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Valuation of Emerging Market Companies and the Role of Country Risk

by

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Declaration

I, Dumisani Nkala, declare that the research work reported in this dissertation is my own, except where otherwise indicated and acknowledged. It is submitted for a master's degree at the University of the Witwatersrand, Johannesburg. This thesis has not, either in whole or in part, been submitted for a degree or diploma to any other universities.

12 November 2012

ABSTRACT

Emerging markets have become important investment destination for international investors as they seek opportunities to grow and diversify their investment portfolios. At the same time, emerging markets are perceived to be riskier than developed markets. It is therefore imperative for the international investor to fully comprehend and appreciate the risk faced by their investments in the emerging markets and the drivers of the underlying their value.

A significant amount of research has been carried out on the valuation of companies in emerging markets and the role country risk has in determining the final valuation price. Despite this, there is still no consensus amongst practitioners in the financial industry and academics on the best approach. The valuation methodologies currently employed vary significantly and in some cases involve making arbitrary adjustments based on "gut feel" with limited empirical evidence.

This research study appraises existing emerging markets valuation frameworks such as the discounted cash flow model (DCF), including capital asset pricing model (CAPM) and its variants. It also looks at relative valuation and real option pricing framework with intention of proposing the "best practice" valuation framework for valuing companies in emerging markets.

The general theory is that emerging markets are segmented from the developed world capital markets making portfolio optimisation across these markets difficult. Segmentation of emerging markets is as a result of inefficiency of the capital markets, in particular the inability of foreign investors to enter and exit the local capital markets at no extra costs. The emerging markets valuation frameworks are designed to address the inability to effectively diversify investments due to the segmentation of these markets. It was therefore pertinent that this study determines whether emerging markets are indeed segmented from world capital markets and therefore significantly riskier than developed markets. This part of the study was carried out by conducting both quantitative and qualitative analysis of the emerging capital markets. Quantitative analysis was done on the performances of twenty-seven emerging equity markets for the period between July 1998 and November 2008 and the results were compared with the US equity market analysis (United States was used in the study as the proxy for the world equity market) for the same period. The study used volatility of the markets as the measure of risk and the correlation to measure the level of integration. Qualitative analysis involved reviewing regulatory, legal and political risks of the different emerging markets.

The results from this part of the study showed that emerging markets are indeed riskier than developed markets and are somewhat segmented from the world capital markets. Based on

this result, we concluded that the valuation frameworks in emerging markets should be adjusted or modified to incorporate the impact of country risk.

A total of eleven different emerging markets valuation frameworks were appraised. The study reviewed the literature relating to the emerging markets valuation frameworks to establish their theoretical and empirical basis. The study also conducted qualitative and quantitative analysis of each of the eleven selected methods regarding relevance and practicality in the valuation of emerging market companies.

Valuation models were developed from the different valuation frameworks, a process that included deriving different variants of the models such as the country risk premium. The qualitative analysis looked at the how practical is the valuation frameworks considering its variants. For quantitative analysis the emerging market valuation models were used to value ABSA Bank Group; Edgars Consolidated Stores Limited; and Standard Bank Group and outcomes of the valuation were compared with the final purchase price paid in recent corporate transactions involving these companies. The absolute difference between the notional valuation and the actual transaction price was used to rank the valuation frameworks, with smallest difference indicating the best fit.

All the eleven emerging market valuation methodologies yielded results different from the purchase prices. Erb−Harvey−Viskanta (EHV) model had the best fit when compared with the actual purchase price. However, the study does not propose the usage of EHV as the “best practice” method because of weak theoretical basis. The study concludes that at least three to four methodologies should be used to derive a valuation range for purchase price negotiations.

Key Words: country risk, country risk premium, emerging markets, asset pricing, valuation, finance theory, capital asset pricing model, capital market integration, investment

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List of acronyms and abbreviations

AsgiSA	Accelerated and Shared Growth Initiative of South Africa
BVR	book value ratio
CAPM	capital asset pricing model
CICBV	Canadian Institute of Business Valuators
CRAM	Country Risk Assessment Model
DCF	discounted cash flow
EHV	Erb−Harvey−Viskanta
EIU	Economist Intelligence Unit
EMBI+	Emerging Market Bond Index Plus
EMDB	Emerging Markets Database
FDI	foreign direct investment
GBP	British Pound
GDP	gross domestic product
GEAR	Growth, Employment and Redistribution
GNI	gross national income
ICBC	Industrial and Commercial Bank of China
ICRG	International Country Risk Guide
IFC	International Finance Corporation
IMF	International Monetary Fund
JALSH	Johannesburg Stock Exchange Africa All Share Index
JSE	Johannesburg Stock Exchange
LLC	limited liability company
M&A	merger and acquisition

MIGA	Multilateral Investment Guaranty Agency
MSCI	Morgan Stanley Capital International
MTN	Mobile Telecommunication Network
MVIC	market value of invested capital
NAV	net asset value
NPV	net present value
OECD	Organisation for Economic Cooperation and Development
OPIC	Overseas Private Investment Corporation
PBVR	price book value ratio
PER	price earnings ratio
PRS Group	Political Risk Services Group
PWC	PricewaterhouseCoopers
RMB Holdings Ltd	Rand Merchant Bank Holdings Limited
S&P	Standard & Poor's
SBG	Standard Bank Group
SOT	Spread over US Treasuries
SSB	Solomon Smith Barney
UNCTAD	United Nations Conference on Trade and Development
USD	United States Dollar
WACC	weighted average cost of capital
ZAR	South African Rand

1. INTRODUCTION

1.1 Introduction

This thesis is on the subject of valuing companies in the emerging markets from the perspective of an international investor. Valuation, which is at the centre of finance theory, can be defined as the process of estimating how much an asset is worth. According to Damodaran (2006), knowing what an asset is worth and what determines that value is a pre-requisite for intelligent decision making − in choosing investments for a portfolio, in deciding on the appropriate price to pay or receive in a takeover and in making investment, financing and dividend choices when running a business.

The value of an asset represents the future cash flow of an asset, as affected by the timing and the riskiness of that cash flow. The valuation process is a subjective process and is regarded as an art more than as a science. Underpinning the process is the asset pricing theory, which is a framework that is designed to identify, to measure risk and to assign fair rate of return for bearing the said risks relating to a particular asset. Choosing investments that have a higher projected rate of return than what is estimated by the asset pricing theory creates value for the investor. The capital asset pricing model (CAPM), which was the first asset pricing framework developed, still remains the most widely accepted and used.

Valuation methods vary widely and the choice of methodology depends on the available information to use in the valuation models. Discounted cash flow (DCF) methodology is the most popular valuation methodology. Other valuation frameworks are those of multiples or relative valuation, open market valuation, liquidation valuation and the real option pricing method. The key assumptions underpinning these valuation methodologies are what make their application challenging when they are used in relation to the developed markets. However, the challenges are significantly enhanced when valuing an asset located and / or generating cash flows from emerging markets. There are certain flaws in emerging markets that influence valuation methodologies, such as lack of transparency in the financial system, low capital and investment liquidity, poor corporate governance, high transaction costs and high

asset price and returns volatility. And these additional risks resulting from the flaws of the emerging markets need to be incorporated into the valuation frameworks.

The challenge of applying valuation methodologies to emerging market assets has been a subject of numerous academic and financial industry researches in search of the 'best practice' valuation framework. So far, there has been no universally acceptable solution. This study will evaluate the various methodologies that have been developed for the emerging markets with the objective of rating the methodologies and proposing a 'best practice' framework that is both feasible and theoretically sound.

1.2 Research Overview

The objective of the research is to review and evaluate applicability of such valuation frameworks as DCF (including CAPM and its variants), relative valuation and the real option pricing in emerging markets valuation assignments. The frameworks will be evaluated in terms of their practicality and relevance by applying the valuation frameworks to selected South African companies and comparing the actual acquisition prices of these companies with the values computed by means of the valuation frameworks. The selected companies, namely ABSA Bank Limited, Standard Bank Limited and Edcon Limited were partly or wholly acquired during in a cross-border transaction. The choice of valuation frameworks will depend on the available information for the various building blocks for the model concerned. Based on the comparisons, we back out implied premium / discount vis-à-vis actual prices. The absolute difference between the notional valuation and the actual transaction price will be used to rank the valuation frameworks, with smallest difference indicating the best fit. This means that we use the actual prices as benchmarks, and therefore assume that they are the 'true or correct' prices. In fact, those prices will most probably have been derived using one of the valuation frameworks reviewed in the study. So, there is a potential circularity problem here, despite the problem being somewhat circumvented by the fact that we compare actual prices with a host of numbers coming from the different valuation frameworks.

A number of approaches have been proposed for how to value investment opportunities in the emerging markets, with no consensus having, as yet, been achieved among academics and practitioners as to what is the best approach. To reflect the higher risks that exist in the emerging markets, many investors include an extra premium in the discount rate that they use when valuing emerging market investment. However, the basis for such discount rates adjustments is often arbitrary (Lessard, 1996). The key question that we intend to answer in the current study is whether country risk premia should be included in valuation of emerging markets companies, and if so, how they should be quantified.

1.3 Research Background

Emerging markets[1] are increasingly becoming an important destination for foreign equity investment. International equity flows takes two majors forms, foreign direct investments (FDI) and foreign portfolio investments (FPI).[2] The key difference between the two types of investment is that FDI investors take both significant ownership and control positions in the domestic companies, whereas FPI investors gain ownership without control of the domestic companies and has limited freedom to make strategic decisions for the companies (Itay and Razin, 2004). Because the FDI investors are effectively active in the management of the companies they are more informed about the prospects on their investments than the portfolio investors who rely on information provided by the company managers resulting in possible agency problems. However, the FPI investments give the investor the benefit of liquidity as the investor is able to sell any time without incurring significant costs which are incurred by FDI investor if they exit investments before their maturity (Itay and Razin, 2004).

[1] For the purpose of the current study, we use Pereiro's definition of emerging markets: those national economies that are engaged in a process of capital markets and trade globalisation that is those that open their borders to the flow of international trade and investment and to world-class managerial practices.

[2] FDI is a measure of foreign ownership of a country's productive assets, such as factories, mines and land. By contrast, foreign portfolio investment is the purchase of such financial assets as bonds, money market instruments and stocks, with the objective of realising financial return, but without resulting in foreign management or legal control.

