The Pricing of the Country Risk Premium on the Johannesburg Stock Exchange

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ABSTRACT

The COVID-19 pandemic has increased the countries' exposure to sovereign risk, re-igniting the need for investors and businesses to revisit the pricing of the country risk premium for emerging markets such as South Africa. This a study evaluated the pricing of the country risk premium on the Johannesburg Stock Exchange (JSE). Using a sample of JSE Top 40 companies, the study determined whether South African investors should be compensated for the country's risk exposure. The country risk premium was estimated using a two-step regression to test if the Capital Asset Pricing Model (CAPM) for South Africa can be augmented with the additional risk factor of country risk premium. Using two proxies of country risk, namely, Credit Default Swap (CDS) spread and Bond Default Spread (BDS) spread, this study found that the CAPM performs better in capturing risk premium when the risk-free variable is treated as an exogenous variable in the model. It further established that the country risk is priced, indicating that South African investors must be compensated for country risk exposure. Consequently, extending the CAPM to include an additional country risk factor may lead to accurate estimations of stock returns.

Keywords: CAPM, Credit Default Swap, Bond Default Spread, Country Risk Premium.

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1. INTRODUCTION

There is a degree of uncertainty for any investment with regards to future holdings return. Investors' demand for a risk premium depends on their level of risk preference: risk averse investors avoid high-risk investments or require a high level of compensation in the form of a risk premium (Muzindutsi and Niyimbanira, 2012). Consequently, the existence of risk premiums is a result of investors being risk averse (Firer *et al.*, 2012). The risk premium distinguishes between two types of investors, gamblers and speculators. Investors who are willing to take on additional risk only with a positive risk premium are referred to as speculators and those who are willing to take on risk even if the risk premium is zero are gamblers (Elton *et al.*, 2014). Therefore, risk premiums on stocks should be positive, as nobody would invest in stocks without compensation for taking on extra risk (that is, zero risk premium).

Increased globalization over the past decades, means that investors are faced with risks associated with cross-border investments, which are referred to as country risks (Damodaran, 2003). Country risk is defined by Vij (2005) as the uncertainty and risk that social, political and economic events of a foreign market that negatively affect the balance sheet of a company. When investors invest offshore, they are exposing themselves to

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additional risk and expect to be rewarded with higher returns. The country risk premium depends on whether additional risk can be diversified or not.

For country risk to be diversifiable, there should be a low or zero correlation across stock markets (Lessard, 1976). However, the observed correlation across the stock markets suggest that country risk may be non-diversifiable or at systematic risk, creating a need for a country risk premium to incentivize investors to hold assets in a riskier country (Damodaran, 2003). Most investors, both in developed and emerging countries, have diversified portfolios which include assets that expand across domestic borders into foreign markets (Damodaran, 2016). Such a form of international diversification is useful in minimizing domestic risk exposure but may also expose investors to foreign financial, economic and political components of country risk (Muzindutsi and Obalade, 2024; Obalade *et al.*, 2023; Vengesai and Muzindutsi, 2020).

The exposure to country risk is determined by the level of market integration of a specific country within the world; South African markets fall under the category of emerging markets that may not be fully-integrated and prone to be affected by country risk (Mutize and Gossel, 2018; Nhlapho and Muzindutsi, 2020). Studies such as Nhlapho and Muzindutsi (2020), Vengesai and Muzindutsi (2020) and Kunjal *et al.* (2022) show that South African companies and the entire stock market are affected by components of country risk, suggesting that country risk should be priced unless such risks are captured by the market risk premium. This empirical evidence linking country risk to the South African financial markets suggests the use of South African companies, notably the JSE-listed companies, to test for the pricing of country risk in the stock market.

Consequently, the main aim of this study was to evaluate whether investors should demand a country risk premium for investing in South Africa and to test how such a country risk premium can be incorporated into the Capital Asset Pricing model (CAPM) for South Africa. This study contributes to the existing literature on establishing whether investors in emerging markets should be compensated for country risk exposure. It also contributes to the debate about whether the CAPM should be extended to include an additional country risk factor.

