Master Thesis Finance

Equity Risk Premium in Emerging Markets

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Abstract

Equity risk premium (ERP) is the main component of the cost of equity and making precise ERP estimations requires long term equity market and risk-free returns data under the historical premium approach. Due to the lack of long-term data and high market volatility in emerging markets, following the same approach is likely to produce large standard errors, widening the confidence interval and hence does not allow to make accurate estimations. To eliminate such problems, this study follows the modified historical premium approach, combination of mature market base premium and additional country risk premium (CRP). In this regard, sovereign credit rating spread, sovereign bond spread, and CDS premium metrics are examined separately to proxy the CRP in sample emerging markets after estimating the base premium of a mature market with the historical premium approach. The results indicate that each proxy produces similar spreads so that certain conditions such as data availability and liquidity would be important when choosing the metric. The study also shows how following different approaches namely Bludgeon, Beta and Lambda used to incorporate the CRP may have considerable impact on the cost of equity. Even though Bludgeon approach applies the same CRP regardless of the degree of companies' exposure to country risk, the study demonstrates that most practitioners use similar method based on 50 equity research reports published in sample emerging markets.

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1) INTRODUCTION

From risk and return perspective, investors expect to earn a certain premium over the risk-free rate by investing in riskier assets such as stocks. The return difference between a stock and the risk-free rate is called the equity risk premium (ERP). It is also one of the main components of the cost of equity under the Capital Asset Pricing Model (CAPM), primarily applied in the discounted cash flow (DCF) models when valuing companies. According to a comprehensive survey conducted by Graham and Harvey (2001), the majority of finance professionals apply the DCF method before taking any investment action. Since even small changes in the cost of equity, may have substantial impacts on the present value of future cash flows, and hence, on the value of corresponding assets, making precise ERP estimations is crucial for investment decisions.

Welch (2000) states that the extrapolation of the historical premium is the most widely used method when estimating the ERP. It is derived from the premium that stocks have historically gained over the risk-free rate. However, following the exact same approach may not yield statistically significant estimates for emerging markets because they do not have an extended period of past data and their return performances show substantial volatility, as demonstrated by Salomons & Grootveld (2003). Such drawbacks eventually lead to wide confidence intervals for the ERP estimates and prevent robust valuations.

In order to overcome this problem, Damodaran (2003) proposed the modified historical risk premium approach for the ERP estimation, which consider the ERP as the combination of two components; “base premium for a mature market” and “country risk premium” (CRP). Based on this approach, the base premium corresponds to historical ERP of a developed market where there is sufficiently enough past data. The CRP, on the other hand, is added to compensate the risks that emerging markets may additionally contain and proxied by various financial metrics such as sovereign bond spreads.

Damodaran (2003) also defines three approaches namely Bludgeon, Beta and Lambda, which varies in the way that they incorporate the CRP into the cost of equity. In this regard, Bludgeon approach assumes that every firm has the same exposure to country risk and requires using the same CRP. Beta approach, however, allows the CRP to be fluctuated based on equity betas. Lambda, additional coefficient, adjusts the CRP by looking at revenue resources, location of production facilities, or risk management tools of companies. Therefore, choosing a suitable approach is mainly about whether firms have different exposure to country risk or not.

The modified historical premium approach may produce different ERP estimations through various CRP proxies. Besides, the cost of equity is likely to fluctuate dramatically depending on the approach used when incorporating the CRP. The purpose of this study is to guide users by demonstrating the past performances of CRP proxies in estimation of the ERP in emerging markets. It also aims to compare approaches which incorporate the CRP and to find the suitable one with the support of detailed literature review. Thus, the outcomes of this study are expected to give insights on making accurate ERP estimations for companies in emerging markets.

In the first part of the analyses, standard historical ERP in the sample developed and emerging markets are tested with up-to-date data to check if there are decent statistical improvements in the outcomes compared to previous findings. In addition to that, special attention is given on how ERP have reacted over time in countries, upgraded to developed market status in the last ten years. In this regard, standard errors of historical ERP in these countries are calculated to check whether they diverge from other emerging markets.

The study is followed by applying the modified historical risk premium approach in the sample emerging markets where the ERP cannot be precisely estimated from the past returns. After choosing the US market risk premium as a base, additional country risks are examined by using sovereign credit rating, sovereign bond default spread, and credit default swap (CDS) spread. The ERP estimations derived from using each CRP proxy are also compared with the realized premiums over the last ten years to provide insights about the performance of the proxies.

In addition to introducing certain assumptions of Bludgeon, Beta and Lambda approaches used in incorporating the CRP into the cost of equity, the last part is enriched with the illustrations of these approaches on two firms based in Turkey to present how choosing different methods can generate large deviations in the cost of equity. The analysis also covers a dataset that includes 50 equity research reports representing the current practices and the methods commonly used when reflecting the additional country risk premium.

The results of these analyses indicate that problems about the historical premium approach still persist in emerging markets and the ones promoted to the developed country status. Also, the CRP proxies produced similar spreads so that the ERP estimations do not change substantially across metrics. In that case, freely traded and liquid instruments are expected to give a better approximation of the CRP. Although the varying exposure of country risk has ground in the literature, equity research reports demonstrate that practitioners tend to apply similar country risk premium when valuing companies.

2) LITERATURE

The ERP is the main component of risk and return concept introduced by Markowitz (1952) in his well-known portfolio selection model. The model determines an optimal portfolio from the combination of assets based on expected returns and standard deviations shown as the point of tangency shaped by a line extending from the expected return of risk-free security to the continuous frontier of portfolios having the highest return correspond to each level of standard deviation. Therefore, the difference between the return of risk-free security and expected return of the tangency portfolio gives the ERP.

Even though the historical ERP of the US is used as base premium in this study, concerns may arise because the magnitude of realized equity returns in the US market is not consistent with the expectations of the theory. Mehra and Prescott (1985) found that given the risk aversion level of market participants, ERP in the US market between 1889 and 1978 corresponds to a much higher degree, leading to the equity premium puzzle. To provide an explanation for this puzzle, Brown, Goetzmann, and Ross (1995) indicate that the ERP computed from the US data may be subjected to survivorship bias as 36 global stock exchanges were abolished outright or they had serious interruptions in the 20th century. Similarly, Goetzmann and Jorion (1999) argue that financial market in the US has the longest and the most successful history so that equities has earned exceptionally high premiums than other markets. Siegel and Thaler (1997) also mention that the riskiness of equities is understated by relying only on the US market data.