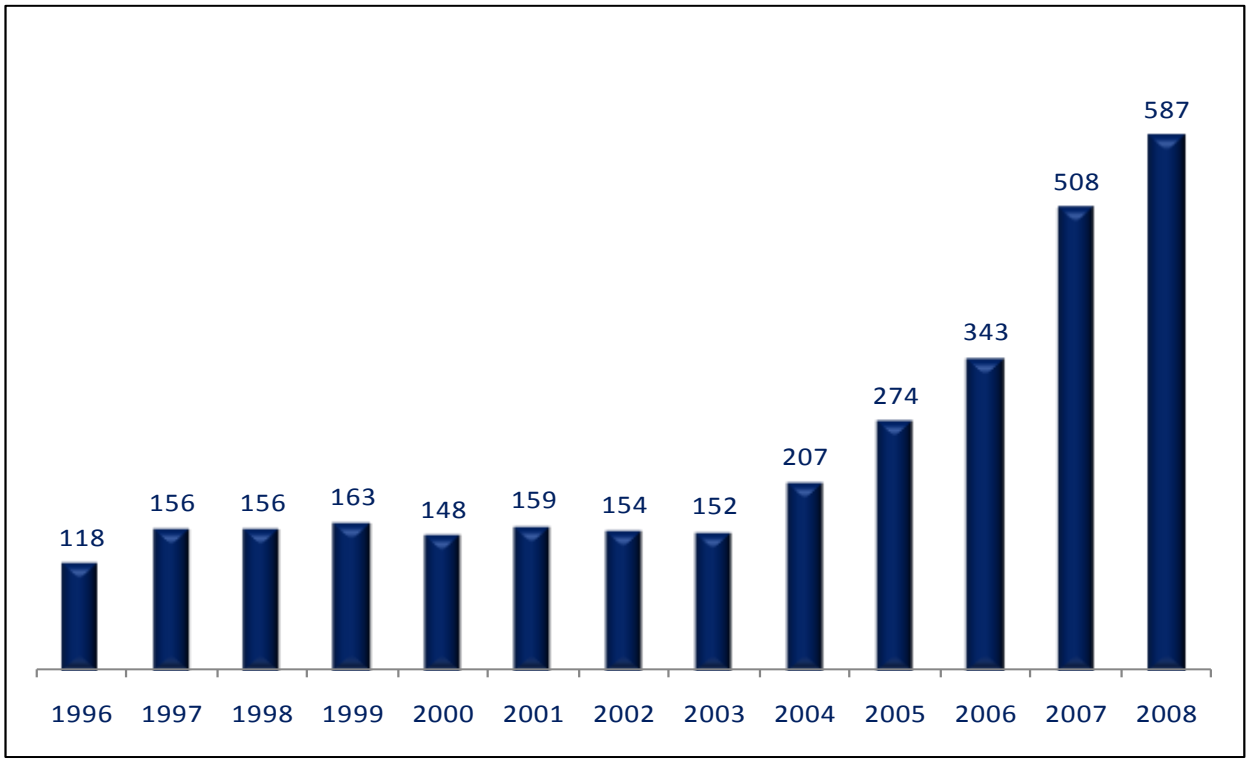
FPI investment strategies are more efficient in the developed countries because of high level of corporate governance and information transparency, whereas investors prefer direct investment in developing countries giving them access to fundamental information of their investments because of perceived poor corporate governance in these markets (Itay and Razin, 2004). In this study we are using past FDI investments in South Africa to evaluate the emerging markets valuation frameworks. The study looks at whether FDI investors in South Africa any of the proposed emerging markets valuation principles, in particular the role of country risk in the valuation.

Figure 1 below shows how emerging markets' FDI inflows have grown over the years. The new markets offer opportunities to achieve sustainable competitive advantage for international investors. Abundant natural resources, low production costs and untapped markets have made emerging markets difficult to ignore for investors seeking growth opportunities, as well as ways in which to diversify their investments. Goldman Sachs predicts that the sum of Brazil, Russia, India and China (BRIC) economies, which forms part of the emerging markets, could be larger than the sum of G6 (the USA; Japan; the UK; Germany; France; and Italy) economies in United States Dollar (USD) (Wilson and Purushothaman, 2003) by 2050.

As the economies of the world globalise and capital becomes more mobile, valuation is gaining importance in the emerging markets, for privatisation, joint venture, mergers and acquisitions (M&As), restructuring, and just for the basic running of businesses to create value (James and Koller, 2000). International businesses are moving into emerging markets for a number of reasons, including the following: a search for higher returns on capital employed; diversification; changing in trade treaties; expansion of markets; and the availability of natural resources.

Exhibits C and D summarise the major outward and inward investments respectively involving South African entities during 2009, as compiled by Ernst and Young (2010). Besides private investors, the governments of emerging markets have to make investment and valuation decisions on a number of activities, such as on the privatisation of state assets, on the regulation of such industries as energy, and on the sale of licenses to exploit natural resources.

Figure 1: Total Emerging Markets FDI (Net) – USD bn



Source: S&P and UNCTAD

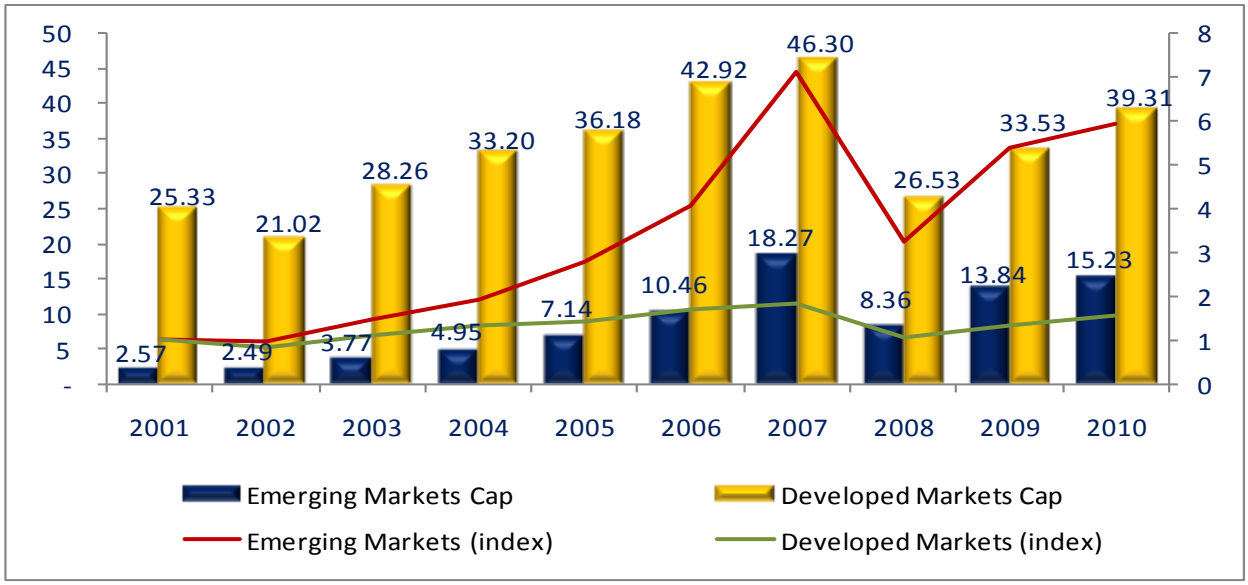
In contrast, emerging markets contain numerous market inefficiencies that present both risk and opportunity to potential foreign investors. One of the key factors that impacts on valuation in the emerging market is the level of market integration.[3] Most emerging markets are not integrated because investors come across investment barriers, local investors are not free to invest across borders, and the international investors are limited as to their choice of investment in a country. The other key sources of risk in emerging markets are government regulation and control, political uncertainties, inconsistent legal doctrines and institutions,

[3] Global markets are defined as fully integrated when assets with the same risk profile have identical expected returns, regardless of their home market (Bekaert and Harvey, 1995). The opposite is the segmented market, which is a closed economy in which investors are not free to move their investment in and out of the country.

agency costs, and information asymmetries arising from problems of transparency in financial reporting (Pereiro, 2002). Due to the above-mentioned inefficiencies, returns in emerging markets are more volatile than they are in developed markets, and are expected to give higher yields in line with the level of risk.

Differences in assessment and treatment of such risks can lead to very different valuations of opportunities. *The New York Times* commented that striking deals in emerging markets can be difficult because of inefficient capital markets[4] and hands-on governments, which make corporations less independent of government control. It highlighted the failure of the Mobile Telecommunication Network (MTN) / Bharti deal. In terms of the deal, the South African government had demanded dual listing of the new MTN and Bharti Joint Venture Company, in the Mumbai Stock Exchange and on the Johannesburg Stock Exchange, in order to protect the South African character of MTN, which is not allowed in India (*The New York Times*, 2009).

Figure 2: World Market Capitalisation, 2001 - 2010 (USD Trillions)



Source: S&P

[4] Efficient capital markets are characterised by free flow of information among a large number of buyers and sellers under no coercion to interact, and in which equilibrium prices are arrived at through multiple, frequent transactions (Pereiro, 2002).

Given the unusual attributes of emerging markets, valuation of investment opportunities in these markets is one of the most interesting frontiers in finance, with no single 'best practice' approach on which all professionals agree (Pereiro, 2002). The valuation approaches used in these markets vary widely and, in some cases, include the making of arbitrary judgements that lack a theoretical and empirical basis. Different assessments of risks can lead to very different valuations by transaction counterparties, resulting in one of the parties carrying excessive risk.

The key principles of financial theory are: (1) net present value (NPV), which permits comparisons to be made between projects with different systematic risk levels and different incomes; (2) portfolio theory, which gives an approach to assessing the risk associated with investment decisions; (3) option theory, which is used to value purchasing and selling rights, as well as to quantify the flexibility of investment and financing arrangements; and (4) capital structure, which refers to the impact of financing on investment decisions (Sabal, 2002). Valuation of business assets in emerging markets uses concepts similar to those applied in developed markets which could consist of one − or a combination of − the following approaches: (1) the DCF approach; (2) real options; (3) asset accumulation; and (4) comparable companies and transactions (Pereiro, 2002).[5]

Applying any of the above finance principles and valuation approaches in the emerging markets context will be affected by the fact that these markets are less efficient compared to the developed markets where the models were developed (Godfrey and Espinosa, 1996). Investment risk is generally divided into systematic (non-diversifiable) and non-systematic/ idiosyncratic (diversifiable) risks. Financial theory – more specifically the CAPM − states that the cost of equity should only be affected by non-diversifiable risk. The question is whether all − or part of the emerging markets risk − is systematic risk or not. According to the empirical data collected by Sabal in 2000, there was little correlation between emerging market returns and developed markets returns, meaning that it was possible to diversify emerging markets country risk (Sabal, 2002).

[5] Asset accumulation calculates the value of a firm as an aggregate of market values of its assets and liabilities, with equity value being the difference between the two values concerned.

Two options are available for incorporating the country idiosyncratic risk (unsystematic risk) of emerging markets, according to McKinsey and Company (2005). The risks can be included either in the assessment of the actual cash flows (as the numerator in a DCF calculation) or as an extra risk premium added to the discount rate (as the denominator), which is the rate used to calculate the present value of future cash flows (McKinsey and Company, 2005). A comprehensive risk analysis is required in order to incorporate it appropriately into the valuation of an asset. For example, if expropriation is identified as a risk, it can be better handled in the cash flow, because it will not apply to the entire horizon of the project. Investors have a good sense of political risk in a country, and tend to make their investment decisions so as to circumvent any possible negative exposure, which might include a shorter investment horizon. Including such risks in the discount rate assumes that they are applicable to the entire project's life.

However, according to Godfrey and Espinosa (1996), most multinational companies prefer to incorporate country risks in the discount rate. The finding was confirmed by a PricewaterhouseCoopers (PWC) survey that found that most South African investors prefer to adjust the discount rate for country risks (PWC, 2010).

The country risks, which are, in fact, idiosyncratic, are likely to affect different industries and companies differently. For example, the devaluation of currency could be beneficial to commodity- exporting companies, assuming that the exports are invoiced in foreign currency, such as USD or Euro. However, devaluation will be a problem for economies that import oil, for example, as the cost of production will increase for companies operating in the country. Companies can hedge foreign currency exposure if they enter into a foreign currency transaction involving an emerging market currency in order to protect itself from adverse currency fluctuation. However, it would be impossible, or at least prohibitively expensive, for a company to hedge against a political or economic risk of a country, such as expropriation of assets. Due to the mentioned differences, currency fluctuation risk and political risk should be treated differently when valuing an emerging market company.