2. LITERATURE REVIEW

The increase in global competition means that firms have to become smarter in order to survive; thus, the analysis of country risk is a critical part of strategic planning for a corporation (Vij, 2005). It is widely accepted that investing in emerging markets is much riskier than investing in developed countries, making higher returns in these markets necessary to motivate investors to make riskier investments (Naumoski, 2012). The challenge is to choose the correct method for defining, measuring and converting the risk measure into an expected return value (Naumoski, 2012). High interest in the emerging market growth has made country risk analysis an important component of valuation over the past years. Two important questions must be answered. Firstly, should country risk be explicitly incorporated into valuation? Secondly, if yes, then how do we do it? Risk adjustments can be made either through adjusting cash flows or adjusting the discount rate (Damodaran, 2003). To answer the first question, Damodaran (2003) asserts that two conditions must hold for a country risk premium to be unimportant when calculating the cost of equity. Firstly, the marginal investor must be globally diversified. Secondly, there

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must be a low correlation between markets (Damodaran, 2003). Due to the increased positive correlation across markets as result of globalization, these conditions are never satisfied simultaneously. To answer the second question Damodaran, highlights how risk adjustments in project appraisals can be made either through adjusting cash flows or adjusting the discount rate (Damodaran, 2003). In this study we focused on counting the risk for the discount rate using the required rate of return.

The method of calculating the required return in the literature is the Capital Asset Pricing Model (CAPM) of Sharpe and Lintner which assumes an equilibrium position where investors are maximizing their utility function (Estrada, 2002). The equilibrium position is a function of the mean and variance for the portfolio returns (Estrada, 2002). CAPM has been augmented to account for some of the non-diversifiable factors as well (e.g. Faff, 2001; Fama and French, 1993; 1996; 2015; Foye, 2018; Mahlophe and Muzindutsi, 2017; Peerbhai and Strydom, 2018) but there is still debate around CAPM's ability to capture the country risk premium. According to Sabal (2008), adding the country risk premium to the required rate of return is not consistent with the fundamentals of CAPM. One of the key assumptions of the CAPM is that only the systematic risk is applicable in determining the required rate of return.

On the other hand, incorporating the country risk premium in CAPM model implies that country risk is non-diversifiable (Sabal, 2008). This argument is supported by Bekaert and Harvey (2003) who claim that standard asset pricing models, such as the CAPM, are inappropriate measures of country risk, especially in emerging markets where there are dynamic developments. Given that studies (e.g. Bergama et al, 2004; De Santis and Gerard, 1998; Naumoki, 2012; Nelson, 1991; Ramona-Diana, 2017) have confirmed that there is empirical evidence showing a strong relationship between returns in emerging markets and country risk, it is plausible to propose the extension of CAPM for emerging markets to include the country risk factor.

Several studies across the world, with the exception of individual studies conducted in South Africa, using similar measures for country risk have found evidence for the existence of country risk premiums. Bergama *et al.*'s (2004) study investigating a connection between the country risk premium and the impact on balance sheets of devaluation, confirmed the existence of the country risk premium. A similar study done by Domowitz, *et al.* (1998) investigated two risk premiums, currency and country risk premiums, in an emerging market in Mexico and also confirmed that country and currency risk premiums are evident in the Mexican debt and equity markets. De Santis and Gerard (1998) tested the international CAPM which expands the CAPM of Sharpe (1964) and Lintner (1965) and concluded that country risk premiums vary over time and across different market. Similarly, a study by Nelson (1991) provided evidence of a stock country risk premium and investors demanding risk premiums in the studied markets. A similar conclusion was reached by Naumoski (2012) who found the presence of a country risk premium (CRP) in emerging markets.

In the South African context, Samouilhan (2007) used a two-factor international CAPM model to measure the domestic variance and the international covariance (risk) on the Johannesburg stock exchange. The study provided evidence suggesting that the South African stock market compensates risk taking. It also discovered that the reason for higher

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returns was the reduced diversification capacity. This is in accordance with Damodaran's (2016) argument. Similarly, Peerbhai and Strydom (2018) tested the suitability of the ICAPM models in a South African context and provided evidence to support the use of a multifactor ICAPM model on the JSE. Muzindutsi and Niyibanira (2012) also used a two-factor CAPM to test the pricing of the exchange risk premium on the JSE and confirmed South Africans demand a risk primum for the currency risk exposure. These South African studies attempted to measure the country risk premium based on the exchange rate exposure, however, they were limited by their omission of other components of country risk such as political and other economic and financial events not reflected in currency fluctuations. Thus, an additional study that extends the measurement of country risk to capture all these factors may shed more light on the topic.

3. METHODOLOGY

This study followed a quantitative approach with the application of Capital Asset Pricing Model by Sharpe (1964) and Litner (1965). The CAPM provides useful information on market risk premiums and was the foundation of this study. A more adequate model of international asset pricing, however, includes additional factors (De Santis and Gerard, 1998). Thus, this study extended the CAPM to include the country risk factor.

