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Lora Taylor

University of Arkansas, Fayetteville

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**Evaluating Methods of Calculating Country-Specific
Market Risk Premium**

by

Lora Suzanne Taylor

Advisor: Dr. Dobrina Jandik

**An Honors Thesis in partial fulfillment of the requirements for the degree Bachelor of
Science in International Business in
Finance**

**Sam M. Walton College of Business
University of Arkansas
Fayetteville, Arkansas**

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1. Introduction

Market risk premium, often referred to as equity, risk, or market premium is calculated as the difference between the expected return on a market portfolio and the risk-free rate. Using country specific market risk premium, investors and analysts are able to evaluate the reward expected for taking on additional risk above the systemic risk of a given market.

This market risk premium is used specifically to calculate cost of equity in corporate finance. The country specific market risk premium is a key factor used in both valuation and portfolio management. In valuation, analysts using the Capital Asset Pricing Model (CAPM) utilize the market risk premium in order to calculate equity and capital costs. In the portfolio management, market risk premium is used to compare different asset classes across a common measure. Despite its frequent use and the importance of the decisions being made based on country specific market risk premium, there is not a method for calculating the measure that is generally accepted as completely accurate and consistent.

A firm or portfolio manager will calculate a country specific market risk premium for both the home country and foreign areas of interest in order to value projects, companies, and potential future equity opportunities. These calculations are then often used for mergers, acquisitions, divestitures, and other major investment projects. In this paper, the primary focus will be on the calculation of market risk premium as used by analyst completing valuation using the CAPM model.

In this paper I will discuss three different methods for calculating country specific market risk premium will be discussed. The methods that will be discussed are that of a historical moving average, Aswath Damodaran's method, and the methodology and survey results from Pablo Fernandez. The weaknesses of the different methods will also be discussed. Additionally, the CAPM model of valuation will be explained as well as the three different concepts that are used interchangeably under the term market risk premium.

The paper is organized as follows – in Section 2 I will introduce the Capital Asset Pricing Model and it's use of MRP, then in Section 3 I will discuss the three different ways that Market Risk Premium is defined. After this I will discuss three methods of calculating MRP (Sections 4, 6, and 8) and each section is followed by its respective critique of the method. I finish the paper in Section 10 with a conclusion and call to further research.

2. The Capital Asset Pricing Model

It is necessary to introduce the Capital Asset Pricing Model before taking a look at the methods of calculation for one of its main components, the market risk premium. In one study by the Association of Financial Professionals, it was found that around 90% of financial professionals use the Capital Asset Pricing Model (CAPM) for valuation and equity calculations (Jacobs and Shivdasani, 2012).

Although CAPM is used for many equity calculations and valuation purposes, CAPM calculations have been shown to be unreliable and inconsistent. This is a problem that is also found in the market risk premium calculation. It has been posited that CAPM should not stand as either a theory or model to be used in a real life setting because the assumptions that are made negate the ability for accurate translation into a practical setting (Fernandez, 2015). Despite this belief, many firms and school continue to use and teach the Capital Asset Pricing Model as a cornerstone of modern financial theory and practice.

Many models utilized in finance follow the assumption that efficient markets and rational investors are present. These assumptions provide a functional groundwork for which tests may be

conducted to support models that are somewhat translatable to the real marketplace. CAPM does assume the previously mentioned assumptions but includes assumptions that are not translatable to a real market. These assumptions include the following: frictionless markets, no restrictions on borrowing or lending at the risk-free rate, ignoring the presence of investor preference, and that investors have the same expectations for return, volatility and correlations for any given security (Mullins, 1982). Notably, these assumptions alone are not reasonably enough to rule out the value of the CAPM by itself but combined with other problems it plays a role in bringing the validity of the model into question.