At this stage, comprehensive analyses including other markets provide more details about the realization of these arguments. In one of those studies, Dimson, Marsh, and Staunton (2018) examined a total of 21 countries for the period 1900-2017 and found that the average real returns gained from the US equity market (5,2%) are in line with the overall average (%5,1) which is not exceptional performance. Therefore, US data can also be considered for the base premium.

Although investing in developing markets are expected to be riskier compared with investing in developed countries, whether to reflect additional country risk premium within the context of CAPM is a critical question to be answered. According to the CAPM developed by Sharpe (1964) and Lintner (1965), the total risk of any asset measured by the variance of returns can be divided into covariance of its returns with a proportion of assets so-called non-diversifiable risk, and residual risk that can be diversified away. The model indicates that the only systematic (non-diversifiable) risks are supposed to be compensated. The critical question then turns into whether country-specific risks in emerging markets are diversifiable or not.

In one of the earlier studies, Levy and Sarnat (1970) show that correlations of returns between international stock markets were limited and thus, diversification could be beneficial. On the other hand, after examining the eight developed markets, Yang, Tapon, and Sun (2006) find a considerable surge in the correlations ranging from 0.65 to 0.82. Also, the report published by Blackrock Inc. (2011) demonstrates that the correlation of MSCI emerging markets index with S&P500 and MSCI EAFE[1] indexes are respectively 0.82 and 0.91. Further details about market correlations can be found in Appendix B.

Stulz (1999) highlights that investors benefited from experiencing a lower cost of equity after diversifying their portfolio by investing in foreign economies, especially in the early years of removing barriers between countries when the correlations were limited. However, accelerated integration between global economies led them to move together and wiped out most of the diversification effect and eventually increased the required rate of returns. Donadelli and Prosperi (2012) also argue that the financial integration and dominance of globally diversified investors have considerably shaped the pricing of equities and increased correlation across markets in the last decade. Related findings on increasing correlations indicate that the large portion of country risk is not diversifiable, which means that country-specific risk is a relevant factor in estimating the ERP.

The literature offers alternative measures to determine a proxy for country risk. Erb, Harvey, and Viskanta (1996) argue that stock market performances are closely related to the credit risk scores of countries. Godfrey and Espinosa (1996) propose estimating country risk as the spread between US dollar-denominated sovereign bonds and corresponding US treasury bond. Porras (2011) states that comparing equity market volatilities may be a good measure for representing country risk exposure. In addition to these, Damodaran (2018) suggest using CDS premiums on US dollar-denominated government bonds. Alternatively, he proposes to look at sovereign credit rating spreads assigned by well-known agencies in their country coverage reports.

Once the optimal measure for country risk is selected, it is also important to determine whether country risk exposure is varying among corporations before addressing it. It used to be assumed that the drivers of country risk were the same for all industries in a market. However, strong evidence presented below arguing that sensitivity towards country risk may change because either companies do not experience similar problems that countries have, or they use several hedging mechanisms to cope up with the political and economic challenges.

[1] It includes stocks from 21 developed economies

Political risks, one of the main drivers of country risk, includes corruption and policy shifts. Kobrin (1979) indicates how political issues have considerable impacts on some companies due to the difference in riskiness level among sector groups. Bekaert and Harvey (2003) define the characteristics of industries which prone to show higher political sensitivity and find that such uncertainties are supposed to be priced. Holburn & Zelner (2010) mention that monopolistic industries have more dominance in the market so that some of those companies usually have opportunity to negotiate with government officials and protect themselves from the negative consequences of political actions.

Economy related country risks arise primarily from the exchange rate, interest rate, inflation, and market volatility. Choi and Prasad (1995) highlight that the degree of exchange rate risks changes for each line of business. Companies benefiting from government incentives, however, may not be affected by changes in the value of the local currency. Bekaert and Harvey (2003) point out that mature industries are more resilient to country-specific risks and they show less return volatility. Wei and Wong (1992) argue that inflation rate movements have a significant impact on non-natural resources companies compared to others. In general, market returns in emerging economies experience greater volatility because they are exposed to more risks than developed countries.

As the researches state, companies are exposed to country risk at a various extent. To address this issue, three main approaches are introduced by Damodaran (2003); Bludgeon, Beta, and Lambda. Although the first two approaches do not require additional input, firm-specific risk exposure should be measured with the Lambda. He indicates that it can possibly be determined from revenue resources, location of production facilities and risk management policies. Since some of these details are not publicly available, revenue sources are used when measuring the Lambda.

3) METHODOLOGY & DATA

To demonstrate the results of the historical ERP approach, yearly equity index and risk-free returns are used to find the premiums after selecting the 15 sample countries. The historical ERP is computed by averaging yearly differences between returns on equity (R^e) and the risk-free rate of returns (R^f);

$$ERP_t = R_t^e - R_t^f$$

In the sample group, countries are separated into two segments as developed and emerging based on their market classifications reported by Morgan Stanley Capital International (MSCI) and Financial Times Stock Exchange (FTSE). Consequently, BRICS countries and Turkey are selected to represent emerging markets, while G7 countries constitute developed economies. Besides, South Korea and Israel are included in the analysis since they have been upgraded to developed market status ten years ago.

Table 1: Market Classifications and Equity Indexes

Developed Countries	**Developed Countries - Newly Listed**	**Emerging Countries**
Canada – S&P/TSX	Israel – TA 125	Brazil - IBOV
Italy – Milan Comit Global	South Korea - KOSPI	Russia - MOEX
France – CAC40		India - SENSEX
Germany – DAX 30		China – SHCOMP
Japan – Nikkei 250		South Africa – FTSE INDEX
United Kingdom – FTSE 100		Turkey – BIST 100
United States – S&P 500		

When computing the returns gained from the sample equity markets, annual index figures are converted in the US dollar terms with year-end exchange rates to make the results comparable. Annual dividend payments are also included to reflect the total index returns. For the risk-free rate of return, the US treasury bond and treasury bill rates are used separately.

Yearly equity index data, currency exchanges, and risk-free rates are obtained from Thomson Reuters, Bloomberg Terminal, Federal Reserve Economic Data (FRED), R. Shiller`s database and records of the related central banks. Some of these statistics are also available at Ibbotson Associates and Fama & French database. Thus, the validity of each data is cross-checked among the sources.

In the historical risk premium approach, time horizon of sample period, determination of risk-free rate and averaging techniques may have considerable impacts on the magnitude of the ERP.

Such divergences in estimating the ERP and related comprehensive discussions are provided in the analysis section, along with their influences on the US market. Following the discussions, time-series analyses are performed separately for the sample markets to observe the size of the historical ERP as well as estimation capabilities.