Numerous models and valuation frameworks have been developed for emerging markets, although there is, as yet, no agreement among practitioners and academics on the best approach to adopt. A modified version of the CAPM is a widely used method, because it is simple to apply/implement via straightforward regression analysis, despite there being little supportive empirical evidence. In the modified CAPM, a country risk premium is introduced to account for the additional risk that an investor faces when investing in emerging markets (James and Koller 2000).

The general theme for emerging markets valuation models and frameworks is to include an additional premium for the perceived extra risks of the markets concerned. According to McKinsey, the valuation methods used not only vary, but also often involve making arbitrary adjustments based primarily on gut feel and on limited empirical evidence (McKinsey and Company 2005). The challenge for the emerging market investor and target/vendor companies is how to price the assets or opportunities appropriately in light of the perceived additional country risks.

The lack of consensus on the approaches adopted means that there can be significant valuation misalignment (over- or undervaluation) in many circumstances, resulting in one of the transactions counterparts bearing an excessive investment risk. As such is not known *ex ante*, if there is a deal, then both parties would think that it was a good deal for them, in that they would let the other party carry most, or all, of the excessive (country-specific) risk.

According to an Ernst and Young 2009 M&A survey, acquirers of South African investments paid an average of 140% above the target company's net asset value (NAV) based on a sample of 79 transactions, with a combined value of R77 823m.[6] In 2008, the average premium was 216%, based on a sample of 82 transactions, with a combined value of R76 227m (Ernst and Young 2010).

[6] NAV is the difference between the market value of the firm's assets and the market value of its debt.

1.4 Study Proposition

We believe that a key issue in the valuation of emerging market companies and the incorporation of country risk is the level of integration of these markets in the rest of the world capital markets. In fully integrated world markets, country risk, like any other idiosyncratic risk, would be diversifiable.

However, according to Pereiro, there is a high degree of world markets segmentation, in particular in regard to the emerging markets (Pereiro 2002), which makes problematic portfolio optimisation across such markets. Segmentation is a result of the inefficiencies of capital markets, in particular the inability of foreign investors to move in and out of local capital markets at no extra cost and in the absence of other restrictions. Therefore, the valuation frameworks in emerging markets should incorporate some country risk element in them.

As stated above, some economists argue that the impact of country risk can be incorporated in either the discount rate or in the project cash flows. We believe that the two are not mutually exclusive; however, country risks, such as expropriation, are better captured in the cash flow projections in form of scenario analysis. Country risks captured in this way are those that would not generally lead to a country defaulting on its debt, which is the measure of country risk used in this report and by most analysts. Other country risks, such as high inflation and political risks, are better captured in the discount rate instead of in the cash flows of a company. Such risks lead to sovereign risks and default.

The current study will use South Africa to illustrate different elements of financial theory and their application to the emerging markets. South Africa, which is one of the most globalised emerging economies, has made significant strides forward in development. Therefore, it is expected that the idiosyncratic risk will be low for South Africa, compared to what it would be for other emerging market countries.

1.5 Main Objectives and the Scope of the Study

The primary objective of the present study is to evaluate the application of such existing valuation frameworks as DCF (including CAPM and its variants), relative valuation and the real

option framework in the valuation of emerging market companies. The valuation models will be evaluated in the South African market by comparing the actual acquisition prices of companies (targets or vendors) with the values that can be computed by the frameworks (depending on the available information regarding the various building blocks). Based on the comparisons concerned, we back out implied premium/discount vis-à-vis actual prices. The absolute value of the premium / discount is used to assess the relevant valuation frameworks. The absolute values will be used in ranking the valuation frameworks. In this regard, the assumption is that the lower the absolute value of the premium the better / more accurate the valuation framework will be.

The results emerging from the study should provide investors in emerging markets with a valuation framework to employ when investing in such markets, and, consequently, should help them to maximise shareholder value. The thesis will also provide ground for further studies among academics.

The key questions that we intend to answer are the following:

- Are emerging markets significantly more risky than developed markets? Risk, in this case, will be measured by the volatility of investment returns in emerging markets compared to in developed markets. Note that this is ex-post volatility, not *ex-ante*, which would lie at the heart of the investment decision.
- How do the main emerging markets valuation models/approaches differ and what is their theoretical basis, in particular incorporation of country risk in the valuation process?
- How good are the different valuation models at estimating the value of a company? Appraisal of models is done by comparing the valuation estimate of the model with the market valuation, where the market valuation is represented by the actual transaction price?

1.6 Delimitation of the Study

When testing the application of the valuation frameworks, we intended to derive notional fair market value. Doing so was important, as the value concerned emerged from the models of companies that were acquired by foreign investors.

However, the value could have proved to be significantly different from the actual market price paid for a particular investment due to the following:

- Purchasers and vendors might have been found to have different knowledge, negotiating abilities and financial strengths.
- Emotional considerations might have overridden objective analysis and evidence.
- Legal and contractual restrictions were likely to affect the price of the business interest.
- A price might have been struck as the result of forced or compulsive acts on behalf of either the vendor or the purchaser.
- The price might not have been all cash and earn-out, or other structures might have been relied upon to close the price 'gap' between the vendor and the purchaser. This meant that it was important to make sure that the price was expressed in current cash value, taking into account the conditions attached to the final price.
- The other challenge was the sample size of the transactions to be reviewed. As the process of valuation would take up a significant amount of time and resources, the sample size was limited to three companies and only to emerging markets in South Africa. Therefore, the representativeness of (i.e. the ability to generalise from) the results was limited. However, this will be circumvented by identifying patterns, in the sense that a certain model always tends to overestimate actual deal prices. These patterns would prove to be important, even if they only applied to South Africa.

2. LITERATURE REVIEW

2.1 Definition of Emerging Markets

The term 'emerging markets' was coined by the World Bank in reference to countries whose per capita gross national income (GNI) falls below a hurdle of USD 12 196 (2010), above which countries are considered developed. Using the World Bank criterion, out of a universe of 213 countries only 69 were considered developed (S&P Factbook 2010). The basic idea behind the term concerned is that it describes the nation's social or business activity in the process of rapid industrialisation. The World Bank definition is complicated by the fact that there are huge disparities among the countries in their developmental behaviour (Pereiro, 2002).

Table 1: World GNI, Population and Per Capita GNI, 2009

World Bank income grouping	No. of economies	GNI (USD billions)	Population	GNI per capita (USD)
Low (USD 995 or less)	40	431	846	509
Lower middle (USD 996–3 945)	56	8 846	3 811	2 321
Upper middle (USD 3 946–12 195)	48	7 515	1 002	7 502
Emerging markets	144	16 792	5 659	10 332
Developed markets (USD 12 196)	69	42 418	1 117	37 990

Source: S&P

The FTSE Group classifies the world equity markets according to the level of development, namely developed market, advance emerging markets, secondary emerging markets and frontier markets, based on the development of their market infrastructure. The country classification is based on a set of fifteen market quality criteria. The September 2010 classification is shown in Table 2 below.

Table 2: FTSE Global Index Classification

Developed	Advanced emerging	Secondary emerging	Frontier
Australia	Brazil	Chile	Argentina
Austria	Hungary	China	Bahrain
Belgium/Luxembourg	Mexico	Colombia	Bangladesh
Canada	Poland	Czech Republic*	Botswana
Denmark	South Africa	Egypt	Bulgaria
Finland	Taiwan	India	Cote d'Ivoire
France		Indonesia	Croatia
Germany		Malaysia*	Cyprus
Greece		Morocco	Estonia
Hong Kong		Pakistan	Jordan
Ireland		Peru	Kenya
Israel		Philippines	Lithuania
Italy		Russia	Macedonia
Japan		Thailand	Malta
Netherlands		Turkey*	Mauritius
New Zealand		UAE	Nigeria
Norway			Oman
Portugal			Qatar
Singapore			Romania
South Korea			Serbia
Spain			Slovakia
Sweden			Sri Lanka
Switzerland			Tunisia
UK			Vietnam
USA			

**Czech Republic, Malaysia and Turkey will be promoted to advanced emerging market status from June 11*

Source: http://www.ftse.com/Indices/Country_Classification/Downloads/Sept%202010/FTSE_Country_Classification_Sept_2010_Update.pdf

Morgan Stanley Capital International (MSCI) developed an index that measures the performance of emerging markets, the MSCI Emerging Markets Index. The MSCI Market Classification Framework consists of the following three criteria: economic development; size and liquidity; as well as market accessibility. The MSCI Index is a free float-adjusted market capitalisation index that is designed to measure the equity market performance of emerging

markets.[7] As of 27 May 2010, the Index consisted of emerging market country indices of the following 21 countries: Brazil; Chile; China; Colombia; the Czech Republic; Egypt; Hungary; India; Indonesia; Korea; Malaysia; Mexico; Morocco; Peru; the Philippines; Poland; Russia; South Africa; Taiwan; Thailand; and Turkey.

The Standard & Poor's (S&P) Emerging Markets Database (EMDB) is now in its fourth decade, and the database is a widely recognised comprehensive and reliable measure of the world's emerging markets. According to S&P, the term 'emerging market' implies a stock market that is in transition – increasing in size, activity, or level of sophistication. Most often, the term is defined by a number of parameters that attempt to assess a stock market's relative level of development and/or an economy's level of development.

In general, S&P classifies a stock market as 'emerging' if it meets at least one of several general criteria: (i) it is located in a low or middle-income economy, as defined by The World Bank; (ii) it does not exhibit financial depth, with the ratio of the country's market capitalisation to its gross domestic product (GDP) being low; (iii) there broad-based discriminatory controls (such as restriction in ownership and repatriation of dividends), including for non-domiciled investors; or (iv) it is characterised by a lack of transparency, lack of market depth (that is, few market participants), lack of market regulation, and operational inefficiency.

Critical characteristics of emerging markets are that they must create a comfortable and attractive environment in which to conduct global business, foreign investment and international trade. An emerging market country is general defined as a country transitioning to a free market-oriented economy, with increasing economic freedom, gradual integration within the global marketplace, an expanding middle class, improving standards of living, social stability and tolerance, as well as an increase in cooperation with multilateral institutions.

[7] Describing a stock as 'free-floating' means that the stock is available in the stock market with no restrictions on the buying and selling of the shares.

