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ANALYSIS OF WEIGHTED AVERAGE COST OF CAPITAL (WACC) AS A VALUATION ELEMENT AND THE INFLUENCE OF THE CAPM MODEL IN EMERGING COUNTRIES

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ABSTRACT

The present research paper focuses on the analysis of the Weighted Average Cost of Capital (WACC) as a valuation element and the influence of the Capital Assets Pricing Model (CAPM) in emerging countries. The research employs the criteria of several authors specializing in two important points. The first is the procurement of the anticipated return on investment for investors allocating their resources, known as the "Ke" element, with consideration for the risk level associated with an emerging economy. To this end, the capital asset pricing model is employed, which, through four adjustments to the traditional model, enables the identification of the level of return equivalent to the risk of investing in a company in a developing country. The modifications made to the original CAPM model are derived from the adaptation of two elements of the base model: a) the volatility index or beta coefficient, and b) the local risk-free rate. Once the adjustment that best reflects the reality of an emerging economy and represents the minimum acceptable return "Ke" for the exchange of own resources has been identified, this element is used in the standard weighted average cost of capital formula, which is the second important point of this research. The following study will present and analyze the methodology employed by appraisers and financial analysts to ascertain the market price of a company. The valuation process entails several constituent elements, which are elucidated with reference to two foundational pillars. These pillars are based on adaptations made to the classic CAPM and WACC models. The first pillar responds to the structure of an appropriate discount rate, and the second to the

preparation and identification of future cash flows using the Free Cash Flow technique. On the one hand, the discount rate is adapted to the characteristics of an emerging country and future cash flows, which take into account the inherent risk of economic activity. The evaluator utilizes both pillars as fundamental inputs to execute the valuation process in its entirety.

KEYWORDS: Discount Rate, Emerging Countries, Risk-Free Rate, Expected Return, Beta Coefficient, Weighted Average Cost Of Capital.

1. INTRODUCTION

Presently, from a contemporary financial perspective, the financial decisions, principles, and criteria that define the scope of this field have been elucidated. This enhanced clarity enables us to recognize and accentuate the endeavors to achieve the primary objective of finance, which is value creation. According to Kaplan and Haenlein (2016), value creation is central to financial decisions in companies and is essential to ensuring sustainability and economic growth.

The objective of financial decision-making within a company is the creation of value, a principle that is evident in the company's transaction records. In this context, Thomas (2017) posits that the judicious allocation of financial resources is instrumental in optimizing returns while mitigating market risks.

This objective of generating value is of the utmost importance in companies when they are faced with the decision to sell or acquire an entire economic entity or part of it. As Smith (2023) underscores, an accurate valuation of assets is paramount for sound financial decision-making, particularly in developing economies.

The analysis of the Weighted Average Cost of Capital (WACC) is presented as a valuation tool, as well as the influence of the Capital Asset Pricing Model (CAPM) in developing countries, as a solution to the current situation faced by business valuers, who are responsible for determining the value of an entity based on a price. Duarte, Galvis, and Volungevičius (2021) posit that the utilization of suitable financial models facilitates a more precise estimation of corporate value, even in highly volatile market conditions.

However, the complexity of the situation increases when considering divergent criteria, such as company valuation in developing countries. Volungevičienė et al. (2020) emphasize that emerging markets pose unique challenges, including limited market depth and a paucity of reliable financial data, which hinders precise valuation.

Galvis (2019) posits that the proper adaptation of financial models to local contexts is imperative to avert valuation failures. In this regard, Nic Giolla Mhichíl (2020) emphasizes the necessity of methodologies that are adaptable and customized to the idiosyncrasies of each market.

Furthermore, Volungevičienė, Duarte, and Galvis (2021) emphasize that financial and economic crises can exert a substantial influence on the value of companies in emerging markets, underscoring the necessity to incorporate macroeconomic factors into the valuation process.

Conversely, the education and training of appraisers is equally crucial. As posited by Duarte, Galvis, and Volungevičius (2019), the implementation of valuation techniques and financial analysis through adequate training has been demonstrated to enhance the quality of decisions made.