3.1 Sample Selection

The sample period consists of monthly observations from January 2010 to December 2019. This period was selected to exclude the major international crises, namely the 2008/9 financial crisis and the recent COVID-19 crisis, which severely affected the international movements of investments (Paramitha and Faturohman, 2022). The JSE Top 40 companies were used as the sample in the study due to their large market capitalization, which represents more than 60% of the overall JSE market capitalization. For a company to be included in this study, it needed to be listed on JSE Top 40 index over the sample period for at least four consecutive years. Firms were excluded if they were in the Top 40 index for less than four years or were unbundled during the sample period. Hence, the final sample included 35 companies.

3.2 Description of variables

The South African 91-day treasury bills rate (3 Months Government Bond yield) was used as a measure of the risk-free rate. Weekly data for the treasury bills rate was extracted from the South African Reserve Bank (SARB) and averaged into monthly data. Companies' share prices were accessed from the IRESS database. JSE ALSI and the sampled Top 40 companies' monthly closing share prices were utilized to capture market and companies' returns, respectively. The security return for each company listed in the JSE Top 40 included in this study's computation was similar to the one used by Fama (1976), except that dividend yields are excluded. The stock returns were calculated as follows:

$$R_{it} = \frac{P_{it} - P_{it-1}}{P_{it-1}} \quad (1)$$

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Where R_{it} is the rate of return on individual company/JSE ALSI at month t, P_{it} is the share price of an individual company or JSE ALSI at month t and P_{t-1} is the share price of an individual company/JSE ALSI at month t-1.

There are several measures that could have been used to capture the country risk premium, but this study used Credit Default Swap (CDS) Spreads and the Bond Default Spread (BDS) to measure country risk as per Brounen *et al.* (2004) and Damodaran (2003). Both the variables were extracted from the Bloomberg Terminal. CDS is a financial instrument used to transfer credit risk from one party to another (Weistroffer *et al.*, 2009). In a CDS contract, two parties come together – one who buys protection against a potential default and the other who sells the protection. CDS Spreads provide useful information on country risk due to their flexibility, as they adjust more quickly to any arrival or new information than the country credit rating (Revoltella *et al.*, 2010). The alteration in time variations of CDS Spreads is more a result of changes in investors risk appetite than changes in default risk. In practice, in the long run, CDS Spreads and BDS tend to move along together, whilst in the short term, the pace of the CDS Spread is ahead of the BDS (Revoltella *et al.*, 2010). Thus, this study used both measurements and compared the results. The bid and ask price quoted from the Bloomberg database was used to compute the CDS Spread. This method is similar to the one used by Pan and Singleton (2008), Ho and Stoll (1983) and Meng and Gwilym (2008) in computing CDS Spreads. The spread from Bid-Ask Price was computed as follows:

$$\ddot{r}_{it} = \frac{AP_{it} - BP_{it}}{BP_{it}} \tag{2}$$

Where $\ddot{r}_{it}$ denotes Bid-Ask spreads on CDS at month t, AP_{it} denotes Ask Price on CDS at month t, and BP_{it} denotes Bid Price on CDS at month t.

The BDS measures country risk by observing yields on bonds issued by the country in a currency (such as Dollar or Euro) in which there is a default free bond yield to use as a comparison (Damodaran, 2003). The South African 10-year treasury bond yield and a similar benchmark yield of the United States of America's 10-year Treasury bond was used in computing the BDS. The following equation was used to estimate the BDS:

$$\overline{\overline{B_{\iota t}}} = Y_{it} - N_{it} \tag{3}$$

Where $\overline{\overline{B_{\iota t}}}$ denotes the BDS at month t, Y_{it} denotes the 10-year South African yield at month t, and N_{it} denotes the 10-year American yield at month t.

3.3 Model specification

The methodology utilized in this study is similar to the one used by Brounen *et al.* (2004) and Damodaran (2003). Both these studies applied the Arbitrage Pricing Theory (APT) Model in addressing the risk that investors are exposed to when investing in a particular country. Therefore, the investors' demand for expected return was determined by market and country risk. The methodology mimicked the estimation of CAPM using a two-step regression.