The current report uses Pereiro's (2002) definition of emerging markets as having a national economy that has the following characteristics:

- Attempting to order its national accounts, to privatise state companies, and to deregulate economic activities;
- Attempting to stabilise its political system, moving from more autocratic regimes to liberal, democratic rules and increased public participation in policy formulation;
- Attempting rapidly to dismantle the barriers to foreign trade and investment;
- Being flooded by foreign capital, new technologies and advanced managerial practices;
- Experiencing profound change in the structure of entire industries and individual companies;
- Reporting a growing rate of activity in M&A, joint ventures, and established foreign-owned subsidiaries;
- Boasting a growing, more active and fairly sophisticated stock market, which attracts international financial investors; and
- Expanding influence to the neighbouring economies, which, in turn start to open up to the rest of the world

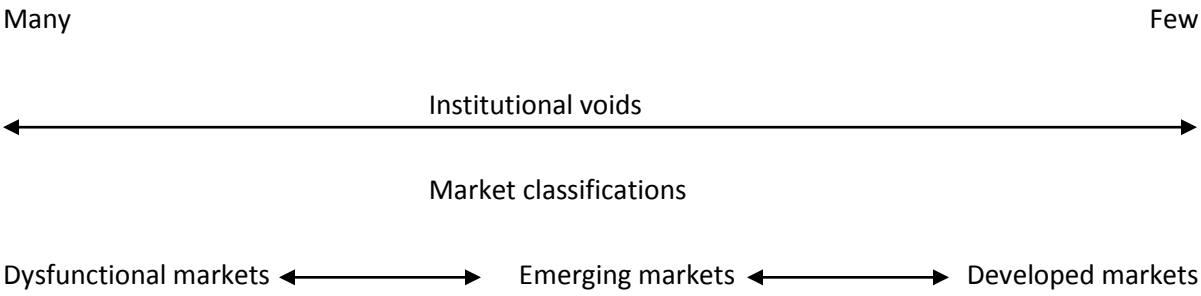
2.2 Country Risk

2.2.1 Definition

Emerging markets are characterised by an extra level of risk if compared to developed markets. Khanna and Palepu (2009) introduced the term 'institutional voids' in reference to the lack of infrastructure − physical and institutional − required for the smooth functioning of markets. Institutional voids come in many forms and play a defining role in the shaping of the capital, product and labour markets in emerging economies. Absent or unreliable sources of market information, an uncertain regulatory environment, and inefficient judicial systems are three

main sources of market failure and, as a consequence, investors may be reluctant to do business in emerging markets. According to Khanna and Palepu (2009), the diffusion of skills, processes and technology throughout the global market is resulting in convergence; the gap between emerging economies and their more developed counterparts is closing. The aggregate of the institutional voids is generally referred to as 'country risk' (Khanna and Palepu, 2009).

Figure 3: Continuum of Institutional Voids and Market Definitions



Source: Khanna and Palepu, 2009

Country risk is idiosyncratic risk, which is risk that, according to standard asset pricing theory, can be diversified and that should not form part of the cost of capital.

The key components of country risk (Pereiro, 2002) are outlined in Table 3 below.

Table 3: Key Components of Country Risk

Risk	Description
Political risk	Social and/or political turmoil, which may negatively affect a company's performance.
Expropriation	Chance of expropriation of company's assets by the government.
Physical infrastructure	The level of infrastructure development – roads, bridges telecommunications network, water and sanitation facilities, and power supply.
Institutional development	Legal and regulatory framework of the country. The ease of conducting business and the ability of the company to enforce contracts.
Capital restrictions	Potential emergence of barriers to the free flow of cross-border capital, for instance, remittance of royalties. The factor is relevant to both portfolio flows and FDI.
Currency risk	Possibility of currency devaluation/appreciation. Also depends on whether a company uses financial/operational hedges.
Sovereign/Default risk	The government may not pay (interest and/or principal) international lenders, which may result in a drop of country credit ratings, and the local cost of borrowing money may soar.
Market inefficiency	Efficient markets have free flow of information among a large number of buyers and sellers under no coercion to interact. The challenge in emerging markets is that they are less efficient because they are small in respect of the number of participants and instruments. This result in less liquidity with firms' stocks concentrated in the hands of few companies, which makes such markets more prone to manipulation than they would otherwise be.
Inflation risk	Possibility of hyperinflation, which would affect the purchasing power of the domestic currency and harbour the possibility of sharp devaluations.

2.2.2 Studies of country risk

Generally, country risk, which is defined as a measure that is associated with a country's default probability, is caused by events that can, at least to some degree, be under the control of the government, but definitely not under the control of a private enterprise or individual domiciled in that country.

One of the most well-known indicators for measuring the emerging markets risk premium is the Emerging Market Bond Index Plus (EMBI+) spread, produced by JP Morgan. EMBI+, which is the most liquid USD emerging market debt standard, tracks total returns for actively traded external instruments in emerging markets. Included in the EMBI+ are USD-denominated Brady bonds, Eurobonds, and traded loans issued by sovereign entities. JP Morgan computes individual country's spreads as a weighted average of all spreads from country's bonds that meet certain size and liquidity requirements. The spread is calculated as the difference between the sovereign bond yields and the yields of the US Treasury Notes, of the same characteristics. These spreads are the proxy for sovereign risk that are often used in the estimation.

Studies by Rowland and Torres (2003) suggest that economic growth, external debt, public debt, international reserves and exports have high explanatory value in relation to creditworthiness and the spread over US Treasuries (SOT) of emerging market sovereign issuers.

Murli Rajan and Joseph Friedman (2001) investigated the impact of country risk on international portfolio selection, using alternative country risk proxies. Using the Mann−Whitney−Wilcoxon test, they provided empirical evidence not only that international portfolio returns contain significant country risk premiums, but also that international markets are partially segmented (Rajan and Friedman, 2001).

The Rajan and Friedman (2001) research study used four country risk proxies, namely the national stock index; the Institutional Investor country risk index; the International Country Risk Guide Index; and deviations from covered interest rate parity. The results from the study

showed that, in terms of the Mann−Whitney−Wilcoxon T statistic, expected non-risk-adjusted returns for international portfolios were significantly greater than were US portfolio returns, pointing to the presence of additional risk in international markets. Irrespective of the measure of country risk used, such risk was found to have an impact in each case. The Rajan and Friedman (2001) study did not differentiate between developed markets and emerging markets, and country risk was defined broadly beyond just the political and financial risks that are prevalent in developing markets.

Yimin Zhang and Ronnald Zhao (2004) studied the impact of country risk in the Chinese stock market by looking at the valuation differential between Class A and B shares. All listed companies in China issue Class A shares denominated in local currency (RMB) to domestic investors and a limited number of them have also issued Class B shares to foreign investors in order to attract international capital. The two classes of shares feature the same voting rights and dividend and obligations; however, the shares have been traded at significantly different prices with a substantial premium for Class A shares. According to Zhang and Zhao (2004), on average the price/earnings ratio for A-shares has been above 70, and that for B-shares below 40.

Zhang and Zhao (2004) suggest that the valuation differential between Class A and B shares can be interpreted as an indicator of the country-specific risk related to the Chinese stock market as perceived by the international investors. The risk encompasses the possibility that the investors will incur losses because of inadequate legal protection and partially reformed institutions, among other risks, and, as a result, the international investor wants to be compensated for the additional risk. The objective of the study was to examine how the country risk of China impacts the discount rates used by the domestic versus foreign investors in determining present value of the expected cash flow.

The Zhang and Zhao (2004) model decomposed the country risk into the effects political risk, exchange rate risk, interest rate risk and market risk. The two researchers used the Euromoney country risk weightings for China as a proxy for political risk. The empirical tests of the study

provided strong evidence that political risk, which has an overall impact on all other factors, is an important determinant of valuation differential.

According to Zhang and Zhao (2004), Class A shares are segmented from the world market, as Chinese investors lack legitimate access to international arbitrage opportunities, because of foreign exchange and investment control. In the market segmentation, the equilibrium risk premium of investors in A shares is determined by the demand and supply of the limited number of shares in the local stock market and by the risk tolerance of the Chinese domestic investor. A foreign investor in Class B shares has access to an unlimited supply of stocks in the world market, of which the Chinese B shares are a tiny portion. For a B share investor, the equilibrium risk premium is driven by preference and by the forces of supply and demand in the world capital market. Hence, domestic and foreign investors use different discount rates to discount the same stream of firm cash flow, because domestic investors cannot, whereas foreign investors can, diversify away China's country risk.

Lessard (1996) suggests that country betas capture the effect of the market risks on target countries, but they do not reflect potential impacts on expected cash flow downside risk, such as expropriation and payment difficulties. According to Lessard (1996), ideally such impacts would be estimated using experts' assessment of possible events and scenarios with estimated impact on cash flows. However, he suggests that this process is unrealistic in screening countries, and suggests that country bond risk premiums, Overseas Private Investment Corporation (OPIC) insurance premia[8], political risk rating, or a combination of such could be used as proxy for country risk premium.

The bond risk premiums reflect the market's assessment of potential losses due to rescheduling or defaulting. However, Lessard (1996) points out that the events do not necessarily match the events that would jeopardise either the local generation or the remittance of cash flows from direct investments. Lessard cites Argentina as an example of such a failure, where, despite

[8] OPIC is a US government development finance institution that, among other services, provides political risk insurance for companies investing outside the US, mainly for those in emerging markets. The insurance premia charged relate to the risk assessment of the particular country.

repeated negotiations and non-payment on sovereign debt, dividends from businesses remained fully convertible (Lessard, 1996). In good times, the direct investor can reap the upside rewards, whereas the bond holder can only obtain promised payment. In contrast, bad things can happen to the direct investor in the absence of defaulting or rescheduling on government debt, especially in regulated industry.

2.3 The Country Risk Premium

There are at least three types of data that can be used to estimate country risk premiums, namely:

- Risk premium on sovereign bonds issued in USD;
- Insurance premiums charged by such insurance agencies as the Multilateral Investment Guaranty Agency (MIGA) and the OPIC to insure against specific downside risk; and
- Country and political risk ratings, published by such organisations as Euromoney, the Economist Intelligence Unit (EIU), and the Political Risk Services (PRS) Group.

None of the above estimates is completely reliable, but they are the best that are generally available, in terms of objective numbers for country risk premiums (Lessard, 1996).

2.3.1 Bond Premiums

The bond risk premium reflects the market's assessment of potential losses due to rescheduling or outright defaulting on debt obligations (in terms of both interest payments and principal repayment).

Sovereign Spread over US Treasuries

The general consensus is that the country risk premium can be measured from the market by examining the yields spread between different countries. A ten-year USD or Eurobond of a particular country is compared with the equivalent ten-year US Treasury bond, which is referred to as spread over US Treasuries (SOT).

The key consideration in selecting the bonds is to avoid differentials that are caused by other factors than the credit risk differentials, namely by:

- In terms of Inflationary impact, the bonds are denominated in the same currency, USD, to avoid inflationary mismatches;
- In terms of maturity (yield curve) impact, the bonds are of identical maturity, say 10 years, to avoid problems associated with the yield curve. However, in this case, there are quite a few bonds that fall outside the 10-year maturity.
- The bonds are of similar liquidity to avoid problems with thin trading. This characteristic is the most difficult with which to comply, as emerging markets have illiquid markets, high concentration ratios and lack depth or turnover.

The assumption is that, with the above conditions fulfilled, the only reason why investors will ask for a different yield for the bonds listed compared to that of the US Treasury bond is that the bonds concerned are not backed by the US government, but by other sovereign governments. Therefore, SOT reflects the government's perceived risk, with the US being treated as the base risk-free country against which country risk is measured.

However, the events that drive debt default risk might neither jeopardise the local cash generation nor the remittance of cash flow from a direct investment. In the case of Argentina, for example, despite repeated negotiations and non-payment of sovereign debt throughout the 1980s, the dividends from businesses remained fully converted (Lessard, 1996).

Implied country bond yield spread

The above approach of estimating the country risk premium has the following limitations that required overcoming:

- Not all countries issue foreign currency denominated bonds, in particular the USD or the Euro.
- Sovereign bonds are traded in different markets and have different maturity terms.
- Many sovereign bonds are structured, with several peculiar characteristics that make straight comparison inappropriate.