Galvis (2020) further emphasizes that an accurate valuation should prioritize the fundamental components of the business, incorporating both internal and external factors that may impact its performance. This approach has been demonstrated to facilitate the attainment of more accurate and reliable results, a benefit that is particularly salient in the context of developing countries.

In this context, the study of WACC and the CAPM model not only simplifies the valuation of companies in emerging markets, but also provides a clearer understanding of the risk factors that affect profitability. As Brealey, Myers, and Allen (2010) have asserted, the accurate identification and evaluation of these risks is imperative to ensure the implementation of suitable and sustainable financial decisions.

Furthermore, Fernández (2018) posits that valuation methodologies based on discounted cash flows, such as the weighted average cost of capital (WACC), facilitate more accurate projections of company value by incorporating the capital structure and the cost of equity. When implemented in an effective manner, this approach has been shown to enhance the accuracy and reliability of results, a critical consideration for investors and decision-makers operating within emerging markets.

2. LITERATURE REVIEW

The publication of the book *Business Valuation: Cases and Methods for Small and Medium-Sized Companies*, Cayo, Teodosio, and Cevallos (2016) assert that the process of valuing companies is quite clear as long as the fundamental criteria of company size, location, and the absence of information asymmetries are respected. Usategui (2020) posits that the concept of information asymmetry is inextricably linked to the principle of market efficiency, a concept that exhibits marked variation when comparing developed economies with developing ones. This discrepancy can be attributed to the presence of a salient variable: namely, the depth and evolution of the capital market in a given country.

Sánchez (2010) delineates the intricacies that emerge when endeavoring to implement classical theoretical models to a developing economy that

confronts information constraints and paucity of information, which is frequently attributable to a dearth of technical expertise in regulatory and supervisory bodies.

Gallardo (2011) has presented a series of options for valuing companies in developing countries. These options incorporate adjustments to traditional models, thereby achieving a more realistic approach to valuation processes. These adjustments focus particularly on the analysis of each of the elements considered when valuing a company, highlighting the weighted average cost of capital (WACC).

According to Gil (2012), the adaptation of traditional models to value companies is a viable proposition, contingent upon two factors. Firstly, there must be a robust comprehension of macroeconomic variables, which are characterized by greater instability and mutability in comparison to those observed in industrialized nations. Secondly, it is imperative to ascertain the valuation method to be employed.

Shaker and Abdeldayem (2018) emphasize that the CAPM model faces significant obstacles in emerging economies due to notable volatility and information constraints, impacting its accuracy. In a similar vein, Foye (2018) emphasizes the necessity of adjusting valuation models to account for local particularities to ensure their proper application.

Leite et al. (2018) emphasize that size, value, and profitability are pivotal factors that considerably influence stock returns in emerging markets. Cox and Britten's (2019) study validates the effectiveness of the Fama-French five-factor model on the Johannesburg Stock Exchange.

Salameh (2020) underscores the necessity of implementing particular modifications to facilitate the integration of asset valuation models within the Saudi market. In contrast, Peerbhai (2018) notes that market segmentation in South Africa impedes the feasibility of the ICAPM.

Madra-Sawicka (2020) examines variations in the cost of capital between companies in the food sector in emerging and developed economies. Porter (2021) posits that risk perception in emerging markets exerts a direct influence on WACC.

Vidal-García and Vidal (2024) have indicated that the application of the Capital Asset Pricing Model (CAPM) in developing economies gives rise to certain challenges, underscoring the necessity for adjustments to ensure adequate reflection of market dynamics. In a related study, Valencia-Herrera and López-Herrera (2018) proposed an ICAPM model with a Markov regime switch, demonstrating its efficacy in the Mexican context.

3. METHODOLOGY

This study utilized both primary and secondary sources in order to ensure that the proposal is supported by a comprehensive theoretical foundation. To develop the proposal, exploratory research was conducted using the various primary and secondary sources available. Secondary sources were utilized, including works by authors who have advanced cogent and compelling arguments concerning the characteristics of emerging markets, their limitations, restrictions, and proposals that align with the fundamental assumptions of established and proven mathematical models.