Standard errors derived from the historical ERP represent the accuracy of estimations. In fact, having extreme errors increase the chance of estimations to deviate from expectations. Porras (2011) states that large standard errors have negative impacts on the reliability of forecasts and make the ERP estimates unsuitable for use. The standard errors are calculated by the following formula;

$$\text{Standard Error} = \frac{Annualized\ Standard\ Deviation\ in\ ERPs}{\sqrt{Number\ of\ Years\ in\ Sample}}$$

A numerical illustration of standard errors for a market with 30% of annual standard deviation in ERP is also given below;

Table 2: ERP Standard Errors

Period	**Standard Error**
10 Year	30%/√10 = 9.5%
20 Year	30%/√20 = 6.7%
30 Year	30%/√30 = 5.5%

Assuming that an emerging market has a historical premium of 6%, the size of such standard errors would give wide confidence intervals for the ERP estimates and consequently decrease the accuracy of estimations. Similar to the example, majority of equity indexes in developing countries do not have a long period of data and/or yearly equity returns tend to show extreme volatility which increases standard errors. To observe whether countries upgraded to developed market status ten years ago still experience similar problems, standard errors of historical ERP are also compared with the sample emerging and mature markets in different intervals before and after the upgrades.

The modified historical premium approach proposed by Damodaran (2003) is applied in the sample developing countries where historical premiums do not allow to make accurate ERP estimations. This method divides the ERP into two main components presented below;

Equity Risk Premium = Base Premium for Mature Market + Country Risk Premium

According to the approach, historical ERP of a mature market is determined as a base premium. To reflect the additional risk exposure, sovereign credit ratings, sovereign bond default spreads, and CDS spreads, introduced in the literature part are used to proxy the CRP.

3.1) Measures for Estimating the Country Risk Premium

Sovereign Credit Rating: Sovereign credit ratings indicate the riskiness of investing in foreign markets by assigning ratings on sovereign debts. This measure requires taking the average of yields on recently announced US dollar-denominated sovereign debts with different ratings. Considering that the yield corresponds to the highest rating represent the default-free rate, spreads on other ratings estimate the CRP.

Sovereign Bond Default Spread: Sovereign bonds are debt instruments issued by governments. According to this measure, yield differences between US dollar-denominated sovereign bonds of developing countries and comparable US treasury bonds capture the CRP.

CDS Spread: Credit default swaps are contractual agreements which provide insurance against default risks of sovereign bonds. Therefore, buyers of these hedging instruments are supposed to pay certain premiums. In order to apply this measure, CDS spreads on long term sovereign debts of developing countries over the CDS premiums on the US treasury bonds with similar maturities are used to estimate the CRP.

To compare the past performances of these metrics in BRICS countries, the ERP estimations, covering the years between 2008 and 2018, are made by applying each of them under the modified historical premium approach. Since the same (the US market) base premium is used in the test, the main difference between the ERP estimations comes from the size of the CRP measures estimated with the 2008 figures. The measures are derived from 10-year sovereign bonds which have equal maturities (10-year) with the test period. Considering that the period starts from 2008, historical ERP for the US market is also computed from the return data between the years 1945 and 2008. After making the ERP estimations for each country, they are compared with the realized ERP figures and observe which measures produced more precise results.

When testing the CRP measures, sovereign bond yields, and CDS premiums are obtained from Thomson Reuters and Bloomberg Terminal. Also, the yearly rating information for each sample country is found at Moody`s database. Considering that the longest rating data is provided by

Moody's, other agencies namely S&P and Fitch are only used to check whether there are any major mismatches between assigned ratings.

In principle, all measures mentioned above are used to estimate the CRP, but additional work may be needed for equity investors in case companies have different exposure to country risk. For that reason, the analysis proceeds with three approaches proposed by Damodaran (2003), which exhibit several ways of integrating the CRP into the cost of equity.

3.2) Approaches for Implementing the Country Risk Premium

Bludgeon Approach

This approach assumes that all companies within a market are affected equally from country risk. Therefore, the same premium is exercised for all firms regardless of their industries and unique characteristics.

$$\mathrm{E}(R_i) = R_f + \beta_i * [E(R_m) - R_f] + CRP$$

Beta Approach

Differently from the previous approach, this one allows the CRP to be modified to the degree of equity beta, which measures exposures of stocks to the systematic risk. It implicitly assumes that stocks with betas lower than one are less sensitive to country risk, or vice versa.

$$\mathrm{E}(R_i) = R_f + \beta_i * [E(R_m) - R_f + CRP]$$

Lambda Approach

Lambda is an additional coefficient incorporated into the cost of equity and enables to assess country risk exposure separately instead of using beta. It can be derived from income sources, location of production facilities, and risk management processes.

$$\lambda_j = \frac{\%\ of\ exposure\ in\ country\ for\ company_j}{\%\ of\ exposure\ in\ country\ for\ average\ company}$$

$$\mathrm{E}(R_i) = R_f + \beta_i * \left[E(R_m) - R_f\right] + CRP * (\lambda_j)$$

All the approaches are also tested on two sample companies operating in an emerging market to present how choosing different methods can change their cost of equities. Accordingly, the 10-year US treasury bond rate is taken as the risk-free rate. When estimating the ERP, historical

ERP of the US market is used as a base premium. The CRP, on the other hand, are proxied by using sovereign bond default spreads. Lastly, betas (β_l) of the companies are estimated from industry-specific unlevered betas (β_u) provided by Damodaran (2017) and then levering them based on debt to equity ratios (D/E) and corporate tax rates (T);

$$\beta_l = \beta_u + [1 + (1 - \mathrm{T}) + (D/E)]$$

When re-levering the betas, tax rate is taken as 22%, the corporate income tax rate currently applied in Turkey. Debt to equity ratios are computed from the figures stated in the 2018 year-end financial statements of the companies. Since debt to equity ratios have stable trends over a long period, they are assumed to stay at a similar level in the following years.

Specific to the lambda coefficient, country risk exposures of the companies are derived from revenue sources because details about the location of production facilities and risk management procedures are not publicly available. Therefore, export shares in revenues and distribution of export markets by country are found from the 2018 annual reports. The average exposure to the country risk is estimated from the share of exports in the country`s GDP provided by the World Bank.

The last part also includes the recent practices of incorporating the country risk by reviewing recently published 50 equity research reports which cover firms based in developing countries. Thus, certain differences between theory and practice can be observed. Thomson One and the archives of financial institutions are used to obtain the reports. Special attention is also given to the reputation of publishers and their potential influence on pricing.