In order to overcome the above shortcomings, a country risk premium model that estimates implied SOT was developed. The following approach was used to develop the model:

- The sovereign bond yield spreads for countries with USD-denominated bonds was obtained, as listed in Table 1 above.
- The credit rating and score for each of the sovereign bonds was obtained from the rating agencies, namely S&P, Moody's, Euromoney and the International Country Risk Guide (ICRG).
- The ratings were converted into numerical figures, starting with AA as 1.
- The numerical figures representing ratings scores (independent variable) were regressed against sovereign yield spread (SOT) (dependent variable) for the selected countries with bond information.
- The statistical relation between the ratings and yield spreads (premia) was obtained, which established a predictive statistical model of country risk premium.

2.3.2 Insurance Premiums

Various government export credit agencies insure against such country risks as expropriation, war and inconvertibility. The premiums charged by the insurance agencies for investments in such developed countries as the US and the UK are relatively low, because of the low political risk in the countries concerned. Therefore, the difference between premiums charged for an emerging market country and that which is charged for a developed country reflects the political risk premium of the particular emerging country involved.

The Organisation for Economic Cooperation and Development (OECD) developed a country risk classification to ensure that agencies from the member states charge adequate premium rates to cover export credits (i.e. credit risk), and to make sure that there is a premium rates convergence of, or alignment with, the different insurers.

The system for assessing country credit risk and for classifying countries is split into eight country risk categories (ranging from 0 to 7):

- The Country Risk Classification Method measures the country credit (sovereign) risk, namely the likelihood that a country will service its external debt.
- The classification of countries is achieved through the application of a methodology that is comprised of two basic components: (1) the Country Risk Assessment Model (CRAM),

which produces a quantitative assessment of country credit risk, based on three groups of risk indicators (the payment experience of the participants, the financial situation, and the economic situation); and (2) the qualitative assessment of CRAM results, considered country−by−country to integrate political risk and/or other risk factors not taken (fully) into account by the Model.

- As the details of the CRAM are confidential, they are not published.
- The final classification, based only on valid country risk elements, is a consensus decision of the sub-Group of Country Risk Experts that involves the country risk experts of the participating Export Credit Agencies.
- The sub-Group of Country Risk Experts meets several times a year, with the meetings being so organised as to guarantee that every country is reviewed whenever a fundamental change is observed, and at least once a year. Whilst the meetings are confidential and no official reports of the deliberations are made, the list of country risk classifications is published after each meeting.

Table 4 below shows the classification of selected countries.

Table 4: OECD Country Risk Classification - Valid as of 31 March 2011

Table	Classification		Classification
US	0	Colombia	4
Italy	0	Malaysia	2
UK	0	Poland	2
Germany	0	India	3
Israel	0	Peru	3
Korea	0	Bulgaria	4
Canada	0	Qatar	2
Japan	0	Argentina	7
Australia	0	Egypt	4
Mexico	3	Nigeria	5
Turkey	4	Slovakia	0
Brazil	3	China	2
Chile	2	Kenya	6
Ukraine	7	Pakistan	7
South Africa	3	Sri Lanka	6
Philippines	4	Mozambique	6
Thailand	3	Jamaica	6
Indonesia	4		

Source: http://www.oecd.org/trade/xcred/crc/

2.3.3 Country and Political Risk Ratings

Political risk ratings published by various rating services, such as EIU, Euromoney and PRS are subjective, and do not directly correspond numerically with the country risk premium. The measures usually capture different dimensions of risk, as are highlighted by Table 5 below, representing the ICRG of selected countries.

Table 5: ICRG Country Risk Rating for Selected Countries

	Economic	Financial	Political	Composite
US	35.5	34.0	82.0	75.8
Italy	35.5	35.0	75.0	72.8
Sri Lanka	32.5	38.0	58.0	64.3
Malaysia	41.0	43.5	72.5	78.5
India	32.5	43.5	58.5	67.3
Pakistan	30.0	39.5	45.0	57.3
Peru	37.5	43.5	62.5	72.0
Argentina	41.5	41.0	67.0	74.8
Nigeria	36.0	48.0	46.0	65.0
Mexico	37.0	41.0	69.0	73.5
Turkey	35.0	34.5	56.0	62.8
Brazil	36.5	40.5	69.0	73.0
Chile	40.5	38.0	75.0	76.8
China	39.5	48.0	61.0	74.3
South Africa	34.0	39.0	66.5	69.8
Philippines	37.5	43.5	62.0	71.5
Thailand	41.5	44.0	54.0	69.8
Egypt	26.0	42.0	51.0	59.5
Kenya	31.5	40.0	55.5	63.5
Indonesia	37.5	40.0	60.0	68.8
Mozambique	32.0	36.5	67.0	67.8

Source: PRS Group, 2010

The respective country risk premium for countries that have sovereign bonds information is estimated as the average of the bond credit default premia for the particular country. Where the sovereign bond information is not available for a country, the implied country risk premium is estimated from a regression model. The observe default premia (dependent variable) is regressed against their country risk rating (independent variable) for countries that have sovereign bonds issued in a strong currency, such as the USD. This derives a predictive statistical model of country risk. The model is then used to estimate country risk premia for all countries that risk rating.

2.4 Valuation Approaches

Valuation of business in emerging markets uses concepts similar to those that are applied in developed markets, which could consist of one − or a combination of − the following approaches: (1) the DCF approach; (2) real options; (3) asset accumulation; and (4) comparable companies and transactions (Pereiro 2002). Applying any of the above approaches in the emerging markets context will be affected by the risks highlighted earlier, because such markets are less efficient compared to the developed markets, where the models were first developed.

2.4.1 Multiples (Extrinsic) Valuation

Extrinsic valuation uses value multiples for comparable companies quoted in the public markets, or uses multiples for comparable transactions that can be observed in the private market. Valuation of companies using multiples is based on the theory that similar assets sell at similar prices.

The process consists of selecting a group of public companies that are similar to the target company. An average market value multiple regarding some such relevant economic parameter as book value, earnings or sales revenue is then obtained. The data used must be normalised by removing such extraordinary items as a once-off charge that the company had to pay. The multiple is then applied to the same economic parameter of the target company to estimate its market value.

The method is simple to apply and gives a good view of the market or the industry. However, the multiple can compound errors of overvaluing or undervaluing that the market might be making in valuing certain sectors of the economy. For example, in price-earnings ratio multiple valuations, the investor assumes that the market price is the correct valuation of the target sector, but, as was seen during the information technology bubble of the late 1990s, the whole sector might be mispriced, exposing the investor to significant risk. The application of the relative valuation methodology is more challenging in emerging markets, due to the inefficiency

and shallowness of such markets. In most cases, there are virtually no comparable companies in the local market, resulting in analysts opting to use the international markets.

According to Irina et al. (2007), in cross-border valuation the use of the market multiples approach should be restated, taking into account that direct use of comparables companies from developed markets to value emerging markets is inaccurate. Pereiro (2002) and Damodaran (2009) have suggested that the country risk of emerging markets results in the valuation multiples differing from those in the developed markets. Therefore, using peers from developed markets will overstate the estimation of equity value in emerging markets, because of the company's exposure to such factors as political and economic risks and low level of corporate governance, resulting in a higher discount being required.

Using empirical studies, Irina et al (2007) were able to show that there is a difference in multiples of companies in Russia, an emerging market country, and those of companies in the US. The results of the study implied that there should be adjustment for multiples if peers are taken from the US market. The lower multiple in Russia meant that investors required a higher expected return on a Russian company than they did in the case of a comparable American company.

The use of international information in valuing emerging market companies faces the same challenge as does the use of the other valuation approach, namely the country risk. Pereiro (2002) proposes that the multiple derived from a developed market should be adjusted for country risk to cater for the conditions of the economy in which the target company operates. The adjustment can be done by developing either a cross-border correlation coefficient or by multiple regressions of fundamental drivers of the two economies.

The current paper uses Pereiro's (2002) popular triad of price earnings ratio (PER), price book value ratio (PBVR), and market value of invested capital to sales ratio (MVIC/sales).

2.4.2 Real Option Valuation

Real option gives the holder the right, but not the obligation, on a real asset at a future agreed time. With an option, an investor in project reserves the right to profit from the upside of a promising project, while simultaneously putting a limit on the down side, which becomes the price of the option concerned (Pereiro, 2002).

Real option theory assumes that the investor can, along the life of a project, change the flow of investment on the basis of the project's performance, giving the investor some flexibility. The investor can expand, abandon, delay or liquidate on a later date if a particular project becomes unsustainable. This is different from other valuation approaches that assume that the investment decision is irreversible.

Expansion options are used for projects with high levels of uncertainty, such as a biotechnology project, where the value of a project can change significantly. Instead of investing all the required capital, the investor can invest in stages, based on how the project prospects look. The subsequent investments are contingent on the attainment of verifiable milestones (Pereiro, 2002). The flexibility that allows the investor to continue with, or to abandon, a project in terms of interim milestones has an economic value.

Investors could be given the right to delay or to postpone their investment for a period of time by paying an entry price. The delay options are typically seen in oil and gas field projects and mining ventures. The holder of the option is given an exclusive right for a period of time within which s/he has to decide whether or not to exercise the option by taking up full investment on the project. The option is valuable to an investor, because the conditions could significantly change prior to the expiration of the contract, with the project being worth either less or more than the original estimate. If, at expiration of the contract, the project is worth less, instead of disinvesting, the investor's right expires, and his total loss is limited to the price of the option concerned (Pereiro, 2002).

The other strategic investment options are those of abandonment and liquidation. Whereas the former allows the investor to discontinue a project that does not meet expectations before the conclusion date in order to avoid incurring further loss, the latter option is another way of valuing the equity of a firm after paying the firm's debts. According to Pereiro (2002), equity can be considered a call option, arising from the option that the shareholder has to liquidate the company at the end of a certain period in order to repay debts and to pocket the remaining value (Pereiro, 2002).

The economic value of a real option is calculated on the same basis as is a financial option. That is, a real option that is embedded in a real underlying asset is valued by analogy to a financial option, with characteristics being similar to those of the underlying asset (Pereiro, 2002).

The Black−Scholes model was developed for valuing a financial option:

Value of the call = $SN(d_1) – Ke\text{-}rtN(d_2)$

where:

$$d_1 = \frac{\ln(K/S) + (r + \sigma^2/2)t}{\sigma\sqrt{t}}$$

$$d_2 = d_1 - \sigma\sqrt{t}$$

the variables are as follows:

s = current value of the underlying asset

K = strike price of the option

t = life to expiration of the option

r = riskless interest rate corresponding to the life of the option

σ2 = variance in the value of the underlying asset

Valuing real options via the Black−Scholes model still requires the use of other valuation methods, such as DCF and value multiples, to compute synthetic value, which becomes an input

to the option pricing model, namely the current value of the underlying asset and the strike price of the option. The Black−Scholes model is designed to value options with one specific expiration date where the underlying stock does not pay dividend. The model's limitations can be partially resolved by way of adjustments for the two limitations (Damodaran, 1996 p 365).

Volatility is one of the main inputs in constructing a real option, being measured as the standard deviation of the underlying asset's returns. The standard deviation of the underlying asset's returns can be estimated using the historical returns observed in similar projects or stock of similar companies (Pereiro, 2002).

Developed countries' stock markets are substantially less volatile than are the emerging stock markets. According to Pereiro (2002), when data from developed markets are used, they must be adjusted for the differences in the level of volatility. Pereiro (2002) uses the average volatility coefficient to adjust the data derived for the local market. The average country volatility adjustment coefficients are derived from dividing the average volatility of the US market by the average volatility of the target country, with the result being applied to the developed market data to adjust for emerging market risk.