In the case of primary sources, public and private entities have been consulted to gather the appropriate information, which will be consolidated according to the requirements of this work. Secondary sources encompass scientific articles, indexed digital journals, websites of public and private organizations, papers related to the topic, and academic books relevant to the level of the proposal. The objective of the research is to ascertain a precise, accurate, and resilient methodology for calculating each component involved in the determination of a discount rate, a pivotal element of the valuation process. This methodology encompasses the cash flows that, when integrated, yield a present value representing the price.

The research project was developed and prepared using a process of experimentation, comparison, and selection by calculating the different steps to obtain the current results. The following steps were taken: (a) Design adjustments to the "Ke" element using the CAPM model and (b) Establish an adapted valuation methodology for emerging countries that considers the WACC model.

4. RESULTS

4.1. Adjustment Design

When working with the traditional CAPM model, three critical variables of the model can be identified: the risk-free rate (R_f), the beta coefficient (B), and the market return (R_m). These variables are to be regarded as the fundamental underpinnings for the adjustments to the conventional model, which will consequently yield a return on equity and serve as a component of the weighted average cost of capital model. In light of the intricate mathematical calculations underlying these variables, adjustments are hereby proposed to establish and identify a return that aligns with the reality of a country exhibiting the aforementioned characteristics, while also encompassing the risk inherent in companies

operating within an emerging economy.

4.1.1. First Adjustment: Beta Coefficient and Local Market Return

For the initial adjustment, it is imperative to acknowledge that the analysis company must be listed on the stock exchange. This is due to the fact that the adjustment involves calculating its systematic risk and the market variations with which the market return can be established. In this initial mathematical model, the adjustment is suggested as the calculation of the beta coefficient or systematic risk measure and the return of the system in which a firm conducts its business activities, i.e., the market

return under the application of the original formulas of the traditional model. The calculation criteria for these two initial variables within the first proposed adjustment are based on the analysis of the statistical measures of variance and covariance. This analysis allows the distance and relationship between the historical variations in the track record values representing prices and the reference stock market index called Ecu-index [2] to be identified for the calculation of both the beta coefficient, understood as an indicator of systematic risk, and market performance. In this regard, Table 1 below presents the results of the initial adjustment to the conventional CAPM model.

Table 1: Initial Adjustment.

Variables	Respuesta
Risk free	2,46%
Systematic risk measure	1,92
Market variations	6,21%
CAPM return	9,66%

Source: Quito-Guayaquil Stock Exchange.

Own Elaboration

The return on equity identified by the element "Ke" with a percentage of 9.66% includes a risk-free rate represented by the rate paid on 10-year treasury bonds of the hegemonic or developed reference country. For the purposes of this analysis, the nation of Germany was considered with a cut-off date of January 2025, utilizing the beta coefficient and local market performance based on variations in the benchmark stock market index. The primary benefit of this initial model is its ease of adjustment. However, it is important to note a significant drawback: it perpetuates the risk-free rate characteristic of a developed nation. The utilization of this rate would imply that an emerging country such as Ecuador possesses no default risk or credit risk, which is a fallacious assertion. The absence of credit risk is a characteristic of developed countries.

4.2. Second Adjustment: Adjustment of the Country Risk Rate

As established in the initial adjustment, the flaw in this adjustment lies in the fact that it utilizes US bond rates as a risk-free element, which is not accurate given the uncertainty gap between

developed and developing markets. To address this discrepancy, an adjustment will be implemented using a macroeconomic variable. This variable is represented by the country risk rate obtained through the EMBI indicator. The primary rationale for employing this variable as a form of risk compensation for an emerging nation pertains to the manner in which countries encountering these conditions establish coupon rates for bond issues. In doing so, they incorporate a risk-free rate, which, in general, mirrors the conditions of a developed nation such as the United States, to the country risk of the emerging nation. Moreover, the theoretical calculation of the EMBI indicator is derived from the difference between the coupon rate or interest paid on long-term securities (bonds) of an emerging country and the coupon rate or interest paid on long-term securities (bonds) of a developed country.