4) ANALYSES AND RESULTS

Considering that equity markets in developing countries tend to be more volatile compared to developed economies, and they do not have a long period of past data, the modified historical risk premium approach is applied to make accurate ERP estimations. Before moving on this part, special attention is given on historical ERP in the G7 countries, but more specifically in the US market, where the longest return data is available and the outcomes are compared with historical ERP derived from the sample emerging markets. After that, optimal mature market premium is used as a base while estimating the ERP in developing countries under the modified historical risk premium approach. Since the choices of time horizon, risk-free rate and averaging techniques are highly relevant when determining the mature market base premium, discussing these issues would give more insights about the outcomes.

4.1) Divergences in Estimating Equity Risk Premium

Even though the historical premium approach is a common practice for estimating the ERP, and analysts have the same dataset; outcomes may vary significantly based on certain assumptions. Since a mature market historical ERP is used as a base premium while estimating the ERP for other emerging economies, it is crucial to highlight the drivers of different assumptions along with their potential implications.

4.1.1) Time Horizon

Although the US market has the longest historical dataset in terms of equity index and risk-free returns which go back to 1871 or even further, some analysts may prefer to use recent time frames such as the last 20 or 30 years. Damodaran (2018) states that analysts who support these arguments may claim that risk aversion levels of investors have changed over time, and using recent periods can provide updated ERP estimates. However, it should be noted that statistical significance is one of the main reasons why the historical premium approach is widely used in developed markets. Thus, using recent periods may give larger standard errors and is not likely to produce accurate estimations. Stulz (1999) also argue that it would be possible to deduce that the ERP may be extremely high or negative when it is estimated from shorter intervals. As an example, he shows how the ERP estimations change by 2% in only two years by using rolling the 20-year periods between 1978 and 1997.

4.1.2) Risk-Free Rate

Another issue, making historical ERP varies is choosing risk-free rates with different maturities, usually ranging from 1-year treasury bills to 10 years treasury bonds. Derrig and Orr (2004) mention that the investment horizon is associated with the maturity of risk-free security used to estimate the ERP. Unless the investment horizon is short term (around one year), using a short-term rate does not provide predictable returns because it may expose to the reinvestment risk. On the other hand, short-term risk-free instruments do not carry price risk, which arises from interest rates changes and they are preferred for short term investors. Therefore, the selection of risk-free return mainly depends on the preferences of investors.

4.1.3) Return Averaging

There are two different ways of averaging returns derived from stock market and risk-free rates when estimating the ERP. While arithmetic mean provides a simple historical return average, geometric average includes compounding effects. One of the past studies conducted by Fama and French (1998) showed that serial correlations in long term returns are strongly negative, indicating that using arithmetic average may lead to higher ERP. Thus, calculating geometric returns would deliver more consistent outcomes on long time horizons.

In order to observe how much historical premiums vary by following the choices, ERP for the US market is computed based on different assumptions. Summary of the estimations together with the standard errors stated in brackets are given below;

Table 3: Historical ERPs of the US

	Geometric Average		**Arithmetic Average**	
	Stock - T. Bill	**Stock - T. Bond**	**Stock - T. Bill**	**Stock - T. Bond**
1871-2018	N/A -	4,3% (1,6%)	N/A -	5,7% (1,6%)
1900-2018	5,6% (1,9%)	4,8% (1,9%)	7,5% (1,9%)	6,4% (1,9%)
1945-2018	6,9% (2,0%)	5,9% (2,2%)	7,7% (2,0%)	6,9% (2,2%)

It is remarkable that even in one of the most developed financial markets, the gap between the results, ranging from 4,3% to 7,7%, goes up to 3,4% depending on different choices. Taking its potential effects on asset valuation into account, the table shows why reaching a consensus of an optimal method is so important. Illustrations of annual risk-free and market returns as well as compounded returns in the US market are given in Appendix C.

4.2) Historical Equity Risk Premium

Historical risk premiums realized in sample developed and emerging markets are tested in US dollar terms.

Table 4: Historical ERP across Sample Markets

	Stock Returns - Long Term Government Rates				Stock Returns - Short Term Government Rates			
Country	**Geometric Mean**	**Arithmetic Mean**	**Standard Error**	**Period**	**Geometric Mean**	**Arithmetic Mean**	**Standard Error**	**Period**
United States	5,9%	6,9%	2,2%	1945-2018	6,9%	7,7%	2,0%	1945-2018
Canada	1,1%	3,9%	3,1%	1961-2018	2,0%	5,3%	2,6%	1961-2018
France	1,6%	4,3%	3,8%	1966-2018	3,0%	5,9%	3,6%	1966-2018
Germany	3,9%	6,3%	3,4%	1960-2018	5,2%	7,8%	3,1%	1960-2018
Italy	2,5%	5,7%	4,5%	1969-2018	4,2%	7,7%	4,1%	1969-2018
Japan	2,0%	5,1%	4,5%	1969-2018	3,7%	7,1%	4,0%	1969-2018
United Kingdom	3,6%	6,5%	4,0%	1963-2018	4,7%	7,9%	3,6%	1963-2018
Israel	5,8%	9,8%	6,2%	1988-2018	8,7%	13,1%	6,2%	1988-2018
South Korea	2,0%	10,8%	8,1%	1984-2018	5,2%	12,5%	7,5%	1984-2018
Brazil	4,8%	15,9%	12,4%	1995-2018	7,8%	19,2%	11,4%	1995-2018
Russia	2,6%	20,0%	14,1%	1998-2018	5,3%	22,9%	12,8%	1998-2018
India	3,9%	9,5%	7,0%	1988-2018	6,9%	12,7%	6,1%	1988-2018
China	5,7%	16,2%	10,6%	1991-2018	8,7%	19,5%	10,4%	1991-2018
South Africa	2,6%	6,2%	5,9%	1987-2018	5,1%	8,9%	5,3%	1987-2018
Turkey	4,7%	30,9%	19,2%	1989-2018	7,8%	34,3%	19,0%	1989-2018

The table exhibits magnitudes of the ERP based on different market classifications and also reveals how using arithmetic average may lead to significant deviations. It is mainly because if there are extreme volatilities in annual ERP, arithmetic mean exceeds geometric mean[2]. Even if the data starts from very early years of each index, estimation periods for developing markets cover approximately the last 30 years, much shorter compared to developed ones. In addition to the higher volatility in equity returns, historical data covering relatively short period cause to high standard errors. In parallel with the expectations, the developed markets produced less standard errors, but still, only the US has enough historical data to make more accurate ERP estimations. Even though historical premiums give insights about the past performance of emerging markets, the outcomes are not used to estimate the ERP. The other details of the descriptive statistics can be found in Appendix A.

Markets are generally divided into two groups as developed and emerging when conducting such studies. Understanding the relationship between riskiness and market classification can be helpful for further researches. Thus, the standard errors of the historical ERP are computed and compared at similar intervals to make sure that time effect is eliminated.