The time to expiration will depend on the contract negotiated, or the strategic decisions of the company. For example, some national governments give up six years from when a company acquires a gas or oil exploration licence to when they decide on whether or not they will proceed with the investment. New products and technology time to expiration could be the estimated time that it takes to develop the make for the product.

2.4.3 DCF Valuation

DCF valuation assumes that the value of a firm is equal to the expected future cash flows to the firm, discounted to a present value by cost by a discount rate equal to the cost of capital. Therefore, the key inputs in a DCF valuation are: the modelling of plausible future cash flows, and the defining of the plausible cost of capital to be used as the discount rate.

According to finance theory, the discount rate used in the DFC valuation of an investment should reflect the investment's risk. The risk of investments' cash flows differs, depending on the type of the asset and the underlying assumptions made, with the difference being captured in the discount rate used in the DCF valuation. However, the CAPM purports that the only risks that matter, and which are rewarded in the market, are systematic risks. Such risks are captured by the asset's beta, which is a measure of the covariance between individual asset returns and market-wide returns. The theory is based on the assumption that the investor has the ability to diversify across industries and international markets. Because of the ability to diversify investments, investors are said to ignore all unsystematic or idiosyncratic risks when setting company's cost of capital, which is the minimum rate of return on capital that the company must earn to satisfy its shareholders (Godfrey and Espinosa, 1996).

However, as was mentioned earlier, the emerging markets are not fully integrated with the rest of the world, which limits the ability to diversify emerging market investments. Therefore, the investor has to account for country-specific risks – idiosyncratic risk − in the valuation process. The country idiosyncratic risks for emerging markets, as highlighted in Table 1, are likely to affect different industries and companies differently.

Two options are available for incorporating the country idiosyncratic risk (unsystematic risk) of emerging markets, according to McKinsey and Company (2005). The risks can be included either in the assessment of the actual cash flows (the numerator in a DCF calculation), or as an extra risk premium added to the discount rate (the denominator), which is the rate used to calculate the present value of future cash flows (McKinsey and Company, 2005).

The traditional CAPM argument is that the discount rate should only be adjusted for risks that cannot be diversified away. However, to incorporate political risk in cash flows, one needs to assess the probability of such events as capital controls, the non-convertibility of the local currency, the possibility of the inability to repatriate profits, and expropriation and to incorporate the assumptions made explicitly in this regard into the expected project cash flows. In reality, it is very difficult to quantify the likelihood and impact of political risk and to adjust cash flows (Salomon Smith Barney, 2002).

To incorporate political risk in the discount rate as a premium is not as difficult as doing the above. According to a PWC survey, investors prefer to adjust the discount rate for country risk (PWC Corporate Finance, 2010). A modified version of the CAPM is widely used, because it is simple to apply/implement via straightforward regression analysis. In a modified CAPM, a country risk premium is introduced to account for the additional risk that an investor faces when investing in emerging markets (James and Koller, 2000). Sabal (2002) and Pereiro (2002) proposed different versions of the modified CAPM model.

Financial theory – more specifically the CAPM − states that the cost of equity should only be affected by non-diversifiable risk. Those risks that are considered to be diversifiable are better handled via the cash flow, because they are unique to a company. The question is whether or not all − or part of − the emerging markets risk is systematic risk. If not, it would support the argument that the assumptions of the CAPM are not holding in emerging markets.

2.4.4 Modelling Cash Flows

The risks faced by investors in emerging markets make the process increase the difficulty of estimating cash flows. The investors must take into consideration such issues as high levels of inflation, volatile foreign exchange rates, the possibility of limited or no currency convertibility, uncertain tax rates, and poor accounting standards.

Typically, project cash flow is estimated in local currency, with international investors then convert the cash flow into a stable developed country currency, such as the USD. The conversion is done using either the spot rates for today's cash flows, or the forward rates (at the relevant maturity) for future cash flows.

When converting cash flows to USD using the forward exchange rate approach, each cash flow is converted using the rate corresponding to that at the time of occurrence. Although the above is a popular method, forecasting is likely to pose a problem for those parties that enter into a forward contract (Pereiro, 2002). The difficulty is solved by assuming that the International Fisher Effect (uncovered interest parity) holds, as it states that the following relation exists between the future present exchange rates and the nominal interest rates:

$$(\$/fo)_t = (\$s/fo)_0 \, (1 + r_{\$0,t})^t / (1 + r_{fo\ 0,t})^t$$

where $(\$/fo)_t$ is the exchange rate of USD versus an emerging market currency at time t, $(\$s/fo)_0$ is the spot exchange rate, $r_{\$0,t}$ is the spot interest USD rate at term t, and $r_{fo\ 0,t}$ is the spot interest rate in an emerging market in time t.[9]

To use the rates of the spot exchange rate, the valuation is conducted in emerging market currency, using the emerging market discount rate. The present value is converted into USD using the spot exchange rate.

Other than the currency effect, the development of projected future cash flows for an investment is done in a similar way, whether or not it is done in a developed market or in an emerging market.

2.5 Asset Pricing Theory and its Application in Emerging Markets

2.5.1 Asset Pricing Theory

Finance theory is the basis for investment decisions and has developed considerably since the 1950s, when Markowitz discovered the relationship between risk and return in an investment portfolio (Sabal, 2002). The theory assumes that markets are efficient – where markets aggregate information quickly and accurately, the marginal investor promptly exploits any inefficiency (Damodaran, 1996). The challenge that the theory faces is constantly to validate the extent to which the key principles of financial theory reflect business realities (Sabal, 2002).

Asset pricing theory is a framework that is designed to identify and measure risk, as well as to assign a price for risk-bearing. The CAPM, which is the most well-known asset pricing framework, was developed in 1962 by Harry Markowitz. The basic premise of the framework is that investors prefer higher to lower expected returns. In addition, they dislike risk and they tend to hold well-diversified portfolios.

[9] Note that the relationship concerned is that of arbitrage, which assumes that home and foreign (US) assets are perfect substitutes (i.e. no risk premium is involved). The assumption here seems to be inappropriate for an emerging markets environment based on the risk highlighted earlier.

The key assumptions of the asset pricing framework include the following:

- Investors care about mean (return) and variance (risk).
- Asset returns are multivariate normally distributed.
- Capital markets are perfect (with all information being correctly reflected in prices).
- There is no transfer cost (no taxes, etc.).
- There is no disagreement about returns distributions.

Most of the research in finance theory focuses on the most efficient markets in the world, namely the developed world (Bekaert and Harvey, 1995). The characteristics of such markets are mostly likely to be consistent with the assumptions of the theoretical models conceived. According to Bekeart and Harvey (1995), risks are difficult to measure in emerging markets, with there being little relation between the risk measures implied by the CAPM and expected returns.

One of the key assumptions of most asset pricing models is that investors are well diversified, and that the only risk about which they are concerned is the portfolio's variance and not the individual assets' variance. What is important for individual assets is their return and risk contribution to the overall portfolio, which is measured by the correlation of the asset with the portfolio.

Portfolio diversification works well in developed markets, due to the integration across the markets. Financial integration refers to the free access of foreigners to local markets and of local investors to foreign markets. In perfectly integrated markets, assets of similar risk command the same expected return, regardless of the location (country), because there are no effective barriers to portfolio investment across borders. Therefore, assets in these markets are rewarded in terms of their contribution to a well-diversified world portfolio, which is the covariance with the world portfolio.

2.5.2 World Capital Markets Integration

According to Soenen and Johnson (2008), one issue of pressing concern to international investors is the extent to which national equity markets have become a single, globally integrated market. For an integrated global equity market, the cost of capital should be estimated from a global perspective. Global markets are defined as fully integrated when assets with the same risk profile have identical expected returns, regardless of their home market (Bekaert and Harvey, 1995).

The concept of world portfolio fails when it is applied to the emerging markets, because of lack of integration. According to Bekeart and Harvey (1995), due to the lack of integration into the world capital markets, in emerging markets there is little relation between the risks measured by the standard CAPM and expected returns. An extreme case of lack of integration is a completely segmented market (i.e. a closed economy). In segmented markets, assets would be priced off the local market return, having little, or no, covariance with world factors. However, the local capital markets lack the breadth (i.e. number of available types of financial assets) and depth (i.e. number of market participants) seen in developed countries. As local firms' prospects are intertwined with the local economy prospects, the firms' returns will move in the same direction as the local economy, resulting in lack of diversification opportunities when one is solely invested in local companies.

The cost of capital in segmented (non-integrated) markets will be higher than in integrated markets, because investors will require compensation for bearing local, idiosyncratic risk (Collins and Abrahamson, 2006). In an integrated capital market, the expected return is determined by the beta with respect to the world market portfolio, multiplied by the world risk premium, and is likely to be low.

Bekeart and Harvey (1995) point out that market integration is often a gradual process and the speed of integration depends on the individual country's particular situation. Most emerging markets are currently in a state of transition from segmented market to an integrated market, which means that they are partially integrated. As the market transitions from a segmented

market to an integrated market, its cost of capital follows. Simultaneously, the price of its assets rise, with the transition process meaning that the cost of capital for emerging markets is not constant.

2.5.3 Asset Pricing Models

The asset pricing model must reflect the return expectations of the different investors involved in a project, who are, broadly speaking, the debt providers and equity funders. Therefore, the discount rate should be a blend of the cost of debt and the cost of equity, plus an adjustment for market covariance and tax. The weighted average cost of capital (WACC) has three components: the capital structure, which is the ratio of debt to equity; the cost of debt; and the cost of equity. The capital structure, which is decided on by the management, is based on the company's debt capacity and credit ratings. The cost of debt (which could be a blend of different instruments, such as corporate bonds and bank loans) is given by the market, and is based on the stability of the company's cash flows.

The cost of equity is the hardest element of the WACC to derive. The first step to take in estimating a discount rate to be applied to an emerging market investment requires determining the risk premium that should be included in the cost of capital to reflect the investment risk.

Asset pricing models generally best fit the valuation of assets in developed markets, which are efficient, in the sense that there is a free flow of information among the number of buyers and sellers who are under no coercion to interact, and the prices are at equilibrium. Emerging markets have relatively small markets with few stocks and tend to be dominated by even a fewer larger stocks, as well as by the operation of a limited number of buyers and sellers, which makes market diversification inefficient. This inefficient diversification results in the presence of unsystematic or idiosyncratic risks.

The CAPM is sometimes used in the emerging markets, because it is easy to apply. However, it can prove to be a faulty tool, and its potentially disastrous implications in terms of wrong/incorrect valuation could overshadow the application benefit that it offers. Due to its

popularity, it has become a standard or benchmark model. Therefore, ignoring the model would place an analyst at a disadvantage, since his counterparts in valuation exercises and in buying and selling negotiations are most likely to use the CAPM. A number of models have been developed to cater for the idiosyncratic risks resulting from market segmentation.

The Global CAPM

The progressive integration of markets means that investors can enter and leave markets with a reasonable certainty of the final value to be realised and incur minimum transaction costs in the mean time. Based on this principle of market integration, an investor can apply the global CAPM to an emerging market.

The global CAPM can be determined as follows:

Cost of equity = $R_{fG} + B_{LG} \times (R_{MG} - R_{fG})$

Where R_{fG} is the global risk-free rate, R_{MG} is the global market return, and B_{LG} is the local company beta, computed against the global market index.

The model assumes geographic diversification, which makes unsystematic risk disappear. The concept of global CAPM is plausible in developed markets where integration is high. However, emerging markets are at least partially segmented and the concept of global CAPM is not possible.