Stage One

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This stage was based on the presumption that all companies are exposed to the homogenous risk of the systematic and country risk (Damodaran, 2003). The purpose of the first stage was to estimate 36 market and country betas. The time series regression estimation includes excess return on stocks, excess return to the market index and the country risk premium. The estimated equations used in the first step were as follows:

$$R_{it} = R_{ft} + \beta_{mt}(R_{mt} - R_{ft}) + \beta_{ct}CDS + e_{it} \quad (4.a)$$
$$R_{it} = R_{ft} + \beta_{mt}(R_{mt} - R_{ft}) + \beta_{st}BDS + e_{it} \quad (4.b)$$

Where R_{it} is the monthly rate of return of a stock at time t, R_{ft} is the monthly rate of return from risk-free investment in time t, R_{mt} is the monthly rate of return of the JSE-ALSI in time t, β_{mt} is the systematic risk of the stock at time t, β_{ct} and β_{st} are the country risks of the stock at time t and e_t is the disturbance term which captures all the exogenous variables that are not included in the study but have significant explanatory power for variation in endogenous factors.

Subtracting the risk-free rate from both sides, that is the left-hand side and right-hand side, leads to the following equation estimations:

$$R_{it} - R_{ft} = \alpha_{it} + \beta_{mt}(R_{mt} - R_{ft}) + \beta_{ct}CDS + e_{ti} \quad (5.a)$$
$$R_{it} - R_{ft} = \alpha_{it} + \beta_{mt}(R_{mt} - R_{ft}) + \beta_{st}BDS + e_{t} \quad (5.b)$$

This implies that the excess return of a unit trust fund ($R_{it} - R_{ft}$) relies on the systematic risk (β_{it}) the market (JSE-ALSI) risk premium ($R_{mt} - R_{ft}$), the country risk premiums (CDS/BDS) (β_{ct} and β_{st}) and alpha α_{it}. The betas measure the investment risk that cannot be eliminated by diversification (Reddy and Thomson, 2011). The betas further explain the price movements of the firm relative to the market and country risk exposure. A positive beta indicates that the stock and market move in same direction whilst a negative beta implies the opposite (Reilly and Brown, 2012). According to Campbell and Vuolteenaho (2004), negative betas are less common with the exception of scenarios in which the financial asset is designed to move in the opposite direction to the market due to its sophistication variety. A beta greater than one implies that the security is more volatile than the market whilst a beta less than one indicates that the security is less volatile than the market (Campbell and Vuolteenaho, 2004).

The hypothesis tests tested for the significance of measures for country risk premium in explaining changes in an individual company's access return. Diagnostic tests, such as autocorrelation, heteroscedasticity and normal distribution, were conducted to ensure that the estimated regression did not violate any econometric assumptions. Additionally, the Augmented Dickey –Fuller (ADF) unit test was used to confirm the stationarity of the returns before estimating the regressions.

Stage Two

This stage involved the estimation of four cross-sectional regressions of average returns over time for stock return on the constant and betas that were estimated in the first stage.

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The following restricted equations were estimated, where the risk-free rate was an exogenous variable:

$$\bar{R}_i = \gamma_{mi}MRP + \gamma_{ci}CDS + \theta_i \quad (6.a)$$

$$\bar{R}_i = \gamma_{mi}MRP + \gamma_{si}BDS + \theta_i \quad (6.b)$$

The following estimations were unrestricted to include the risk free rate as an endogenous variable:

$$\bar{R}_i - \bar{R}_f = \gamma_0 + \gamma_{mi}MRP + \gamma_{ci}CDS + \theta_i \quad (7.a)$$

$$\bar{R}_i - \bar{\bar{R}}_f = \gamma_0 + \gamma_{mi}MRP + \gamma_{si}BDS + \theta_i \quad (7.b)$$

Where $\bar{R}_i$ denotes the average stock excess return i over 120 months (10 years) and $\bar{R}_f$ denotes the average risk-free rate over 120 months.

Thus, the following hypothesis test was conducted:

H_o: γ_{ct} (γ_{st}) = 0 and H_1: γ_{ct} (γ_{st}) ≠ 0

This hypothesis test was used to determine the significance of CDS and BDS in explaining stock return as stock return tests for the existence of the country risk premium in South African Top 40 companies. As per the CAPM model, this stage verified the validity of CAPM. If the model was deemed valid, no additional variable had significant power in explaining the variation in stock return. However, if the CDS and BDS were significant, the country risk premium exists in the South African Top 40 stock market.