[2] To illustrate, the arithmetic mean of 30% and -20% returns is equal to 5% from (30% - 20%)/2, whereas the geometric mean is equal to 1,98% from $\sqrt[2]{(1+0{,}30)*(1-0{,}20)}-1$

Table 5: Standard Error Comparison of the Historical ERP

Standard Errors of ERP	30 Years	20 Years	10 Years	1989-2008
Israel	6,3%	8,6%	11,2%	7,9%
South Korea	8,1%	9,4%	9,3%	11,3%
Average	**7,2%**	**9,0%**	**10,2%**	**9,6%**
India	7,2%	10,0%	11,9%	9,2%
South Africa	6,3%	8,4%	9,6%	8,3%
Average	**6,8%**	**9,2%**	**10,8%**	**8,8%**
United States	3,7%	5,2%	5,1%	4,8%
Canada	4,9%	6,9%	8,5%	6,2%
France	4,5%	6,4%	7,5%	5,8%
Germany	5,0%	6,7%	6,7%	6,8%
Italy	4,6%	5,8%	7,1%	6,0%
Japan	5,0%	6,4%	6,0%	6,7%
United Kingdom	4,1%	6,0%	6,7%	5,3%
Average	**4,6%**	**6,2%**	**6,8%**	**5,9%**

Since other emerging markets do not have 30 years of data, only India and South Africa are included. According to FTSE and MSCI index reviews, Israel and South Korea have been treated as developed markets over the last ten years. For that reason, variations in different periods, before and after the updates, are observed. Based on the results, however, they are not differentiated from the other emerging markets in terms of standard errors calculated from historical ERPs. It indicates that upgrading to developed market status is not solely enough, at least in the 10-year period, to decrease the riskiness of the markets, which is closely related to forming the ERP expectations.

Considering high standard errors presented in table 4, the modified historical risk premium is followed as an alternative approach to make more precise estimations in emerging markets. When testing the past performance of this approach, the historical ERP of the US market is used as base premium. Since the estimation horizon covers the years between 2008 and 2018, historical ERP of the US market is recalculated by excluding the last ten years.

Table 6: Historical ERP of the US

Period	Equity Returns*	T-Bond Returns*	ERP	Standard Error
1945-2008	10,7%	5,6%	**5,1%**	2,4%

(*) Represents annual returns derived from geometric averages.

The main reason why the inception year started in 1945 is that the US financial system has changed considerably in the post-war period. Friedman, Friedman and Clausen (1980) state that after World War II, the US financial market has experienced three main developments; rising of private debt economy, increasing degree of financial intermediation, and growing role of the federal government. In addition, 10-year treasury bond rates are used to compute the base premium to make the analysis consistent in terms of time horizon (2008-2018).

4.3) Estimating Country Risk Premium

As discussed in the literature part, high correlation between emerging and developed markets does not allow to diversify additional country risks in developing countries. Therefore, the next step is to determine an optimal approach for an additional risk premium. In that regard, metrics derived from sovereign credit ratings, sovereign bond default spreads, and CDS spreads are tested to estimate the CRP. In order to observe the performance of each measure over the last ten years, historical ERPs in BRICS countries are also computed for the period between 2008 and 2018. After introducing each method, the results are summarized along with the differences from realized values.

4.3.1) Sovereign Credit Rating

Having already experienced on assessing the riskiness of corporations over 100 years, credit rating agencies have also started to allocate rating scores for sovereign bonds of developing economies where availability of data is limited or sometimes hard to obtain. Considering that developed countries with the highest ratings are expected to carry the minimum risk, they also offer the lowest interest rates. Hence, the following table is formed by taking the averages of yields on long-term (10 years) sovereign bonds which has corresponding ratings, and they are also adjusted through deducting the average yield attached on the highest ratings.

Table 7: Sovereign Rating Spreads

Rating Score	Default Spread*
Aaa	0,00%
Aa1	0,53%
Aa2	0,57%
Aa3	0,75%
A1	0,83%
A2	1,07%
A3	1,37%
Baa1	1,89%
Baa2	2,29%
Baa3	2,53%
Ba1	2,85%
Ba2	3,27%
Ba3	4,12%
B1	5,16%
B2	6,47%
B3	7,77%

(*) Defaults spreads below the highest rating are netted.

Although the agencies have advanced risk evaluation models and accessing the relevant rating information is simple, there are some problems related to using them as a single reference.

First of all, rating agencies do not prefer to update ratings in short intervals, which may lead to ignoring the current state of default risk. As an example, Damodaran (2018) emphasize that Greece's ratings were not downgraded until the first half of 2011, even if financial turbulence had already been anticipated. Secondly, the assessment process is not transparent because the agencies do not disclose the details of their methodologies and assumptions when assigning a credit score for sovereign bonds. Any estimation based on that information would be directly associated with the opaque measurement strategies of those institutions. Finally, every country does not have a credit rating, and it may limit the use of this method.

In order to evaluate the past performance of this metric, a new ranking similar to table 7 is formed by using the figures of 2008. After making the ERP estimations for BRICS countries, they are compared with the realized values.

Table 8: Sovereign Rating Based ERP Comparison between 2008-2018

Countries	Estimated CRP*	Estimated ERP	Realized ERP	Difference
Brazil	1,4%	6,4%	6,5%	0,1%
Russia	1,9%	7,0%	6,9%	0,0%
India	2,5%	7,6%	9,5%	1,9%
China	0,8%	5,9%	4,5%	-1,4%
South Africa	1,9%	7,0%	6,2%	-0,8%

(*) 2008 year-end ratings are used for estimation

4.3.2) Sovereign Bond Default Spread

Damodaran (2003) and Porras (2011) state that comparing the yield to maturity on a dollar or euro-denominated sovereign bond issued by a developing country with the yield to maturity of a comparable mature market treasury bond in the same currency is one of the simplest and most widely used measures of the CRP. Assuming that a mature market (i.e., the US) treasury bond is free from risk, spreads over sovereign bonds represent the level of default risk in the related emerging markets.

Compared with the sovereign credit rating measure, using default spreads that change for every country may produce more accurate results while evaluating the riskiness of countries. It is primarily because some countries may have the same credit rating even though they expose to different level of risks. Another advantage is that sovereign bonds are usually priced frequently so that the capability of reflecting new information into spreads is expected to be greater.

It is important to remind that spreads across emerging markets increase remarkably when short term uncertainties arise. If such cases are expected to be temporary, taking the average spread over the specific period instead of using the most recent figure may be more reasonable. Although it becomes less of an issue over time, existence of US dollar or Euro-denominated sovereign bonds issued by developing countries and liquidity remain as potential challenges for applying this measure.