CAPM is the trademark method for asset pricing. The model is frequently compared to the Fama-French three factor model, the Arbitrage Pricing Model, and the ICAPM, all of which were developed after the introduction of CAPM in the 1960's. The CAPM focuses on a single factor, while the other three models offer more complexity in the consideration of further factors. The ICAPM model follows the same logic as the CAPM which it is based on. The formulas of the three models are as follow:

$$\begin{aligned}
 \text{CAPM} &\rightarrow E(ri) = r_f + \beta \times MRP \\
 \text{Fama - French} &\rightarrow r_f + \beta_1 \times (MRP) + \beta_2 \times SMB + B_3 \times HML + \alpha \\
 \text{Arbitrage Pricing Theory} &\rightarrow E(ri) = r_f + \beta_1 \times RP_1 + B_2 \times RP_2 \times \dots + \alpha \\
 \text{ICAPM} &\rightarrow E(ri) = r_f + \beta \times MRP + \beta \times FCRP
 \end{aligned}$$

Terms:

$$\begin{aligned}
 MRP &\rightarrow \text{Market Risk Premium} \\
 r_f &\rightarrow \text{Risk - free rate of return} \\
 \beta &\rightarrow \text{Beta value of systemic risk in a given market} \\
 SMB &\rightarrow \text{Small minus big, excess return of small cap companies over large cap} \\
 HML &\rightarrow \text{High minus low, differing returns between growth and value stocks} \\
 FCRP &\rightarrow \text{Foreign Currency Risk Premium}
 \end{aligned}$$

Similarities between the four different models are very evident, but the most prevalently used model is the Capital Asset Pricing Model. A benefit of the models other than the CAPM is the possibility of capturing covariances in returns missed by market returns and the ability to pick up size and value effects in avg returns left unexplained by CAPM (Fama & French, 2004). It should be noted that under the CAPM, required and expected market risk premiums equal each other (Fernandez, 2004). The largest failure seen in the use of the CAPM is the fact that although β is the only indicator of risk, there is unexplained variances of return (Blanco, 2012)

3. Three Concepts of Market Risk Premium

The required market risk premium is frequently calculated in a corporate finance setting. It is used to answer the question "What incremental return do I require to a diversified portfolio of shares (a stock index, for example) over the risk-free rate?" (Fernandez, 2004). In order to calculate this accurately, it is necessary to understand that this value is not utilized the same across different investors, industries, and companies. Additionally, despite common assumptions, the historical return of a market over the risk-free rate does not necessarily equal the required risk-free return (Fernandez, 2004).

There are three concepts that are frequently labeled market risk premium although they definitionally serve different purposes. The concepts are the Historical Equity Premium (HEP),

the Expected Equity Premium (EEP), and the Implied Equity Premium (IEP) (Fernandez, 2004). The HEP tracks the historical returns of difference between bonds (government issued risk-free asset) and stocks. The EEP is the forward-looking expected return between stocks and bonds. The IEP is the required asset premium based on a capital pricing model like CAPM or the Fama-French 3 Factor Model. HEP, IEP, and EEP are used interchangeable under the term Market Risk Premium (MRP), and it is necessary to clarify which meaning is being invoked when evaluating the research literature on the subject.

An important distinction between the three concepts is their prevalence throughout a group of investors. It is assumed when using the historical equity premium that the value should be the same for all investors, but when using expected equity premium or the implied equity premium this is not the case (Fernandez, 2004).

4. Historically Calculated Market Risk Premium

One of the generally acceptable methodologies for calculating the market risk premium is that of a historical moving average. This is understood to be the Historical Equity Premium (HEP) iteration of market risk premium. Generally, firms will take a period of time ranging between 20 and 100 years and create an average to determine an acceptable market risk premium. In 2012, around half of firms using this method reported to using a market risk premium of between 5% and 6%, with the remainder of the survey pool being split evenly above and below.

The reason why it is so difficult to calculate a country specific market risk premium is because the factor being calculated is what is expected in the future from a specific market, something that cannot be completely predicted or accurately calculated. In using historically calculated market risk premium, it is important to note that the assumption is that over a long enough period of time the averaged historical market risk premium data might be able to provide a relatively unbiased estimate of the future-looking market risk premium (Carleton & Lakonishok, 1985).