4. EMPIRICAL RESULT

4.1.Stage one: testing for country risk in the individual Top 40 companies

The country risk measured by CDS and BDS as well as market risk (betas) of the sampled JSE 35 companies are reported in Tables 1 and 2. The companies are categorised in terms of their global trade position. Both Tables 1 and 2 show how the rate of return for shares of each company responds to changes in CDS and BDS. The P-Value was used to test for the significances of CDS and BDS in their effect on the return. R-squared was analyzed to comment on the overall goodness of the fit of the model for individual companies. Company names have been omitted to maintain anonymity. All the variables estimated in this study were stationary and a residual diagnostic test confirmed that none of the Ordinary Least Squares (OLS) assumptions were violated. Following Muzindutsi and Niyimbanira (2012), companies were grouped into three categories, namely *non-tradable*, *tradable and mixed*, based on the exposure of their operations. Non-tradable companies are those with revenue and cost structures denominated in domestic currency. Tradable companies mostly generate their revenues in foreign currency with their cost being denominated in either domestic or foreign currency (Muzindutsi and Niyimbanira, 2012). Mixed companies are those with revenue and cost structures denominated either in domestic or foreign currency. These companies have characteristics of both tradable and non-tradable companies.

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4.1.1 Risk factors results with country risk Proxy 1- CDS

Section a) of non-tradable companies in Table 1 reports negative exposure to country risk for four out of the 13 companies and positive exposure for nine out of the 13 companies. The CDS coefficients, however, were not statistically significant for all 13 companies. The market risk premium coefficient was statistically significant for nine out of the 12 companies. This suggests that these non-tradable companies may not be exposed to country risk. For mixed companies, Table 1.b) reports positive exposure to country risk for eight out of the 11 companies and negative exposure for three out of the 11 companies. Again, all 11 CDS coefficients were not statistically significant. The market risk premium coefficient was statistically insignificant for all 11 companies.

Tradable companies, reported in section c of Table 1, had negative exposure to country risk for three out of the eight companies and positive exposure for the remaining five companies. The CDS coefficients were statistically significant for four companies at the 90% confidence interval. These were mostly companies in mining and companies with operations at a global scale. This finding suggests that companies with international operations are affected by country risks as far as the CDS are concerned.

Table 1: Credit Default Swap Exposure

Estimated equation: ($R_{it} - R_{ft} = \beta_{mt}(R_{mt} - R_{ft}) + \beta_{ct}CDS + e_t$)						
Company	**Bmrp(cds)**	**P-Values**	**Bcds**	**P-Values**	**R^2**	**Prob(F-stat.)**
a) Non-Tradable						
Company 1	0,8032	0,00	0,5925	0,4128	0,2688	0,00
Company 2	0,9164	0,00	0,5857	0,4427	0,3007	0,00
Company 3	0,1928	0,21	1,0394	0,1646	0,0489	0,1346
Company 4	0,0342	0,8163	0,9486	0,1878	0,0216	0,4171
Company 5	0,9426	0,00	0,8105	0,4187	0,2391	0,00
Company 6	0,6737	0,0129	1,2731	0,3256	0,0794	0,0366
Company 7	0,2986	0,1404	0,1593	0,8807	0,0277	0,3252
Company 8	1,4054	0,00	-0,2543	0,7906	0,397	0,00
Company 9	0,8024	0,00	-0,4031	0,5862	0,2697	0,00
Company 10	1,102	0,00	0,1969	0,7989	0,3788	0,00
Company 12	0,8343	0,0003	0,7409	0,4931	0,1509	0,0014
Company 13	1,0104	0,00	-0,9736	0,3923	0,2515	0,00
Company 14	1.385142	0,00	-0.34660	0.7167	0.394312	0.0000
b) Mixed						
Company 15	0,9485	0,00	-0,8139	0,7906	0,397	0,00
Company 16	0,2766	0,2242	0,2326	0,8326	0,0184	0,475
Company 17	-0,421	0,0643	1,412	0,1989	0,0693	0,0566
Company 18	0,3589	0,0562	0,8284	0,3601	0,0607	0,0816
Company 19	1,2054	0,00	-1,9167	0,073	0,3784	0,00
Company 20	0,2605	0,2038	0,7549	0,447	0,0307	0,2874
Company 21	0,54	0,0964	2,3755	0,1364	0,0532	0,1123
Company 22	0,35643	0,4436	4,6964	0,0581	0,0637	0,072
Company 23	0,7242	0,0001	0,86	0,3233	0,173	0,0005
Company 24	0,9543	0,0217	0,3352	0,866	0,0644	0,0699
c) Tradable						
Company 26	-0,421	0,0643	1,412	0,0989	0,0693	0,0808