Table 9: Sovereign Bond Default Spreads as of 2008

	United States	Brazil	Russia	India	China	South Africa
Average Sovereign Bond Yields*	2,4%	4,3%	4,6%	5,0%	2,8%	4,0%
Sovereign Bond Default Spreads**		**1,9%**	**2,2%**	**2,6%**	**0,4%**	**1,6%**

(*) Estimated from the average of monthly yields on 10-year sovereign bonds in the year 2008
(**) Represent the CRP by using the rates over the US government bond yields

Table 10: Default Spread Based ERP Comparison for the period between 2008-2018

Countries	Estimated CRP*	Estimated ERP	Realized ERP	Difference
Brazil	1,9%	7,0%	6,5%	-0,4%
Russia	2,2%	7,3%	6,9%	-0,3%
India	2,6%	7,7%	9,5%	1,9%
China	0,4%	5,5%	4,5%	-0,9%
South Africa	1,6%	6,7%	6,2%	-0,5%

(*) Estimated from the average of monthly figures over one-year period

4.3.3.) Credit Default Swap

During the past two decades, the CDS market has expanded rapidly and provided investors an optional source to access continuously updated default spreads. Ismailescu and Kazemi (2010) argue that the chance of adverse events being forecasted by CDS premiums is significantly higher in emerging markets compared to sovereign credit ratings. However, no clear evidence is found indicating that CDS premiums are better estimators of country risk than sovereign bond spreads.

On the negative side, the instrument is so sensitive towards market conditions and sometimes can be extremely volatile. Similar to the sovereign bond spreads, ERP estimations in such cases can be made by averaging CDS spreads over a certain period. The other issue is that the market carries counterparty risk, also included in the premium independently from country default risk. In order to eliminate it, the premium demanded for the US government CDS contract are netted from CDS spread on the relevant country.

Table 10: Excess CDS Spreads as of 2008

	United States	Brazil	Russia	India	China	South Africa
Average CDS Spreads*	66,0	217,7	271,9	301,8	85,8	198,7
Excess CDS Spreads**		**1,5%**	**2,1%**	**2,4%**	**0,2%**	**1,3%**

(*) Estimated from the average monthly CDS premiums on 10-year sovereign bonds in 2008
(**) Represent the CRP by using the spreads (converted from basis points to percentages) over CDS premiums on the US government bond

Table 11: CDS Based ERP Comparison for the period between 2008-2018

Countries	Estimated CRP*	Estimated ERP	Realized ERP	Difference
Brazil	1,5%	6,6%	6,5%	-0,1%
Russia	2,1%	7,1%	6,9%	-0,2%
India	2,4%	7,4%	9,5%	2,1%
China	0,2%	5,3%	4,5%	-0,8%
South Africa	1,3%	6,4%	6,2%	-0,2%

4.4) Incorporating Country Risk Premium

After testing the measures, the next challenge is finding a suitable approach to incorporate the CRP in the cost of equity. Deciding on whether every company is exposed to the same degree of country risk is a critical step while discussing alternative approaches proposed by Damodaran (2003). To demonstrate the variations between the approaches, two companies namely Tupras Turkiye Petrol Rafineri AS (Tupras) and Tofas Turk Otomobil Fabrikasi AS (Tofas) traded in Turkey`s BIST-100 index are analyzed based on 2018 year-end figures.

Giving some details regarding the main assumptions would be useful before summarizing the outcomes. Turkey`s country risk premium is found as 4,3% from the default spread on the 10-year sovereign bond where the yield at the end of 2018 was 7,1% and 2,8% respectively for Turkey and the US. The US treasury bond rate equal to 2,8% is also used as the risk-free rate. Also, the ERP of 5,9% is estimated from the post-war historical data (1945-2018) in the US market. Lastly, the betas of the companies are estimated by using industry-specific unlevered betas published by Damodaran (2017) and then re-levering them based on companies' debt-to-equity and corporate tax rates. The results derived from alternative approaches are presented below with underlying assumptions.

4.4.1) Bludgeon Approach

The first approach incorporates the country risk as a fixed premium and does not take company-specific characteristics into account (ignoring the beta effect) when dealing with country risk. It implicitly assumes that all companies within a market carry the same level of country risk.

Cost of Equity for Tupras = 2,8% + 0,64 * (5,9%) + 4,3% = 10,9%

Cost of Equity for Tofas = 2,8% + 1,18 * (5,9%) + 4,3% = 14,1%

Even though this is the simplest form of integrating the CRP, pretending that all companies in the market are equally affected by country risk would be a strong assumption. There are also many arguments presented in the literature section showing that risk exposure changes across industries and firms.

4.4.2) Beta Approach

Differently from the previous one, this approach implies that a company's sensitivity to country risk is the same with its exposure to the systematic risk, which is measured by beta. The concept shows that companies with a beta higher than one are exposed to the country risk more than others with lower betas. Since Tupras has a beta lower than one, its cost of equity decreases compared to the previous approach while the opposite effect is observed for Tofas.

Cost of Equity for Tupras = 2,8% + 0,64 * (5,9%+ 4,3%) = 9,3%

Cost of Equity for Tofas = 2,8% + 1,18 * (5,9%+ 4,3%) = 14,8%

The main advantage of using this practice is that finding the beta is relatively straightforward, and it quantifies the systematic risk exposure of companies. However, there are a great number of arguments on the effectiveness of beta about its capability of reflecting the true country risk exposure. Harvey (1995) examines that emerging markets have significantly lower betas which tend to underestimate expected returns when they are used in the CAPM model.

4.4.3) Lambda Approach

This approach allows users to deal with company-specific exposure to country risk in a separate way. Similar to beta, the lambda is also scaled around 1, representing the magnitude of country risk exposure. It shows how much a company is exposed to the country risk than the average.

The method focuses on several metrics to proxy country risk exposure, such as revenue sources, production facilities, and risk management. Given that the average value of lambda is equal to 1, it can be determined through scaling it by finding the share of revenues generated from the domestic market and then comparing with the country average. At this point, share of export in the country's GDP is used as a benchmark to determine the average share of revenues generated from the internal market.

Proceeding with the sample companies, Tupras, one of the biggest energy companies in the country, generated 86,1% of its revenue in Turkey, whereas the country average is 70,4%. On the contrary, Tofas, a leading auto manufacturer based in the region, had 80,3% of its turnover from export activities. Therefore, Tupras expose more to country risk than the average while the effect is the opposite for Tofas.