In a study from the Studies in Economic and Econometrics, Firer and Bradfield researched on a trend suggesting that long term historical market risk premia frequently showed estimates with an upward biased. To evaluate further, Firer and Bradfield used an arithmetic mean to evaluate historical performance of equity, bonds, and cash from a data set from South Africa to derive a market risk premium. Key take away from the study included the prevalence of volatility in market risk premia as a result of volatile historical data, leading to unreliability in calculation. Additionally, it was found that a more recent data set to the study provided a market risk premium significantly lower than that of the entire data series, bringing into question the validity of the longer-term market risk premium as it functioned within the requirement of investors for return on risk. The study affirmed the possibility of upwardly skewed market risk premium with Firer and Bradfield going to far as to suggest that historical estimates be adjusted downwards to improve validity of the metric.

Another study found that market risk premium (HEP) is found to be a highly persistent factor (Caporale, Gil-Ala & Martin-Valmayor, 2020). This conclusion means that it over time the market risk premium moves in the same direction consistently. This is a factor that firms are recommended to adopt when evaluating market risk premium as a factor in equity valuation for projects and investment. The study conducted by Graham & Harvey (2005) also cited low time-variation for market risk premium.

5. Problems with Historically Calculated MRP

Amongst other problems, the use of historical data applies the assumption that market-affecting events of the past will reoccur in the future. Additionally, the errors found in singularly using technical analysis as a form of stock valuation can be seen here too because volatility and unpredictability are present in the markets being observed for market risk premium calculations. As technical analysis ignores the fundamentals of the market, using a historically calculated market risk premium ignores the fundamentals of the country it is being based on and the presence of unpreventable systemic risk. Amongst other factors, this disregards politics, economic strength, and unpredictable events such as market failures, pandemics, and bubbles.

It has also been found that historically based market risk premiums are higher than a reasonably acceptable level. This problem has led to the need for the expansion and manipulation of capital pricing models in order to explain the discrepancy and has called for further research (Mehera & Prescott, 1985). This equity puzzle can potentially be explained by market participants not necessarily using theoretical pricing models to calculate required return but rather historical data and opinion (Fernandez et al., 2009)

There is also evidence that a long-term market risk premium has little to no correlation to past returns, further agitating the reliability of the method (Graham & Harvey, 2005). Shorter time spans of data also invite higher standardized error, making historically based methods for calculating market risk premium less reliable for countries with less established economies (Damodaran, 2009).

6. Damodaran Method

Aswath Damodaran is a professor in the Howard Stern School of Business at NYU, teaching and researching corporate finance and valuation. Damodaran introduced a new method of calculation for market risk premium in the late 1900's due to his belief that emerging markets in Asia and Latin America did not have the necessary long-term data to have a reasonable method to calculate market risk premium. Damodaran recognized that as time increases there is an inverse effect on standard error that was unforgiving for the less established emerging economies. He believes that there is the possibility that some country specific risk is diversifiable, and that a rational and diversified international investor would do so if available to him, in turn impacting the country specific market risk premium (Damodaran, 2003).

To an extent, his belief was that in markets like the United States it was reasonably possible to use historically calculated market risk premium and get a reliable answer, but in newer nations the same could not be achieved (Damodaran, 2020). In simple terms, Damodaran's method for calculating market risk premium is a modified version of the historical market risk premium discussed above. Of the three translations of the term 'market risk premium' Damodaran concludes that his method, that falls under the Implied Equity Premium, performs better than the Historical Equity Premium he compares against in terms of predictive power of future market risk premium (Damodaran, 2018).

In order to calculate a country specific market risk premium, Damodaran points out three necessary solutions that must be found. First, there must be a way to measure country specific risk which must then be turned into a country specific risk premium. Once these two problems have been solved a firm would then be able to evaluate their own exposure to that country specific risk. Damodaran had methods by which to answer all three of the questions asked.

