

number of other factors. Obviously, under the influence of these factors, an average enterprise operating in an EM, for example in Ukraine, carries more risks than a similar enterprise operating in developed markets. According to the CAPM, these additional risks are subject to diversification, which means that they are non-systematic and do not affect the evaluation of investments and assets. From a theoretical point of view, the market does not pay an additional risk premium for unsystematic risks. If so, then the increment in the premium for additional risks is not advisable to take into account, since the corresponding risks are duly taken into account when determining the coefficient of beta and the market risk premium (MRP). However, the CAPM, filigree from the theoretical point of view, is based on assumptions that are far from reality. This is the key drawback of the model and the need to modify it, in particular, for the purposes of determining the discount rate on EM.

In the world practice, modifications of the CAPM are widespread: the Additive Model, the Beta Model, the Lambda Model (Damodaran, 2012), the local CAPM (Pereiro, 2006), the Hybrid CAPM (Godfrey & Espinosa, 1996), the Lessard-Model (1996) and the Godfrey-Espinoza model (Godfrey & Espinosa, 1996). These models are aimed at solving a pragmatic task - the calculation of the expected return on investment by investors on invested capital, provided that the corresponding asset is on the EM. To do this, it is necessary to cover all risks as fully as possible, and also to prevent their double counting. In addition, the information used in the settlement process must be reliable and trustworthy on the part of investors. The key critical point of these modifications lies in the absence of such information. To determine the individual parameters of the models, the data generated by the local stock market is needed. For example, to use the local or hybrid CAPM, local beta and the local risk premium should be calculated; this is done on the basis of processing information from the stock market.

All the other models involve the use of information from the local stock market to calculate the beta factor. Due to the lack of reliable information from local financial markets, it is advisable for EM to use modifications of the CAPM, which provide for minimal use of data from these local markets.

The factors that make it difficult to calculate the cost of equity with the use of the traditional CAPM include the following:

- informational inefficiency of local capital markets;
- high investment risks and low sovereign ratings of the respective countries;
- lack of reliable market instruments, on the basis of which one can objectively calculate the local market risk premium and the local risk-free rate;

- active use of hidden schemes of payment for investment capital;
- insufficient level of protection of property rights of investors;
- high level of expected risk premium, which may exceed the actual return on equity;
- discrepancy of the incomes, which are given in the official financial statements, and the expected incomes of the investor.

The starting point for developing an algorithm for calculating the cost of equity is to solve a dual problem:

- the need to take into account all possible risks associated with the investment process;
- avoidance of double counting of the same risks in different components of the risk premium.

One of the ways to solve this problem is to use modifications of the CAPM that provide for the combined use of the parameters calculated on the basis of global data, as well as specific premiums for the risk of investing in EM (country risk premium, CRP) and the specific risks premium (SRP) peculiar to a specific asset. Therefore, the approach assumes that a modified risk premium includes a global market risk premium (MRPg), a country risk premium, and an asset-specific risk premium. In addition to the well-known recommendations on the need to integrate the CRP into the CAPM model, justified by A. Damodaran, arguments in support of the use of the CRP and SRP for the purposes of calculating capital costs were also adduced by Ernst & Gleißner (2012), Ballwieser (2018), Hitchner (2017). The legitimacy of the use of these parameters can be easily explained if we interpret at least some of the non-diversified risks (peculiar to the enterprise) as being relevant for evaluation. In order for these risks to be classified as irrelevant, sufficiently restrictive assumptions must be made, which in reality do not hold. Therefore, unsystematic risks arising from investments in EM can be interpreted as those that significantly affect the assessment (Ernst & Gleißner, 2012).

Let us justify the methodology for constructing an algorithm for calculating the cost of equity for the countries that belong to EM and are in crisis. We denote the corresponding modification of the CAPM as a hybrid crisis model. Hybridity in this case means a combination of different types of risks in one model: global, local and specific risks characteristic of a particular asset. Taking into consideration the impossibility of an objective calculation of the risk-free rate of return and the lack of reliable information from the local stock market, adequate calculation models for Ukraine will be those that take into account the global risk-free rate, the global risk premium and the minimum use of data from the domestic stock market as an information base, as well as expert evaluation. To this end, using the survey method and systematization, a survey was

conducted among the heads of financial departments of 40 Ukrainian enterprises, half of which belong to the group of large, and half to the group of medium and small enterprises. On the condition of anonymity, business representatives answered the question about investors' expected incomes of enterprises (the rate of return on investment capital), the main sources of an additional risk premium, rates for dividend payments, and possible schemes for paying income to owners. The survey results are shown in Table 1.