Table 12: Lambda Results

Company	Lambda
Tupras	1,22
Tofas	0,28

After finding the lambdas, required rate of returns for the companies are as follows;

$$\text{Cost of Equity for Tupras} = 2{,}8\% + 0{,}64 * (5{,}9\%) + 1{,}22 * (4{,}3\%) = 11{,}8\%$$

$$\text{Cost of Equity for Tofas} = 2{,}8\% + 1{,}18 * (5{,}9\%) + 0{,}28 * (4{,}3\%) = 10{,}9\%$$

Since both of these companies export their products to developed economies which do not have additional country risk, only Turkey`s country risk exposure reflected in the discount rate.

Table 13: Summary of Cost of Equity Estimates

Approach	Tupras	Tofas
Bludgeon	10,9%	14,1%
Beta	9,3%	14,8%
Lamda	11,8%	10,9%

As stated in the summary table, outcomes can variate dramatically based on the approaches. It indicates that even if the cash flow estimations are identical, changes in the cost of equity may have a considerable impact on the intrinsic value of companies. The difference can easily reach up to really high amounts depending on the size of firms and their characteristics.

According to the practices observed in more than 50 equity research reports in emerging markets, 96% of practitioners follow the Bludgeon approach, which assumes every company is exposed to country risk at a similar level. However, the literature supports the argument that every company has different country risk exposure. Therefore, using the same method may keep practitioners away from finding the optimal value when using DCF valuations. Since the CRP is generally much higher in emerging markets, such concepts become more crucial in making investment decisions in those regions.

5) CONCLUSION

The ERP used to be estimated by looking at historical premiums, especially for the countries which have a long period of return data. For that reason, a comprehensive analysis, covering both developed and developing countries, is initially conducted, and the results are compared to test the estimation capacity of the historical premium approach in developing countries. Since emerging markets are extremely volatile and most of their indexes have existed only the last 30 years, there are still statistical restrictions on applying this approach. In order to observe the effects of market classifications on the ERP volatility, special attention is also given for Israel and South Korea which have been upgraded to developed market status ten years ago. However, no significant divergence from the sample emerging markets is found after the change in their market status.

Considering that the historical premium approach does not allow to estimate the ERP accurately in emerging markets, the modified historical risk premium approach is followed. According to this approach, the ERP is stated as a sum of base premium for a mature market and the CRP. Measuring the latter is especially critical to make precise ERP estimations in emerging markets. Although selecting the base premium may be seen as a straight forward process, deciding on time horizon, risk-free rate and averaging technique are also crucial in determining the size of the base premium.

In order to estimate the CRP, sovereign credit ratings, sovereign bond default spreads, and CDS premium measures are examined in details. Differently from two decades ago, the use of US dollar-denominated sovereign bonds and CDS contracts have become more prevalent in emerging markets. Accordingly, these instruments enable investors to proxy the CRP in different ways. When observing their past estimation performances, each approach is tested for the period between 2008 and 2018. The outcomes indicate that all the measures have produced similar CRP spreads, and they estimated the ERP without having major divergence from the realized figures.

After determining the components of the ERP, the next and probably the most controversial part is the way of incorporating the CRP into the cost of equity. The examples indicate that Bludgeon, Beta and Lambda approaches may affect the cost of equity and hence, the value of companies under the DCF method.

Based on the data obtained from 50 equity research reports published in the sample emerging markets, 96% of the practitioners reflect the CRP on risk-free rates and tend to ignore firm-specific risk exposure which is complied with the Bludgeon approach.

Table 14: Summary Statistics of the Survey

Details of Dataset	**Amount**
Equity Research Report*	50
Publisher (Financial Institution)	13
Company	20
Industry	5
Country	7
Distribution of Approaches	**Share (%)**
Bludgeon	96%
Beta	4%
Lambda	-
Total	**100%**

(*) Reports published between the years 2016 and 2018 are used.

As discussed in the literature part, every company is not exposed to the country risk at a similar degree. Since it is also argued that beta may not be effective in capturing the magnitude of country risks in developing countries, alternative solution can be integrating another coefficient called lambda where country risk exposure can be taken into account separately.

Even though no single solution is strictly addressed, discussing more about the mismatches between theory and practice and having a consensus on an optimal way of estimating ERP in emerging markets is highly critical on asset valuations.

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Appendix-A

Table 15: Distributional characteristics of the yearly ERP of Developed Markets

(in US dollar)	Canada	France	Germany	Italy	Japan	UK	US
Mean	3,9%	4,3%	6,3%	5,7%	5,1%	6,5%	5,7%
Standard Error	3,1%	3,8%	3,4%	4,5%	4,5%	4,0%	1,6%
Median	4,6%	2,5%	7,7%	9,3%	4,0%	6,3%	6,5%
Standard Deviation	23,6%	27,8%	25,9%	31,5%	32,1%	29,8%	19,2%
Sample Variance	5,6%	7,7%	6,7%	9,9%	10,3%	8,9%	3,7%
Kurtosis	0,45	-0,19	-0,25	2,04	0,12	2,92	0,18
Skewness	0,02	0,13	-0,19	0,70	0,51	0,71	-0,18
Minimum	-64,2%	-61,4%	-55,9%	-63,1%	-48,6%	-69,6%	-55,4%
Maximum	64,4%	67,2%	62,4%	113,7%	98,7%	115,4%	49,3%
Count	58	53	59	50	50	56	148

Table 16: Distributional characteristics of the yearly ERP of Developing Markets

(in US dollar)	Brazil	Russia	India	China	South Africa	Turkey
Mean	15,9%	20,0%	9,5%	16,2%	6,2%	30,9%
Standard Error	12,4%	14,1%	7,0%	10,6%	5,9%	19,2%
Median	2,7%	10,7%	10,0%	3,6%	8,9%	1,9%
Standard Deviation	60,9%	64,5%	39,5%	55,9%	33,6%	105,3%
Sample Variance	37,1%	41,6%	15,6%	31,2%	11,3%	110,8%
Kurtosis	0,34	0,47	0,40	0,20	0,50	4,16
Skewness	0,84	0,28	0,09	0,89	0,47	1,92
Minimum	-71,0%	-99,3%	-79,6%	-81,0%	-62,6%	-81,2%
Maximum	157,6%	167,4%	98,8%	143,0%	94,7%	391,5%
Count	24	21	31	28	32	30

Table 17: Distributional characteristics of the yearly ERP of New Developed Markets

(in US dollar)	Israel	South Korea
Mean	9,8%	10,8%
Standard Error	6,2%	8,1%
Median	7,5%	11,1%
Standard Deviation	34,7%	48,2%
Sample Variance	12,1%	23,2%
Kurtosis	0,51	0,01
Skewness	0,33	0,35
Minimum	-66,8%	-80,1%
Maximum	96,9%	116,9%
Count	31	35