The Local CAPM

The local CAPM adjusts the standard CAPM for the perceived emerging markets' risks by incorporating a country risk premium.

The local CAPM equation is as follows:

Cost of equity = $R_{fL} + B_{LL} \times (R_{ML} - R_{fL})$

$R_{fL} = R_{fG} + R_C$

where R_{fL} is the local risk-free rate; B_{LL} is the local company beta computed against a local market index; and R_{ML} is the return of the local market.

R_{fL}, the local risk-free rate, is the composite of the global risk-free rate, R_{fG}, and the country risk premium, R_C.

The concept of a country risk premium is supported by several empirical studies that have shown that stock performance in emerging markets tends to be more closely linked to the local volatility of the economy than to the fluctuations and trends of the corresponding industry at an international level (Pereiro, 2002).

Adjustment of Local CAPM

Adding the country risk premium to the local CAPM is thought to overstate risk (Pereiro, 2002). The equity market performance is affected by business activities (companies' performances) of the country, as well as by the risk perception of the country, meaning that the equity market return is a product of business risks and country risk. Therefore, there is a need to harmonise the application of the local equity risk premium and the country risk premium when using local CAPM to avoid double counting.

The inclusion of the country risk premium without taking the impact of the country risk on equity market risk premium into consideration could result in double-counting risks. An alternative approach, of adjusting the local CAPM by reducing the amount of country risk premium, is proposed. Pereiro (2002) suggests that as much as 40% of volatility in equity market returns is explained by the country risk, with the rest being explained by pure stock market risk. Therefore, one must reduce the country risk premium used in the local CAPM by 40% to avoid double counting, because a significant part of the risk is already captured in the equity market risk premium.

Researchers, using data relating to 40 developed and emerging economies, were able to show that country risk explains, on average, about 40% of the volatility of equity market returns, with the remaining 60% volatility being explained by the normal equity markets volatility (Pereiro, 2002).

Therefore, to adjust for the potential double counting of risk, it is proposed that equity market risk, due to country risk, measured as the coefficient of determination between country risk (bond market) and the equity market risk, be excluded, as can be seen below:

Cost of capital = $R_{fG} + R_C + B_{LL} \times (R_{ML} - R_{fL}) \times (1 - R_i^2)$

where R_i^2 is the coefficient of determination of the regression between the volatility of the local company's returns and the volatility of bond yields. R_i^2 can also be seen as representing the amount of equity volatility that is explained by the country risk. Therefore, 1 - R_i^2 factor depresses the equity risk premium in order to alleviate the problem of double counting.

The Godfrey–Espinosa Model

Godfrey and Espinosa proposed an ad-hoc beta model to deal with emerging markets' shortcomings when faced by the classic CAPM (Pereiro, 2002, p. 112). The Godfrey and Espinosa model addresses the problem of double counting resulting from the fact that credit risk (country risk) also impacts on the equity market risk. The basic formula for the Godfrey–Espinosa is as follows:

$K_{EM} = Rf_{US} + R_C + BA \times (RM_{US} - Rf_{US})$

where K_{EM} is the required rate of return in an emerging market; BA is an adjusted beta measuring the relative volatility between the US market and that of the emerging market; and Rf_{US} is the US risk-free rate. RM_{US} is the US equity market return and R_C is the country risk premium.

BA is calculated as $\sigma_i / \sigma_{US} \times 0.60$, where σ_i is the standard deviation of the returns in the local market, and σ_{US} is the standard deviation of returns in the US equity market. The 0.6 factor is meant to alleviate the problem of overestimating risk because of double counting country risk.

Similar to the adjusted local CAPM discussed earlier, there is a possibility of double counting if emerging market risk is adjusted for in both risk-free rate by adding country risk, R_c, and in the equity market premium through the relative volatility adjustment. To reduce the impact of double counting risk, the equity market risk premium is adjusted down by multiplying the equity premium by 0.6

The Estrada Model

CAPM, like most financial models, uses volatility as the basis of risk. Estrada (2000), on the contrary, suggests considering only the downside risk, meaning that the measure of risk should consider only deviations that fall to the left of a given threshold. Estrada believes that investors are only concerned with the risk of bad outcomes, and do not associate risk with positive outcomes. The Estrada model takes as the risk measure the ratio between the semistandard deviations[10] of returns with respect to the mean of the emerging market returns and the semistandard deviation of returns with respect to the mean in the world market, with this factor replacing the conventional beta.

The Estrada model equation is as follows:

Cost of equity = $R_{fUS} + (R_{MG} - R_{fG}) \times RM$

RM is a risk measure that is defined as the ratio between the semistandard deviation with respect to the mean in a local market and the semistandard deviation of returns with respect to the mean in the world market (US), meaning that RM = beta (downside) = semideviation, as follows:

$$\text{Semideviation} = \sqrt{\frac{1}{n} * \sum_{r_t < \text{Average}}^{n} (\text{Average} - r_t)^2}$$

[10] This is a measure of dispersion for the values of a dataset falling below the observed mean or target value. Semideviation is the square root of semivariance, which is found by averaging the deviations of observed values that have a result that is less than the mean. The formula for semideviation is as follows:

$$\text{Semideviation} = \sqrt{\frac{1}{n} * \sum_{r_t < \text{Average}}^{n} (\text{Average} - r_t)^2}$$

Where:
n = the total number of observations below the mean
r_t = the observed value
average = the mean or target value of a dataset

Estrada (2000) considers that the semivariance of returns is a more plausible measure of risk for several reasons. First, investors only dislike downside volatility; second, the semivariance is more useful when the underlying volatility is asymmetric; and, third, the semivariance combines, in one measure, the information provided by two statistics, variance and skewness, thus making it possible to use a one-factor model to estimate required returns (Sánchez et al. 2007). Estrada concludes that, in emerging markets, the investor is compensated for unsystematic risk (unlike in the developed markets) because it is not diversifiable.

The Erb−Harvey−Viskanta (EHV) Model

Erb, Harvey and Viskanta (1996) developed a model that is based on credit risk ratings, ignoring the stock market. The EHV model discards the use of beta as an appropriate measure of emerging market risk and, instead, proposes a log-linear model that is based on the logarithm of the country credit rating (in terms of which, in order to capture the potential nonlinearity at low credit ratings, the higher credit ratings are associated with lower average returns). Credit rating incorporates such country risk variables as political, financial and economic risks. The advantage of using credit risk estimates is that they are forward-looking. Credit rating is forward-looking because it is an examination of the capability of a country or corporate to pay its debt in future.

The Erb−Harvey−Viskanta equation is as follows:

$$CS_{i,1+t} = \gamma_0 + \gamma_1 \times \ln(CCR_{it}) + \varepsilon_{i,\,t+1}$$

where CS is the semiannual return in USD for country i, CCR is the country credit rating, t is measured in half-years and epsilon is the regression of residual.

The Goldman Sachs Approach

Mariscal and Hargis (1999) of Goldman Sachs (GS) proposed a market-driven risk quantification model that is based on the CAPM to reflect emerging markets risk. The discount rate is tailored for USD-dominated investors evaluating emerging markets investments.

The GS equation is as follows:

Return on equity = Rf + [(Re + Rc) + β x (Se / Su) x Eu x (1 – crr(S,B))]

where

Rf	Long-term US Treasury Bond
Rc	Country risk spread (SOT for sovereign, USD-denominated emerging market bond of similar maturity)
Re	Extra component of the spread due to company characteristics (which can be either positive or negative)
B	Beta of the company on the local market index (bottom-up industry beta)
Se	Daily (relative) volatility of the emerging stock market index
Su	Daily (relative) volatility of the US stock market index
S	USD-denominated stock returns
B	USD-denominated bond returns

There are few reliable local equity risk premiums for emerging markets; therefore, the US equity risk premium (Eu) is used, adjusted for a volatility factor (Se/Su). To avoid double counting, due to the fact that the two components of the equity market risk premium (sovereign spread and equity market volatility) are not independent of each other, an adjustment is made for the correlation of the USD-denominated (emerging market) stock and bond returns. A country risk (Rc) and a company specific spread (Re) are added to derive the discount rate.

The Solomon Smith Barney (SSB) Approach

Akaydin and Zenner (2002) of SSB proposed a model based on the global CAPM to account for emerging market risks. The SSB model adds to the traditional CAPM country risk premium. However, because different industries are affected differently by the emerging market risk, SSB is adjusted for the impact of the industry on the country risk. Unadjusted political risk premium equals the spread between USD sovereign bond and US Treasury, controlling for maturity

differences and special features of the issue. This basis is, to equal weight, adjusted by the following three risk factors:

- Access to capital markets (measured by γ1): As larger listed firms are likely to have fully diversified investors, they tend to be more concerned with systematic risk, which is captured by the beta,
- Susceptibility of investment to political risk (measured by γ2): Cash flow loss from expropriation is most relevant for those industries that are highly susceptible to political intervention.
- Importance of investment for the investing company (measured by γ3): If the investment constitutes a major part of the firm's assets, then political uncertainty originating in the host country significantly affects the firm's risk profile.

$R_{Equity} = R_f + \beta_i \times MRP_{Global} + [\gamma_1 + \gamma_2 + \gamma_3]/30 \times PRP$

R_f	Risk-free rate of the home country
β_i	Global CAPM beta for company i corresponding to the optimal structure and the industry of investment
MRP_{Global}	Global equity risk premium
γ_1	Access to capital markets score (from 0 to 10, with 0 indicating best access to markets)
γ_2	Susceptibility of the investment to political risk (from 0 to 10, with 0 indicating least susceptibility to political risk)
γ_3	Importance of the investment for the investing company (from 0 to 10, with 0 indicating that the investment constitutes only a small portion of the firm's assets)
PRP	Unadjusted political risk premium

The Damodaran Approach

Damodaran (2003) suggests that each company should be allowed to have an exposure to country risk that is different from its exposure to all other market risk. The conventional approach of adding country risk premium to the discount rate assumes that the sovereign

credit rating is equal to the local companies' exposure to country risk. Damodaran suggests that this is not necessarily a case in point, being that multinational companies that export most of their products from a host-emerging country to the developed countries. The suggestion is that such a company could be strong enough to survive the host-emerging country's sovereign credit shock.

Damodaran (2003) introduces the term lambda (λ) as the measure of a company's exposure to country risk. Like a beta, a lambda is scaled around one, with a lambda of one indicating a company with average exposure and a lambda above or below one indicating above or below average exposure to country risk.

Revenue generation can be used as a measure of exposure by considering where the company obtains most of its revenue. For example, a company that derives 30% of its revenues from South Africa should be less exposed to South African country risk than is a company that derives 70% of its revenues from South Africa. Production facilities location is another key determinant, since turmoil in a country will disrupt the production schedule of the company. Taking insurance against political risk will also reduce the company exposure to country risk.

The lambda of a company can be estimated using one of the following three variables: measure based entirely on where a company generates its revenues; measure based upon accounting earnings in the most recent period; and measure that uses stock prices, similarly to how conventional beta estimates do, to estimate company risk exposure (Damodaran, 2003).

The model for incorporating the country risk premium in the discount rate, according to Damodaran (2003), is shown below;

$E(Rp) = Rf + \beta p[E(Rm) – Rf) + \lambda CRP$

where:

$E(R_p)$ = expected portfolio P return

R_f = risk-free rate

β_p = the beta of portfolio P against market M

$E(R_m)$ = the expected return of market M

λ = factor measuring the amount of country risk, which is not diversifiable

CRP = country risk premium in percentage points

In general, we would like to see the dimension of all variables, in regard to whether they are in percentages, percentage points, and others (which also applies to the previous formulas).