Table 1 Sources of an additional premium for the risk of investing in the company's equity capital: the example of Ukraine (developed by authors)

Parameters	Large companies		Medium and small companies	
	Quantity	%	Quantity	%
Total questioned companies	20	100	20	100
Companies that have been paying official dividends during last five years	3	15	1	5
Companies that have been paying the income to the owners during the last five years	20	100	20	100
Average expected return on investment (expected rate of capital expenditures in USD):				
- less than 10%	2	10	1	5
- from 10% to 20%	13	65	11	55
- over 20%	5	25	8	40
Sources of an additional risk premium (ERP)				
- high pricing for products (services)	5	25	1	5
- savings on staff costs (low wages/salaries and unofficial wages/salaries)	18	90	17	85
- counterfeit goods and use of low-quality materials, products and services	6	30	15	75
- savings as a result of using various tax evasion schemes	15	75	19	95
- other sources	8	40	5	25
Underhanded schemes for the income paid to owners (investors):				
- transfer of profits to tax havens (offshore zones)	9	45	3	15
- fake, missing trader costs (missing trader)	8	40	15	75
- manipulating the tax allowances	6	30	7	35
- paying the excessive royalties, interest, commission charges, agency fees, etc.	4	20	2	10

The proposed model uses the following parameters: global risk-free rate of return (r_{rf}), global market risk premium (MRP_g), country risk premium (CRP), beta factor calculated on the basis of the analogue approach

β_{ga} , cumulative premium for the specific risks of investing in a specific asset (SRP):

$$Re = rf_g + \beta_{ga} \cdot (\text{MRP}_g + \text{CRP}) + \text{SRP} \quad (1)$$

The basic component of calculating the rate of return expected by the investor is the risk-free rate. Low sovereign ratings, a high discount rate, the virtual absence of the stock market do not allow an objective assessment of the risk-free interest rate, which is the basis for further calculations of capital costs. In such a situation, for the purpose of determining the cost of equity, it is advisable to use the global risk-free rate that operates in a developed market. The specified rate is in the range of 2.5 - 3.5% in US dollars. It is advisable to reflect in the total market risk premium, which corresponds to the sum of the MRP_g and CRP, the risks associated with investing capital in a specific local market. As a global risk premium, a market premium is accepted for the countries with a developed stock market, which has a long history of operation. This is a the MRP for the USA, Germany or other countries with the highest credit ratings. According to A. Damodaran, in the middle of 2018 this premium was about 5.4%, respectively, the CRP for Ukraine is about 10.4% (Damodaran, 2018). To fully take into account all the risks associated with investing in funds, it is also necessary to take into account the risks inherent in a particular enterprise. The vast majority of these risks are quantified in the beta parameter. To calculate the beta factor for enterprises operating on EM, one should use adaptation algorithms (for example, Miller-Modigliani), the basic values of which should be indicators of global sectoral beta or beta, which is calculated on the basis of compared enterprises whose corporate rights have a turn in a developed stock market.

The above model parameters do not take into account a number of specific risks peculiar to a particular enterprise: associated with low publicity of the company and mobility of corporate rights (marketability), quality of corporate governance, company size, uncertainty in planning financial indicators. To take into account such risks in the rate of investment capital costs, we consider the use of a specific premium for individual risks justified. The amount of such premium should be determined by an expert.

Taking into consideration the vagueness of key provisions of corporate law, including the mechanism for exercising the pre-emptive right, corruption of the judicial system, poor quality of corporate governance, minority owners in countries such as Ukraine have much more risks than majority ones. That is why, when determining the cost of investment capital, a differentiated approach should be applied: for minority investors, the premium for risks associated with

corporate governance will be higher, and for owners of the controlling stake the corresponding premium will be minimal. Table 2 shows the proposed scale of risk premium dependence on the level of publicity and the quality of corporate governance. It is assumed that the level of corporate governance of public companies can only be high, and the mobility of an asset depends on the publicity of the company.