Measuring country specific risk and using it to develop into a country specific risk premium go hand in hand. Damodaran functioned under the belief that the country specific risk could be

found by taking the default rate and then accounting for the difference in volatility of the stock market and bond market in the country being evaluated. Once this step had been executed, he then proposed the following formula to find the country specific risk premium:

$$\text{Country Risk Premium} = \text{corporate spread} \times \frac{\sigma_{\text{stock}}}{\sigma_{\text{bond}}}$$

Next, Damodaran suggests using the calculated country specific market risk premium to evaluate the risk exposure a firm is bearing. There are three schools of thought that Damodaran suggests concerning this calculation, the bludgeon method, the beta approach, and the one Damodaran himself uses, the lambda approach. The bludgeon method is used to evaluate firm exposure assuming all of the companies within the country are exposed equally to risk. The beta approach assumes that a single company's market risk premium (MRP) and country risk premium (CRP) are proportional to one another and can, therefore, be measured using a beta value. Lastly, the lambda approach makes it possible for a company to be exposed differently to country and market risk. The lambda approach is the broadest approach and is most applicable in a variety of situations. The suggested formulas for the different methods are as follows:

$$\begin{aligned} \text{Bludgeon method} &\rightarrow \text{expected ROE} = r_f + \text{MRP} \times \beta + \text{CRP} \\ \text{Beta approach} &\rightarrow \text{expected ROE} = r_f + (\text{MRP} + \text{CRP}) \times \beta \\ \text{Lambda approach} &\rightarrow \text{expected ROE} = r_f + \text{MRP} \times \beta + \text{CRP} \times \lambda \end{aligned}$$

Explanation of terms can be found above.

The methods for calculation are first explained in Damodaran's 1999 paper on estimating equity risk premiums, which are reiterated yearly in his working study on equity risk premiums: determinants, estimation and implications. The lambda value included in the lambda approach is similar in function to the beta value with both being levered around the value 1 to signify higher or lower measure of risk, essentially turning the one factor valuation model into a two-factor model (Damodaran, 2003).

7. Critique of Damodaran's Method

Although offering different insights on calculating country-specific market risk premium, Damodaran's method did not solve many of the problems created by the ambiguity of the market risk premium. One problem created by Damodaran's method comes from adding even further assumptions about international markets and investor activities on top of the problematic assumptions seen by CAPM. Similar to the problems found with historical bias for CAPM, Damodaran's method also does nothing to explain the variance not captured by the market risk premium.

Damodaran's Country Risk Premium: A Serious Critique (2012) includes the following critique of the model as well, split between theoretical critique and empirical critique. The researchers first cite a fundamental problem with bending the bounds of CAPM to capture the effect of a two-factor model. Using the Damodaran method (assuming the existence of multiple currencies), the researchers were unable to use the beta value nor the risk-free rate to recognize an individual country risk premium. This calculation is necessary to further Damodaran's method in the bludgeon, beta, or lambda methods to calculate return on equity. Additionally, the researchers express hesitation surrounding the lack of substantial peer review for Damodaran's method as well

as the conspicuous lack of external research used by Damodaran in the creation and introduction of his method. It is the belief of Kruschwitz, Löffler, and Mandl (2012) that the theoretical basis of Damodaran's method is not justifiable within CAPM. This is problematic considering the prevalence of use of the CAPM model.

For the empirical critique, Kruschwitz, Löffler, and Mandl (2012) present more criticisms of Damodaran's methodology. One of the first red flags seen is the lack of clear definition being provided for key terms such as country risk premium, making it difficult to understand what is necessary to be measured in the calculation for accuracy and function. Upon manipulating the valuation model to become multi-factored, Damodaran also fails to create distinction between different markets mathematically as well as ignoring the potential risk assets to be associated with additional markets. Damodaran ignores that two different independent markets with independent currencies might function with different risk-free rates and does nothing to provide a solution for the created problem. In Damodaran's identification of country risk premiums he derives the poorly defined country risk premium via credit spreads, however there is lacking evidence of a true relationship between credit swaps and the country risk premium. This assumed relationship between credit swaps and country risk premium has no true theoretical foundation, rather relying on pragmatism in investors and assumptions on how market participants' function.