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Company 27	0,3589	0,0562	0,8284	0,3601	0,0607	0,0432
Company 28	1,2054	0	-1,9167	0,043	0,3784	0,000
Company 29	0,2605	0,2038	0,7549	0,447	0,0307	0,2988
Company 30	0,54	0,0964	2,3755	0, 0936	0,0532	0,0475
Company 31	0,35643	0,4436	4,6964	0,0381	0,0637	0,072
Company 32	0,7242	0,0001	0,86	0,3233	0,173	0,0003
Company 33	0,9543	0,0217	0,3352	0,866	0,044	0,0303

4.1.2 Risk factors results with country risk Proxy 2- BDS

Table 2 reports the estimated betas using the country risk proxy 2 of BDS. Section a) of Table 2 reports positive exposure to country risk for six out of the 13 companies, with the remaining seven companies having negative exposure. Similarly, to the CDS proxy, the BDS coefficients were statistical insignificant for all 13 companies. This suggests that the non-tradable companies are not exposed to country risk. Firms in the mixed category had a positive exposure to country risk for four out of the 11 companies with the remaining seven having negative exposure to country risk. The BDS coefficients of 10 companies were not statically significant at all levels of significance while the BDS coefficient for one company (company 26) was significant at the 95% confidence interval. This was a financial services company with branches in different countries, implying that its investors were sensitive to country risks.

Tradable companies, which mostly generate their income in foreign currency with their cost denominated in either domestic or foreign currency, showed both positive and negative exposure to country risk. Table 2 reports positive exposure to country risk for 50% of the companies with the remaining 50% of the companies having negative exposure to country risk. The BDS coefficients were not statistically significant for five of the eight companies at all levels of significance, while they were statistically significant for three companies at the 90% confidence interval. These were the same global player companies found to be sensitive to country risk when CDS was used as a proxy for country risk.

Table 2: Bond Default Spread Exposure

Estimated equation: ($R_{it} = R_{ft} + \beta_{mt}(R_{mt} - R_{ft}) + \beta_{st}BDS + Et$)						
company name	**Bmrp(bds)**	**P-Values**	**Bbds**	**P-Values**	**R^2**	**Prob(F-statistic)**
a) Non-Tradable						
Company 1	0,8121	0,00	0,5074	0,5298	0,2662	0,00
Company 2	0,9555	0,00	1,1115	0,1898	0,3106	0,00
Company 3	0,1920	0,2281	0,5928	0,4792	0,0316	0,2765
Company 4	0,0427	0,7792	0,697	0,3869	0,0094	0,6851
Company 5	0,9426	0,00	0,8105	0,4187	0,2391	0,00
Company 6	0,69737	0,0124	1,1827	0,4132	0,0759	0,0425
Company 7	0,2391	0,2454	0,1843	0,8647	0,0171	0,5022
Company 8	1,3729	0,00	-0,794	0,4565	0,4007	0,00
Company 9	0,7558	0,00	-1,16	0,1578	0,2851	0,00
Company 10	1,0666	0,00	-0,604	0,4827	0,3821	0,00
Company 12	0,7948	0,0008	-0,383	0,7509	0,147	0,0017
Company 13	1,0104	0,00	-0,974	0,3923	0,2515	0,00
Company 14	1,4054	0,00	-0,254	0,7906	0,397	0,00

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b) Mixed						
Company 15	0,9043	0,00	-1,343	0,3138	0,1759	0,0004
Company 16	0,3342	0,1507	1,2876	0,2925	0,0315	0,2782
Company 17	1,035	0,00	-0,969	0,3901	0,3341	0,00
Company 18	0,8049	0,00	-0,44	0,6059	0,2631	0,00
Company 19	0,1465	0,3735	-1,349	0,1223	0,0506	0,1252
Company 20	0,8140	0,00	0,2021	0,7527	0,3721	0,00
Company 21	0,2986	0,8807	0,1593	0,8807	0,0277	0,3252
Company 22	0,4643	0,0049	0,7166	0,3993	0,095	0,0184
Company 23	0.94258	0.0000	0.8108	0.4187	0.2391	0,2038
Company 24	0,4458	0,0042	-1,4649	0,0699	0,1103	0,0093
Company 25	0,49287	0,002	0,1925	0,8135	0,1172	0,0068
c) Tradable						
Company 26	-0,519	0,0277	-1,192	0,3318	0,061	0,0808
Company 27	0,3094	0,1051	1,4567	0,1474	0,0755	0,0432
Company 28	1,2054	0,00	-1,917	0,063	0,3784	0,00
Company 29	0,320255	0,1292	0,7836	0,4791	0,0298	0,2988
Company 30	0,6552	0,0506	3,5046	0,0375	0,0733	0,0475
Company 31	0,356434	0,4436	4,6964	0,0481	0,0637	0,072
Company 32	0,7635	0,0001	1,2683	0,1904	0,1807	0,0003
Company 33	0,8026	0,0562	2,8663	0,1934	0,0837	0,0303