Table 2 Extra premium for risks associated with the publicity of the company and the quality of corporate management (developed by authors)

Parameters	Value of extra premium for risk, % (USD)	
	For monitory investors	For majority shareholders
The company is public (securities are traded in international capital markets), the quality of corporate management is high	0	0
The company is public (securities are traded in local capital markets), the quality of corporate management is high	1	0
The company is non-public, the quality of corporate management is sufficient	2	1
The company is non-public, the quality of corporate management is satisfactory	3	1
The company is non-public, the quality of corporate management is unsatisfactory	4	1

Many studies have proven the feasibility of taking into account in the process of calculating the cost of equity capital premiums for risks associated with the size of the company (small cap premium). The most famous of the studies is that by Fama & French (1992). According to PWC studies, the small cap premium range should be 0-4% (Cheridito & Schneller, 2008). Size premiums for the Russian market are in the range of 3-4% (Fomkina, 2016). The results of surveys of financial analysts and consulting companies in Ukraine show that in the process of investment calculations about 70% of them apply the premium for the small size of the enterprise as a separate parameter of the algorithm for calculating the cost of equity. In addition, the results of a survey of various groups of enterprises in Ukraine showed that the expected rate of expenditures on the equity capital of representatives of small and medium-sized businesses was on average 2-5% higher than that of representatives of large enterprises. Given the increased risks, expectations for super-profits among small and medium-sized businesses are higher than those among large enterprise owners. According to the survey results (Table 1), the expected rate of expenditures on equity in 40 percent of small and medium-sized businesses

exceeds 20% (in US dollars). It can be assumed that the premium for the size of the enterprise in Ukraine is in the range of 2-5%.

In addition to the above components of the cumulative premium for specific risks, different studies also include a premium for the risk of bankruptcy, for the risk of a company's dependence on key stakeholders, for sectoral risk, for financial risks, for the risk of erroneous forecasts, and the like. In our opinion, some of these risks are expressed in the beta factor (sector and financial risks). Other risks, since they significantly affect the cash-flow targets, should be combined into a risk premium for planning uncertainties. This premium should take into account the risks of erroneous planned calculations, due to the subjective factors that are generated by the enterprise itself. We are talking about a high level of dependence on individual stakeholders, as well as the desire of domestic agents to provide "budgetary reserve" (budgetary slack). According to our estimates, the range of this premium for Ukraine is 1-3 percent. We emphasize that the uncertainty caused by global and local macroeconomic factors is characterized by other parameters of the model.

Estimated with use of the proposed modification, the average cost of equity invested in the Ukrainian enterprise is in the range of 15-20% (USD). This value corresponds to the expectations regarding the rate of return on invested capital, obtained as a result of the survey of business representatives in Ukraine. According to KPMG research, the average rate of expenditures on the equity of enterprises (Germany, Austria, Switzerland) is 8.3% (Castedello & Schöniger, 2018). According to the table, 1.90% of owners of large and 95% of owners of small and medium-sized enterprises expect a risk premium, which significantly exceeds the incomes that occur in developed markets. The rate of expenditure on the equity capital of an average Ukrainian enterprise is 2-2.5 times higher than the corresponding figure for enterprises operating in developed markets. Let us find out which sources and schemes for paying an additional risk premium are common in countries such as Ukraine.

An analysis of the official reporting of enterprises doing business in EM shows that the performance indicators of such enterprises do not exceed the figures reported for the enterprises operating in developed markets. A significant number of enterprises generally show losses or minimum incomes. The paradox is that all the enterprises that participated in the study paid the income to the owners, that is, they incurred capital costs. However, official dividends were paid only by 15% of large and 5% percent of small and medium enterprises. The answer to the question about the possible sources of generating an additional risk premium depends on the scale and type of activity of enterprises, as well as on the degree of business illegalization.

The main sources of obtaining super-profits (high risk premium) for owners (investors) are:

- establishing high prices for products (services);
- savings on staff costs (low wages and unofficial wages);
- pirated goods and use of low-quality materials, products, services;
- savings resulting from the use of various tax evasion schemes;

Other sources, in particular, low fees for the use of resources, low rental costs and so on.

The results of the research study showed that the most significant sources of providing an additional premium for the risk of investing funds in EM were low staff costs and savings resulting from the use of tax evasion schemes. Savings on personnel costs was the main source of additional value generation for owners of 90% of large and 85% of medium and small Ukrainian enterprises that participated in the study. Savings from tax evasion were a source of compensation for additional risks for 75% of large and 95% of small and medium-sized enterprises.