The country risk rate [3] is an indicator published by the country's central bank, and the information is updated on a daily basis. Consequently, as it is a public variable, it can be readily obtained and accessed, and can be incorporated directly into the traditional model as an adjustment. The initial data necessary for calculating the adjustment are presented below.

Table 2: Second Adjustment.

Variable	Respuesta
Risk free	2,46%
Systematic risk measure	1,92
Market variations	6,21%
Country risk premium	9,41%
CAPM return	19,07%

Source: Own Elaboration.

When the risk compensation criterion is taken into account that is, when the country risk premium is added a model is obtained that yields an expected CAPM return of 19.07%. A notable disadvantage of the model under consideration is its omission of the risk-free rate criterion. In the context of a developed country, the risk-free rate is known to reflect the following.

subject to:

Therefore:

However, in emerging countries, there is a possibility of credit or default risk, and the country risk rating presented by the public entity (Central Bank of Ecuador) includes default risk as political risk. Consequently, the risk-free rate criterion, which exclusively considers political risk, is being rendered obsolete. This model's fundamental limitation stems from its inability to differentiate between political risk and default risk, resulting in an overestimation of the required return.^[5]

4.3. Third Adjustment: Local Risk-Free Rate

The incorporation of the country risk rate into the

traditional model overestimates the expected return that will eventually form part of the discount rate used to value future cash flows. The main reason for the overestimation generated in Adjustment 2 is that the country risk rate of a territory considered emerging is composed of credit risk and not only political risk, as an adequate risk-free rate similar to that of a developed country should be formed.

To obtain the local risk-free rate, credit risk must be isolated from the country risk rate, i.e., the following expression can be applied:

Four steps are then defined to achieve this effect. 1) Identify the risk rating of the emerging country provided by a risk rating agency such as Standard & Poor's, Moody's, etc. 2) Identify a company in a developed country that has the same risk ranking as the emerging country and investigate the rate it pays on its corporate bonds. 3) Obtain the difference between the corporate bond rate and the risk-free rate of the developed country. This spread is the credit risk. Finally, we apply the above mathematical formula, and the result represents the local risk-free rate.

Table 3: Own Risk-Free Rate.

Variable	Respuesta
S&P emerging market rating	B -
Developed market company	Kroger Co
Kroger Co. risk rating	B -
Kroger Co. 10-year bonds	8,79%
Developed market risk-free rate	2,46%
Credit risk (spread)	6,33%
Country risk premium	9,41%
Own risk-free rate	3,08%

Source: Own Elaboration.

It is imperative to deliberate on the compliance with the fundamental criterion of this third adjustment, which entails the identification of the risk rating of the emerging country and the risk rating of a company belonging to a developed country, contingent upon the condition that both ratings are congruent in order to undertake the comparison and adhere to the second step of the methodology established by the author. For the demonstration, Kroger Co. has been selected as the

case study. This corporation is involved in the retail sector, operating supermarkets, food stores, and convenience stores. For the purpose of comparison, Kroger Co. has an outstanding 10-year bond issue that pays a coupon rate of 8.79% and has a B- rating for 2024 according to S&P Global Ratings. After the element that provides support for Adjustment 3 – that is to say, a local risk-free rate – has been established in Table 3, the practical demonstration of Adjustment 3 is detailed below.

Table 4: Third Adjustment.

Variable	Respuesta
Own risk-free rate	3,08%
Market variations	6,21%
Systematic risk measure	1,92
CAPM performance	9,09%

Source: Quito-Guayaquil Stock Exchange.

Own Elaboration

The main feature that strengthens the proposed adjustment is that it meets the criterion of expressing the risk-free rate as an identity of political risk

through the application of an identified calculation methodology. With these adjustments, a new expected return on equity can be obtained using the CAPM model of 9.09%.