Overall, these findings show that some of the tradable companies were exposed to country risk regardless of the proxy used, confirming the sensitivity of these companies to country risk. The interesting finding is for one company which showed a significant negative exposure country risk, confirming that their return decreased as country risk increased. This was a global company which mostly incurs costs in the domestic currency, and as a result, increases in country risk would increase the costs. Consequently, the market may react negatively to such increases in production costs. For the overall fitness of the model, R-squared for all the companies in all three categories was relatively low, ranging from 0.0094 to 0.4007. This implies that the model has low forecasting power given that less than 40% of the expected returns for each company could be explained by the independent variables.

4.2. Stage two: Estimation of the country risk premium

Tables 3 to 6 provide estimates of the country risk premium (measured by CDS and BDS) and the systematic risk premium with their p-values, R-squared, adjusted R-squared and information criteria. The results in Tables 3 and 5 include intercepts (that is, the risk-free rate as an endogenous variable), whilst Tables 4 and 6 do not have an intercept (that is, the risk-free rate as an exogenous variable).

Table 3: CDS country risk premium with intercept

Estimated equation: ($\bar{R}_{it} - \bar{R}_{ft} = \gamma_0 + \gamma_{mt}MRP + \gamma_{ct}CDS + \theta t$)						
	Coefficients	**P-Value**	**R^2**		**Information Criteria**	
γ_0	-5.8639	0.0000			Akaike info criterion	2.4445
γ_{mt}	0.9502	0.0023	R^2	0.4628	Schwarz criterion	2.5778
γ_{ct}	0.4182	0.0001	R^2Adjusted.	0.4292	Hannan-Quinn criterion	2.4905

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Table 4: CDS country risk premium with exogenous risk-free rate

Estimation equation: ($\bar{R}_{it} = \gamma_{mt}MRP + \gamma_{ct}CDS + \theta t$)						
	Coefficients	**P-Value**	**R^2**		**Information Criteria**	
					Akaike info criterion	2.3878
γ_{mt}	0.9796	0.0000	R^2	0.4626	Schwarz criterion	2.4768
γ_{ct}	-0.4199	0.0000	R^2Adjusted.	0.4463	Hannan-Quinn criterion	2.4185

Table 3 shows a risk free rate with an unexpected negative sign of 5.86 given by intercept (γ_0). The intercept was significant at the 1% level of significance. The market risk premium per month was 0.95% with a positive sign and significance at the 5% level of significance. The CDS was estimated at a rate of 0.42% per month and was significant at the 1% level of significance. The significance of the CDS risk premium indicates that investors in JSE Top 40 companies requested a premium for country risk exposure. The negative (-5.86%.) and significant intercept suggests that the returns of companies selected in this study were undervalued.

Table 4 presents the market premium risk estimated at a rate of 0.98% and a credit default premium rate of -0.42%, both coefficients were significant at the 1% level of significance. Both models confirm the risk premium but, with the intercept excluded in Table 4, the sign of credit default premium changed. However, the coefficients for R-squared decreased by 0.0002 and adjusted R-squared increased to 0.4463 which indicates that 44.63% of the variation in the rate of return was explained by variation in the credit default and market risk premium. By comparing Tables 3 and 4, it is clear that the adjusted R-squared and all information criteria for Table 4 indicates that it was the model that best explained the fitness of the values. Thus, in terms of the credit default premium, the preferable model included the risk free rate as an exogenous variable. This finding suggests that the market risk premium does not capture the country risk premium, implying that it is plausible to extend the CAPM to include the country risk while modelling the return of Top 40 companies. The negative risk premium suggests JSE Top40 companies demand less return for country risk exposure.