Conclusion

For the calculation of the cost of capital expenditures in the countries with an incompetent stock market, it is justified to use the models allowing the calculation of individual parameters based on data that are substitutes for information generated by the stock market. The proposed hybrid crisis model for calculating the cost of equity includes the following parameters: global risk-free rate of return, global market risk premium, country risk premium, beta factor calculated on the basis of the analogue approach, premium for the specific risks of investing in a particular asset. The model assumes the dependence of the level of CRP influence on the cost of equity on the beta factor.

The rate of expenses on equity should take into account the expert premiums for specific risks peculiar to a particular asset. The premium should include additional risks for shareholders and stakeholders due to the level of publicity of the company and asset mobility, quality of corporate management, company size and the adequacy of financial performance planning. Through the total control of companies by majority owners, minority owners in countries such as Ukraine experience much higher risks associated with the protection of property rights. To take into account these risks, a differentiated approach should be applied when determining the cost of investment capital: for minority investors, the premium for risks associated with corporate governance will be higher, and for owners of a controlling stake the corresponding premium will be minimal. The level of premium depends on the publicity of the company and the

quality of corporate governance. The cumulative premium for specific risks should also include a premium for the risk of a small enterprise and for uncertainty in planning due to internal factors.

Given the high risks of doing business in EM, for example in Ukraine, investors (owners) expect a super-high risk premium. To obtain super-profits, enterprises in such countries resort to minimizing personnel costs, evading taxation, reducing the quality of finished goods (services) or using counterfeit goods. The main part of the payment for investment capital in such countries is poured into the shadow sector.

Thus, we have a vicious circle: high risks force enterprises to use shadow schemes and sources of paying an additional risk premium to investors; on the other hand, the shadow economy is a risk factor that necessitates the payment of an excessive premium. The solution to the problem is seen in reducing the risk premium, which is achieved primarily by reducing corruption risks.

References

- Ballwieser, W. (2018). Zur „Kunst“ der Verwendung von Bewertungszuschlägen und abschlägen. *Corporate Finance*, 03-04, 61-72.
- Castedello, M., & Schöniger, S. (2018). *Cost of Capital Study 2018: New Business Models – Risks and Rewards*. Retrieved from www.kpmg.de/cost-of-capital
- Cheridito, Y., & Schneller, Th. (2008). Discounts und Premia in der Unternehmensbewertung. *Schweizer Treuhändler*, 6-7, 416-422.
- Damodaran, A. (2012). *Investment Valuation: Tools and Techniques for Determining the Value of Any Asset*. New Jersey: John Wiley & Sons.
- Damodaran, A. (2018). *Equity Risk Premiums (ERP): Determinants, Estimation and Implications*. Retrieved from <https://ssrn.com/abstract=3140837> or <http://dx.doi.org/10.2139/ssrn.3140837>
- Ernst, D., & Gleißner, W. (2012). Damodarans Länderrisikoprämie - Eine Ergänzung zur Kritik von Kruschwitz/Löffler/Mandl aus realwissenschaftlicher Perspektive. *Die Wirtschaftsprüfung*. 23. Jg., 1252-1264.
- Fama, E.F., & French, K.R. (1992). The Cross-Section of Expected Stock Returns. *The Journal of Finance*, XLVII(2), 427-465.
- Fomkina, S. (2016). Size effect: evidence from Russian capital market. *St.Peterburg University Journal of Economic Studies*, 4, 92-103.
- Godfrey, S., & Espinosa, R. (1996). A practical approach to calculating costs of equity for investments in emerging markets. *Journal of Applied Corporate Finance*, 9(3), 80–90.
- Hitchner, J.R. (2017). *Financial Valuation Workbook: Step-by-Step Exercises and Tests to Help You Master Financial Valuation*. 4th Edition. New Jersey: John Wiley & Sons.
- Lessard, D.R. (1996). Incorporating country risk in the valuation of offshore projects. *Journal of Applied Corporate Finance*, 9(3), 52–63.
- Pereiro, L.E. (2006). The practice of investment valuation in emerging markets: Evidence from Argentina. *Journal of Multinational Financial Management*, 16(2), 160–183.