4.4. Fourth Adjustment: Comparable Systematic Risk Measure

This adjustment involves the analysis, correction, and adjustment of the volatility index of a financial asset with respect to the market in which it is traded and which represents systematic risk. In this instance, the adjustment involves a preliminary comparison of beta coefficients. In order to perform an adjustment to adapt to the emerging country index, it is necessary to compare the beta coefficient of a developed country with the beta coefficient of a

developing country.

In order to implement the proposed adjustment in practice, it is necessary to have the financial information of two companies and to consider the following two basic characteristics for comparison: a) same line of business b) listing of the companies on their respective stock markets. The financial information for 2024 is presented below for the company in the developed country called Whole Food, which has the same line of business as the company in the emerging country and has a similar capital structure.

Table 5: Financial Information on Foreign Companies.

Variable	Respuesta	Ponderación
Beta volatility coefficient	0,67	
Total assets according to balance sheets	48.637.000	100%
Total liabilities according to balance sheets	9.550.000	20%
Equity according to balance sheets	39.087.000	80%
Tax burden applied	n/a	40%

Source: Yahoo Finance.

It is imperative to ascertain the risk considered to be operational for the firm, given the financial information obtained from the company belonging to the developed country. This operational risk is characterized by the failure to consider the effects or impacts of the use of debt by companies. In this regard, the unlevered beta coefficient criterion, identified as Bu, is employed to identify this risk. The mathematical expression defined by the authors is applied as follows for this process:

Subsequent to the unlevering of the beta

coefficient of a developed-country company, it is imperative to obtain analogous financial information from an equivalent company in an emerging country. The contributions from the firm's capital providers, otherwise referred to as the capital structure, are identified with the objective of adapting this structure to the Bu element calculated for the company belonging to the developed country. The data for the company to be adapted, i.e., the company located in the developing country, is presented below with a closing date of 2024.

Table 6: Capital Structure of Local Company.

Variable	Respuesta	Ponderación
Total assets according to balance sheets	2.122.000.000	100%
Total liabilities according to balance sheets	639.000.000	30.11%
Equity according to balance sheets	1.483.000.000	69.89%
Tax burden applied	n/a	36.25%

Source: Own Elaboration.

With the above information expressing the company's capital structure, the effects of debt utilization will be added to the operating risk. The re-leveraging formula is defined as: Once the beta coefficient is re-leveraged, i.e., once it has been

adjusted to the developed country base and the impacts of debt use have been considered, the input data for the new expected return calculation using Adjustment 4 are presented.

Table 7: Beta Deleveraged and Re-Leveraged.

Variable	Respuesta
Beta (unlevered)	0,5843
Beta (relevered)	0,7448

Source: Own Elaboration.

As can be seen, the re-leveraged beta coefficient used to obtain the required return is less than one, indicating that it is less risky than the market. The explanation for this value is that not all businesses react in the same way to market variations. The analysis company belongs to the supermarket sector,

therefore, its business focuses on the sale of basic necessities, which is almost immune to drastic market variations. With this, maintaining the local risk-free rate, the re-leveraged beta coefficient, and the traditional model formula, the following expected return is obtained.

Table 8: Approximation Fourth Adjustment.

Variable	Respuesta
Own risk-free rate	3,08%
Market variations	6,21%
Re-leveraged beta	0,7448
CAPM return	5,41%

Source: Own Elaboration.

The adjustment made has one drawback: when adjusting the beta coefficient based on a comparison with a company belonging to a developed market, it does not take into account that the levels of indebtedness and/or financial leverage requirements are not the same even if they have the same line of business. Furthermore, if a comparable company with a similar capital structure is sought, a proxy for the beta of the company in the developed country would be obtained, which would not be useful, as it would be tantamount to assuming that the level of risk of companies in both countries is the same. In this regard, an additional step is proposed.

This process involves the enhancement of the re-leveraged beta coefficient, which is obtained in the preceding step, with the original local beta coefficient. The objective of this enhancement is to derive a beta coefficient that is representative of a developing country. The fundamental premise of this study is that the volatility index, adjusted for debt, utilized by the firm, should be weighted with the standardized beta coefficient of the classic model.