Table 5: BDS country risk premium with endogenous risk-free rate

Estimated equation: ($\bar{R}_{it} - \bar{\bar{R}}_{ft} = \gamma_0 + \gamma_{mt}MRP + \gamma_{st}BDS + \theta t$)						
	Coefficient	**P-Value**	**R^2**		**Information Criteria**	
γ_0	-5.8756	0.0000			Akaike info criterion	2.7132
γ_{mt}	1.001	0.0027	R^2	0.2972	Schwarz criterion	2.8465
γ_{st}	-0.3428	0.0589	R^2Adjusted.	0.2533	Hannan-Quinn criterion	2.7592

Table 6: Country risk premium with exogenous risk-free rate

Estimated equation: ($\bar{R}_{it} = \gamma_{mt}MRP + \gamma_{st}BDS + \theta t$)						
	Coefficient	**P-Value**	**R^2**		**Information Criteria**	
					Akaike info criterion	2.6562
γ_{mt}	1.0186	0.0000	R^2	0.2971	Schwarz criterion	2.7451
γ_{st}	-0.3437	0.0537	R^2Adjusted.	0.2758	Hannan-Quinn criterion	2.6869

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Table 5 reports the BDS results from the estimation of the equation with an intercept, while Table 6 shows the results without the intercept. Table 5 shows that the risk-free rate (represented by the intercept) was -5.8%. The negative sign of the result was unexpected. The market rate premium seemed to be 1 % per month and the BDS premium was 0.34. The market risk coefficient was statistically significant at the 5% level of significance, whereas the BDS coefficient was only statistically significant at the 10% level of significance. The R-squared and adjusted R -squared were too low at 29.72% and 25.33%. Thus, on average the model did not explain 70% of country risk.

Table 6 reports a market risk value of 1.018 and a BDS coefficient of 0.3437, which was also a negative value. The market risk coefficient was significant at all levels of significance whereas the BDS coefficient was significant at the 10% level of significance. R-squared and adjusted R-squared were 29.71% and 27.58% respectively. The values were still very low, but for this model, the adjusted R-squared was slightly higher compared to the model with an intercept. All the information criterion agreed that the model without the intercept was better when comparing the models represented by Table 5 and Table 6.

A comparison between two measures of the country risk premium (BDS and CDS) reveals that the CDS is a better model for measuring country risk for the South African market. This was indicated by the R-squared and adjusted R-squared as well as the information criterion of the model. Comparing Table 3, where the risk-free rate was an exogenous variable, to Table 5, where the risk-free rate was an endogenous variable, R-squared and adjusted R-squared were 46.28% and 42.92% respectively for the CDS while, for the BDS, R-squared (29.72%) and adjusted R-squared (25.33%) were less than those for the CDS. Information criterions also confirmed that the CDS model was the better of the two. Both information criteria and adjusted R-squared indicate that the model represented by Table 4 was better than the model represented by Table 6 in modelling the country risk premium. This was indicated by the lower values for information criteria and adjusted R-squared. The results obtained by this study are consistent with the studies conducted by Amato (2005), Revoltella *et al.* (2010) and Naumoski (2012). These studies postulated that the CDS performs better in measuring the country risk premium in the short term relative to the BDS. The reason for the better performance of the CDS is its ability to adjust more quickly to new information than the BDS as bonds are normally long-term contracts.

5. CONCLUSION

This study examined whether country risk exposure is priced on the South African stock market with the adoption of the CDS and BDS as proxies for measuring country risk. Additionally, this study tested the best model to capture the country risk premium. Our study found that the CDS spread gives a better measure of country risk than the BDS. A two-stage regression revealed that country risk betas are not significant among most Top 40 companies. However, the tradable companies with revenue and cost structures denominated in domestic currency seem to be exposed to country risk. Thus, the effect of country risk on stock returns may be associated with a company's involvement in international operations. In modelling the country risk premium, the CAPM model with

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the exogenous risk-free was found to be the better model to capture the risk premium among the JSE Top 40 companies. This finding implies that, in the South African context, the CAPM would perform better in capturing the risk premium if the risk-free variable is treated as an exogenous variable in the model. This study further found a significant country risk premium in the JSE companies, implying that the South African investors may demand a premium for country risk exposure. Thus, extending the CAPM to include an additional country risk factor may lead to more accurate estimations of stock returns in the South African equity market and other similar markets. This study contributes to the ongoing debate on the best model to estimate stock returns in emerging and developing markets. It has concluded in favour of the two-factor CAPM model with an additional factor to capture the country risk premium. This study did not extend the estimation to APT models, such as the Fama and French 3-factor or 5-factor model, to test for the significance of the additional factors when country risk is considered. Thus, future studies can extend the scope to test whether the country risk premium remains relevant in the APT models.

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