The researchers for Damodaran's critique cite similar problems to the ones stated above for a historically estimated market risk premium. In doing so, it is highlighted that Damodaran does not find unreliability in historical calculations of market risk premium as long as the time period included is significant enough, even though research shows otherwise. As for the necessity of a country risk premium, Damodaran states that his factor is necessary because it is impossible to diversify country specific risk (Damodaran, 2000). The researchers dispute this on the grounds that markets do not need to be wholly uncorrelated for diversification to reduce risk burden, and that as correlation decreases the positive impact of diversification increases. Concerning Damodaran's suggested three methods of evaluation return on equity, there are problems with the methods suggesting conformity to the CAPM model where no conformity truly exists (Kruschwitz, Löffler, and Mandl, 2010).

The attempt to create a method for equity valuation showed initiative on Damodaran's behalf and provided an attempt to fill a theoretical gap in the financial theory. However, the lack of empirical and theoretical methodology with accurate results discounts the value of Damodaran's method and limits its functionality in practice.

8. Fernandez's Method

A third method of calculating market risk premium to be used in equity valuation comes from Pablo Fernandez of the IESB School of Business in Portugal. Contrary to the historically average and Damodaran methodology, Fernandez calculates the expected market risk premium by yearly conducting a survey of a large set of finance and economics professors, managers, and companies around the world. The survey asks these different financial professionals about what market risk premium they are using in the workplace and classroom. Upon the completion of these surveys the values are then plotted and averaged to calculate a market risk premium for upwards of 80 countries. This data sets are available and can be found from Fernandez to run regression and calculation on, and the data set includes the country specific risk-free rate as well. The market risk premium average is provided year over year as well as calculated medians, minimums,

maximums, standard deviations and the number of answers provided for each country. (Fernandez, 2020).

Prior to Fernandez's survey, similar surveys were conducted by Graham and Harvey (2005) who surveyed CFOs in the United States, as well as Welch (2000, 2001) who interview professors in the United States. Neither of these studies included the span of companies, industries, or countries that is found in Fernandez's research.

Fernandez's method of survey is interesting because it allows for the impact of specific market-changing events to be evaluated more independently than found in a time series. For example, in his yearly survey of 2020 Fernandez was able to capture information from different survey respondents before and after the onslaught of the COVID-19 pandemic. The majority of respondents raised their market risk premium by 2% (Fernandez, 2020).

9. Critique of Fernandez's Method

Similar to Damodaran's method, an immediate problem with Fernandez's work is a lack of published literature concerning the method and finding of his research. Although Fernandez has been collecting data and conducting survey since 2010, the only year of his research being published was the survey from 2012 (Fernandez, 2015). This calls to attention a lack of peer review and indicates the possibility for unreliable results.

In addition, it is possible that survey-based results may be upwardly biased based on anticipated future returns that might be higher than actual returns (Ilmanen, 2003). Damodaran also warns about the inclusion of academics in survey results due to their separation from corporate finance and valuation in practice rather than in theory (Damodaran, 2008).

10. Conclusion

Market risk premium is a prevalent and important factor used in many equity and valuation calculation. The three methods for calculating market risk premium included in this paper all face unique challenges in effectively creating solutions for unreliability in market risk premium. Although accessible, historically calculated market risk premium have been found to be higher than a reasonably acceptable level while also proving unreliable for countries without well-established economies. Damodaran made efforts to test the bounds of the CAPM theory to engage a more thoughtful market risk premium, but the results ultimately fall flat empirically and theoretically. Fernandez's method is promising but lack support from peer review while facing challenges concerning forward looking bias.

It can be concluded that further theoretical research is necessary to build a pricing model that is more effective at explaining covariances of the market and returns. In addition, further research is necessary to attempt to create a method of calculating market risk premium that is effective, consistent, and reliable.

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