The following table presents the adjusted variables that were used to calculate the expected return.

Table 9: Fourth Adjustment.

Variable	Respuesta
Risk-free	3,08%
Ecu-index return	6,21%
Re-leveraged beta	0,7448
Local beta	1,92
CAPM return	7,56%

Source: Own Elaboration.

This provides the expected return on equity by applying the maximum level of adjustments to the traditional CAPM model, which will be the critical element in the basic weighted average cost of capital (WACC) formula used to complete the valuation process reviewed below.

4.5. Valuation in Emerging Countries

The valuation process in emerging countries should be carried out based on the methodology standardized by the authors. The primary rationale for this approach is that it establishes a defined valuation process that considers and respects the fundamental requirements and assumptions of a traditional model, but adapts it to countries with developing characteristics. As Dumrauf (2010) asserts, "a theory should be judged by the success of its predictions rather than by the realism of its assumptions" (235).

In order to ascertain the appropriate structure for this section, the present study has considered two fundamental pillars. The initial pillar is the determination of an appropriate discount rate. In order to establish a foundation for this inquiry, two fundamental points have been identified.

The initial point pertains to the consideration of

the capital structure of the company, employing the weighted average cost of capital (WACC) technique as a methodological framework.

Secondly, it is imperative to deliberate on the potential modifications to the return on equity, employing the Capital Asset Pricing Model (CAPM) technique as a foundation.

It is imperative to acknowledge that the recognition of an adjustment in point 2 inherently generates an adjustment in point 1. The second pillar is to consider an appropriate projection method for establishing future cash flows that will be discounted, taking into account the risk at the time of the forecast.

The initial step in the valuation methodology is the implementation of a criterion that enables the selection of a company that possesses the fundamental characteristic of creating value. This approach is adopted as a form of oversight to ensure that valuation efforts are executed only when necessary. To this end, we examine a technique known as macro value drivers. This concept refers to those factors and variables that are related to the operational side of the company and that express its ability to produce value. To this end, the following measures or indicators are utilized: The primary

factors to be considered are EBITDA margin, working capital productivity, and company growth leverage. The expected result of the latter should be greater than 1, and the higher it is, the greater the value generated by the company independently. The subsequent step in the valuation methodology is to identify the valuation method. The proposed research will utilize the Discounted Cash Flow approach, a methodical framework for evaluating the financial viability of investment projects. The valuation analysis approach is selected for four primary reasons: 1) It utilizes a resolution criterion that applies concepts objectively. This approach is predicated on the premise that the company is regarded as an entity that generates cash flows from its business activities. This is evident, since every company has the overall objective of obtaining profits and, therefore, profitability. Secondly, given the company's status as a generator of cash flows, it is capable of estimating and forecasting these flows over a designated planning horizon. In consideration of this characteristic, the projected flows in question are regarded as future flows. These future flows can be expressed in terms of their present-day equivalent. That is to say, future flows can be brought forward to the present day. Thirdly, the explicit expression of the equivalence of future flows with their present value indicates that the process of updating future cash flows complies with the general asset valuation principle. The latter states that the price of any asset, whether financial or real, is equal to the present value of the future cash flows that the asset offers. Consequently, this approach aligns closely with the valuation process that is widely accepted and utilized by the majority of analysts and appraisers. Fourthly, the discounted cash flow approach utilizes the discounting criterion and consequently necessitates a discount rate that facilitates the determination of the present value. In this regard, within the selected approach, the specific Free Cash Flow method will be used, which employs a discount rate expressed as the weighted average cost of capital (WACC), but adjusted to the reality of emerging countries.

In light of the elucidated steps and criteria for the subsequent procedures, it is imperative to address the following points:

The identification of value creation through macro value drivers is imperative.

The determination of the cash flow method is to be made using the free cash flow template and format.