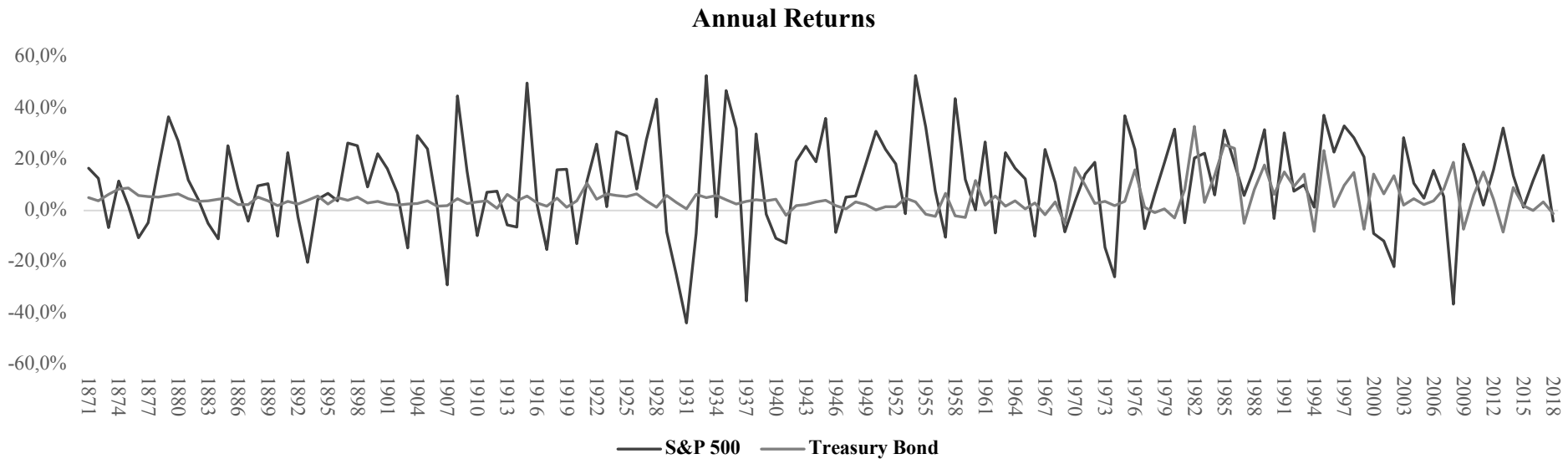
Appendix-B

Table 18: Market Correlations

Indexes	MSCI Frontier Markets Index	S&P 500 Index	MSCI EAFE Index	MSCI EM Index	MSCI Canada Index	S&P GSCI Index	MSCI Japan Index	MSCI Europe Index
MSCI F. Markets Index	1,00	-	-	-	-	-	-	-
S&P 500 Index	0,57	1,00	-	-	-	-	-	-
MSCI EAFE Index	0,65	0,90	1,00	-	-	-	-	-
MSCI EM Index	0,60	0,82	0,91	1,00	-	-	-	-
MSCI Canada Index	0,65	0,79	0,84	0,87	1,00	-	-	-
S&P GSCI Index	0,51	0,31	0,43	0,48	0,64	1,00	-	-
MSCI Japan Index	0,47	0,60	0,76	0,71	0,64	0,34	1,00	-
MSCI Europe Index	0,63	0,91	0,98	0,88	0,81	0,41	0,64	1,00

Source: Blackrock Report, “The Final Frontier” (2011)

Appendix-C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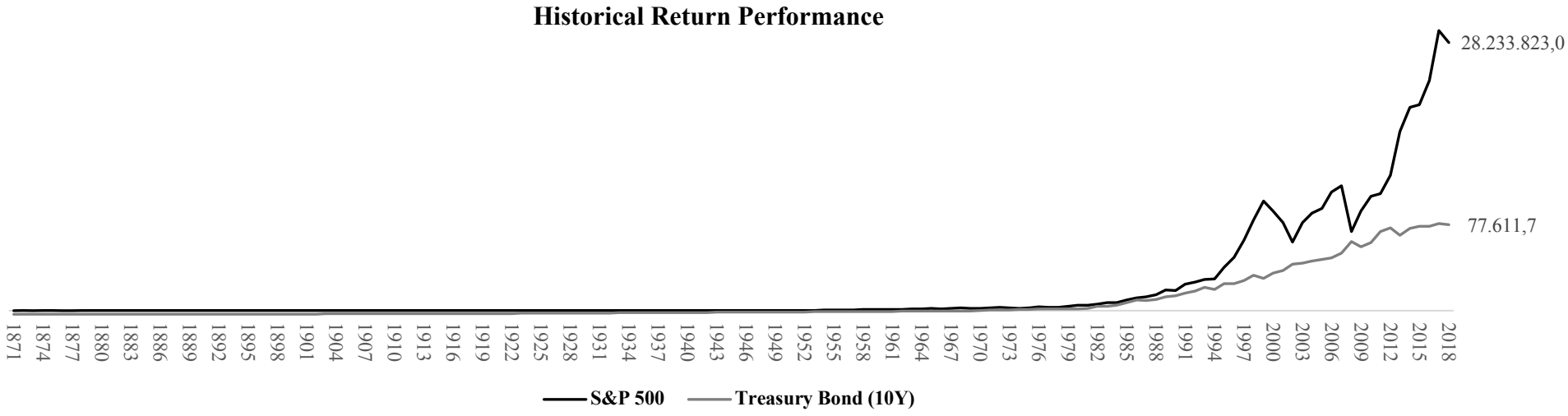
40,0%
20,0%
0,0%
-20,0%
-40,0%
-60,0%
1871 1874 1877 1880 1883 1886 1889 1892 1895 1898 1901 1904 1907 1910 1913 1916 1919 1922 1925 1928 1931 1934 1937 1940 1943 1946 1949 1952 1955 1958 1961 1964 1967 1970 1973 1976 1979 1982 1985 1988 1991 1994 1997 2000 2003 2006 2009 2012 2015 2018
S&P 500
Treasury Bond


Historical Return Performance
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1871 1874 1877 1880 1883 1886 1889 1892 1895 1898 1901 1904 1907 1910 1913 1916 1919 1922 1925 1928 1931 1934 1937 1940 1943 1946 1949 1952 1955 1958 1961 1964 1967 1970 1973 1976 1979 1982 1985 1988 1991 1994 1997 2000 2003 2006 2009 2012 2015 2018
S&P 500
Treasury Bond (10Y)