The determination of the appropriate discount rate is to be made using the weighted average cost of

capital criterion, with an emphasis on the expected return on equity. This will be adjusted to the traditional CAPM model.

The final step of this methodology can now be developed. This step is arguably the simplest of all, as it consists of applying a predefined formula that allows compliance with the maximum valuation postulate, which states: The value of a financial or real asset is equivalent to the present value of the future cash flows that the asset offers.

Accordingly, the final expression for calculating the price is the present value function, defined as follows:

This process can be automated using a more complex calculation tool such as Excel and the NPV function, which allows the data explained above to be entered as function arguments and obtain a result that represents the value of a company equal to that which can be obtained by applying the formula manually.

5. DISCUSSION

The adaptation of a robust and comprehensive technical model, such as the Capital Asset Pricing Model (CAPM), in an emerging economy has always been the crux of the matter for any business appraiser seeking to establish an adequate return on the equity invested in a firm. Specialized authors such as Daumrauf, Martínez, and others concur on the necessity of modifying the classic model based on critical elements such as the beta coefficient, risk-free rate, and market returns. However, the adjustment methodologies employed by these entities are not articulated in a sufficiently precise manner, as they merely offer general principles.

Conversely, authors such as Van Horne and Wachiwicz emphasize the demonstration and calculation of performance while adhering to the conventional CAPM model. The authors do not propose alternative models for adapting the model, as their analysis focuses exclusively on companies that belong to a market that meets the criterion of being efficient. The adjustments proposed in this research are based on the general contributions of the authors, particularly those who analyze valuation processes in developing countries. These adjustments are adapted to the assumptions of the traditional model, with the addition of elements that balance the risk profile of an emerging economy. However, it should be noted that the adjustments presented, in addition to aligning with the fundamental assumptions of a standardized model and considering the criteria of specialized authors, are supported by mathematical statistics in each of

the estimates of the elements of the base model. These adjustments establish alternatives consistent with the risk characteristics of an emerging country. There exist criteria from other authors for adjustments that could be used and demonstrated; however, these were not taken into account, as the aforementioned adjustments are not significantly representative of the reality of a developing country. Finally, given the adjustments established in this proposal and other adjustments that may be evident in certain methodologies, their use is at the discretion of the analyst or appraiser. This is because setting a return for an investor's own resources may also respond to purely subjective criteria such as the basic opportunity cost, the investor's risk profile, and the perception of balance between the risk-return relationship explained by the rationality of the trade-off principle.

6. CONCLUSIONS

After defining, explaining, developing, and adapting the relevant adjustments to the traditional CAPM model to a broader formula, such as the weighted average cost of capital (WACC), the following conclusions have been reached for this research.

The optimal approach for calculating the components that underpin a discount rate for companies in emerging markets, as determined by the weighted average cost of capital (WACC) model, was ascertained through the development of its fundamental components. These components encompass the capital structure and external financing costs, which are readily accessible in the firm's financial reports. Similarly, the estimation of the K_e element, conceptualized as the minimum required return on equity and regarded as the most intricate component, was feasible. This element is contingent upon the conventional Capital Asset Pricing Model (CAPM), which necessitates adaptation to the risk profile of an economy designated as developing.

Despite the existence of numerous adjustments capable of adapting the conventional CAPM model to the context of an emerging nation, our efforts were focused on the development and procurement of those that are most indicative. These adjustments

center on the analysis of risk-free rates and volatility coefficient, otherwise known as the beta coefficient, as adjustment criteria.

The WACC calculation methodology has been thoroughly delineated by numerous specialized authors. Therefore, the identification of its fundamental components, such as capital structure and the cost of external resources, was susceptible to direct specification, while the composite element, i.e., return on equity, was contrasted between methodologies that were not very robust and/or had little validity due to the use of subjective criteria. For example, the minimum acceptable rate of return (T-MAR) establishes a spurious return that does not reflect the financial principle of trade-off, and the capital asset pricing model (CAPM), through a series of adjustments, can express the risk profile of an emerging economy.

It is acknowledged that company valuation methods exhibit significant variability, encompassing a range of approaches from accounting to financial techniques. However, it has been stipulated that the most robust criterion is that of methods that consider discounted cash flows. This approach facilitates the establishment of a firm as a cash flow generator, which is susceptible to estimation or projection. The present value of these flows can be expressed, thereby ensuring compliance with the general asset valuation principle. This principle posits that the price of any asset is equivalent to the present value of the future cash flows that the asset generates. This principle is expressed using a discount rate that is calculated as the weighted average cost of capital (WACC). However, the main element of the WACC is adjusted to reflect the reality of emerging countries.

In the context of an emerging country, the execution of a company valuation process is indeed a realizable endeavor, contingent upon the adjustment of the fundamental variables inherent to the valuation procedure. Such adjustments encompass the estimation of prospective cash flows, predicated on consistent assumptions, and, most crucially, the acquisition of a rate that articulates the return requisite by investors. This adjustment is derived from the capital asset pricing model (CAPM).

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APPENDICES

Appendix 1. Emerging Countries

No.	Approach	Name	Countries
1	Banco Mundial	Main emerging markets	China, India, Indonesia, Brasil, Rusia, México, Argentina, Sudáfrica, Polonia, Turquía y Corea del Sur.
2	MSCI Index	BRIMC	BRIC + México
BRICS	BRIC + South Africa		
BRICA	BRIC + Arab countries (Saudi Arabia, Qatar, Kuwait, Bahrain, the Emirates),		
BRICET	BRIC + Eastern Europe and Turkey		
VISTA	Vietnam, Indonesia, South Africa, Turkey, and Argentina		
MINT	Mexico, Indonesia, Nigeria, and Turkey		
Next Eleven - Sigüientes Once	Bangladesh, Egypt, Indonesia, Iran, Mexico, Nigeria, Pakistan, Philippines, South Korea, Turkey, and Vietnam		
CIVETS	Colombia, Indonesia, Vietnam, Egypt, Turkey, and South Africa,		
Grandes Mercados Emergentes (BEM)	Brazil, China, Egypt, India, Indonesia, Mexico, the Philippines, Poland, Russia, South Africa, South Korea, and Turkey.		
3	Spanish bank BBVA	Eagle (Emerging and Growth-Leading Economies)	Brasil, China, Egipto, India, Indonesia, México, Rusia, Corea del Sur, Taiwán, Turquía
NEST	Argentina, Bangladesh, Colombia, Malaysia, Nigeria, Pakistan, Peru, Philippines, Poland, South Africa, Thailand, Vietnam.		
4	Standard and Poor	Main emerging markets	Brasil, Chile, China, República Checa, Egipto, Hungría, India, Indonesia, Malasia, Marruecos, México, Perú, Filipinas, Polonia, Rusia, Sudáfrica, Taiwán, Tailandia, Turquía.
5	EENI criterion	Emerging - Borderline	Asia. Irán, Kazajistán (fronterizo), Pakistán (fronterizo), Filipinas, Indonesia, Malasia, Singapur, Tailandia, Vietnam (fronterizo), Bangladés, Corea del Sur y Taiwán,
Middle East (2 countries). Kuwait and the Emirates (border).			
Africa (all bordering): Ivory Coast, Ghana, Nigeria, Ethiopia, Kenya, Uganda, Tanzania, Angola, Zambia, Morocco, and Algeria.			
América. Argentina (fronterizo), Chile, Colombia, Ecuador y Perú,			
Europa. Serbia y Turquía.			

The ENNI criteria identify a country as emerging based on the characteristics of its capital market, the technical level of its stock market index (in this case, the Ecu-index) and the representativeness of its listed companies.

[1] According to the ENNI criteria, with a focus on emerging and frontier countries, Ecuador is identified as emerging based on variables such as its capital market, stock market index and listed companies.

[2] The Ecu-Index is made up of shares from the main Ecuadorian companies.

[3] Value taken in January 2025.

[4] Developed countries issue their own currency and impose taxes directly.

[5] Credit or default risk.