The Godfrey and Espinosa model

Stephen Godfrey and Ramon Espinosa (1996) proposed a methodology for calculating the cost of equity for investments in emerging markets that incorporates country risk adjusted with a beta factor. They argue that there are three major types of risk that affect most developing country investments: political or sovereign risk; commercial or business risk (as reflected in the volatility of the local business environment); and currency risk. In the Godfrey and Espinosa model, sovereign risk is assessed by observing the yield spread on sovereign bonds denominated in a common reserve currency, such as USD. Business risk is measured by comparing the volatility of local equity markets to the volatility of the US market.

The currency risk is accounted for by converting local currency cash flows into USD, eliminating the currency risk at an appropriate exchange rate, and then discounting those USD cash flows at the appropriate, risk-adjusted USD discount rate, as can be seen below:

Equity discount rate = [RF_{us} + credit spread] + [β x (US equity premium]

where:

RF_{us} = US risk-free rate;

β = adjusted beta = σ_i / σ_{us}

The beta accounts for the difference in the equity risk between the emerging market and the US market. This risk is not captured in the credit risk that is used as a proxy for country risk. Godfrey and Espinosa (1996) argue that total risk represents the relative risks of investing in different countries better than do discount rates based on betas. The two dimensions that require incorporating when establishing discount rates for emerging markets are credit quality,

which captures sovereign risks, and business volatility, which reflects primarily the commercial risk of operating in a country. The model accounts for the sovereign risk in country risk premium that is added to the risk-free rate and the business/equity risk in the adjusted beta.

The Soenen and Johnson Model

Luc Soenen and Robert Johnson (2008) proposed the use of an adjusted CAPM to determine the cost of equity in an emerging market, adjusting for country risk and the lack of integration of the local equity market with the US stock market.

Soenen and Johnson (2008) suggest that political risks, which include expropriation, civil war, unrest, and currency inconvertibility, are reflected in the yield spreads between yields of USD-denominated sovereign bonds issued by the foreign government and the yield of bond-issued US Treasury of the same maturity.

The model also proposes an additional risk factor, which accounts for the differences in the equity markets of the US and the target emerging market. The equity market risk is expressed as a beta factor, which is calculated by regressing US stock returns (independent variable) against the emerging market stock return.

In summary, the standard CAPM is modified to incorporate an estimate for political risk as well as a measure of the co-movement between the foreign equity market and the US stock market, as can be seen below:

Cost of equity = $R_f + pr + (\beta_{project} \times \beta_{FM, US})$ MRP

where, R_f = US risk-free rate

pr = political risk premium

$\beta_{project}$ = beta coefficient, as if the project were domestic to the US

$\beta_{FM, US}$ = beta coefficient as a measure of the co-movement between the foreign and US stock markets

$\beta_{FM, US} = \rho_{FM, US} \times (\sigma_{FM} / \sigma_{US})$, where ρ is the correlation between foreign market and US equities

σ = the standard deviation of equity returns in the two markets

MRP = the equity market risk premium of the US equity market.

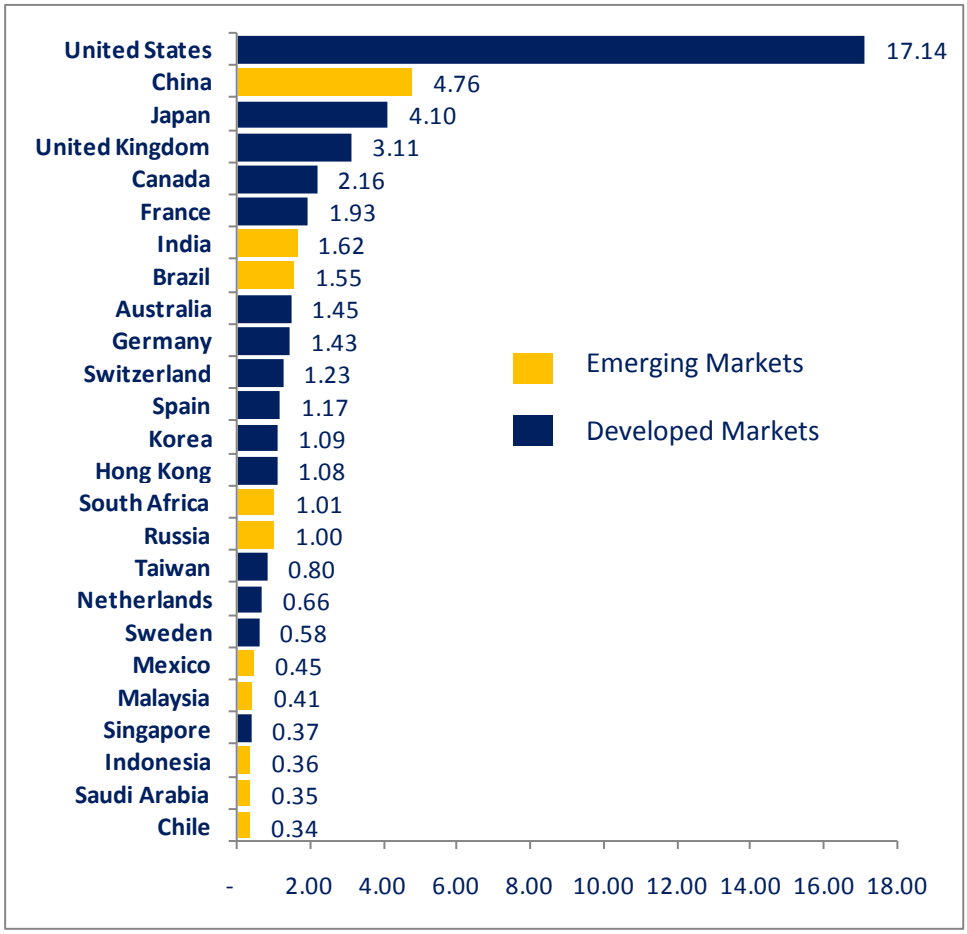
2.5.4 Market Risk Premium

One of the central terms in the asset pricing models is market equity risk premium, which measures the premium that investors expect to earn above a risk-free investment, such as a government. Therefore, equity market risk premium is expressed as an extra return that an investor expects to receive as compensation for the additional risk that is associated with investing in a risk-free bill or bond of a country.

Investment risk in a market can be defined in two dimensions: credit quality and business or equity volatility. Credit quality is measured as the sovereign bond yield. The risk of doing business in a country is reflected in the volatility of the return on the investment, with the risk generally being measured as the volatility of the equity market concerned (Godfrey and Espinosa, 1996). The risk premium for an emerging market is the difference between the yields or volatility of the target market and that of the US market. However, the sum of these two premia is more than the emerging market equity premium, because some of the risks in the two measures are from the same source, which results in double counting.

In addition to being significantly the biggest market in the world, making up 41% of world equity capitalisation, the US market is also the most liquid. The US equity market risk premium was estimated using data provided by Ibbotson, which reflected the difference between the ten-year US Treasury bond yields and the average return on the US equity market

Figure 4: World Ranking of Markets by Capitalisation, 2010 (USD Trillion)



Source: S&P, 2011.

The key decisions that one needs to make when estimating the equity market risk premium include the following:

1) Source of data – the two approaches are:

   a) Historic data of stock and bond returns, in terms of which the assumption is that history is a predictor of the future. Uncertainty is eliminated by using the longest possible period of historic returns to calculate the market premium concerned.

   b) Survey of industry experts, which is considered to be forward-looking, due to it focusing on expected future premiums.

2) Mean used:

There are two ways in which to compute the average returns of stocks and bonds − the geometric mean or the arithmetic mean.

a) Geometric mean[11] looks at the compounded return and is useful in analysing the annual return achieved by an investor, assuming that the investment will be held over a period longer than a year, such as over a five-year investment period.

b) Arithmetic average returns measure the simple mean of a series of annual returns. If one assumes that annual returns are uncorrelated over time, and the objective is to estimate the following year's risk premium, the arithmetic average is the best and most unbiased estimate of the premium (Damodaran, 2010). Therefore, the arithmetic average works well when looking at shorter investment periods than the life of the investment.

According to Damodaran (2010), there is no agreement among academics and industry experts on which average produces a better estimate. Due to the asset pricing model considering return on investments over a long period, the geometric mean is used in the current report.

3) The local equity market versus the world equity market (US equity market). It is argued that most emerging markets do not meet even the requirements for the 'weak form' of market efficiency, and therefore cannot be used to calculate equity premia or a company beta. The

[11] The average of a set of products, the calculation of which is commonly used to determine the performance results of an investment or portfolio. Technically defined as 'the 'n'th root product of 'n' numbers', the formula for calculating the geometric mean is most easily written as:

$$\{\text{Return } 1 \times \text{Return } 2 \times \ldots \text{Return } n\}^{\frac{1}{n}}$$

key differences between the developed equity markets and emerging equity markets are discussed below:

a) Level of maturity: The US market is preferred, because it has a much longer history than does any other index in the world, and is the most diversified, liquid and transparent stock market.

b) Levels of integration: Developed markets are well integrated with one another. Due to the integration of this market's investors, which are predominantly large institutions, there is the ability to move funds across such markets at no extra cost. The emerging markets have significant investment barriers that limit the ability of an international investor to investment and that add extra costs to the process.

c) Risk-free rate: The bonds that are issued by the governments of most emerging markets cannot be considered risk-free, because of the sovereign risks that were highlighted earlier. In addition, a number of emerging markets lack developed capital markets where government bonds and other financial instruments can be traded. These shortcomings make it difficult to estimate the equity premiums of such markets.

2.6 Valuation Principles

Valuation is the process of determining the value or the current worth of an asset or company. The precise definition of value is an important aspect of the valuation process, because the value depends on *what* is being valued, for *whom*, for *what* purpose and *how* (Pereiro, 2002).

2.6.1 Features and Status of the Entity under Appraisal (What is Being Valued)

The specific characteristics of the entity that influence the value of the entity include the following:

- The legal form, name and place of incorporation of the entity are contingent on specific legal and tax regulations.
- Direct versus indirect rights and obligations of the buyer regarding an asset will require different valuation methods.
- Company size influences the business's economic value, with large companies tending to be worth more because they are less vulnerable to macroeconomic uncertainties. Such companies are also likely to have a number of products and trade in a number of markets, with the diversification concerned making them less exposed to the market's volatility. In contrast, small companies tend to have few products and limited markets, which make them vulnerable to market changes.
- Broadly speaking, a publicly held company is worth more than a non-quoting, private company because the former is more liquid.
- In terms of control versus minority shareholding, a minority stock is less valuable than is a controlling stake of the same company, because it does not carry as many privileges as does the latter.
- Regarding developed versus emerging economies, the nature of the economy in which a company operates affects its value. The latter markets tend to be less economically stable, and tend to suffer more in the event of global economic downturn, partly because most of them are dependent on their exports to the developed countries.
- As far as mature versus emerging industry goes, ventures starting from scratch are normally more prone to failure than are long-established companies.

- Clearly, in terms of operating conditions, a company that is on the verge of closing is worth less than a company that is on a more solid footing, with the following values being different;
    - Value as a going concern;
    - Value as a grouping of assets;
    - Value of an orderly disposition; and
    - Value of forced liquidation.

2.6.2 End Customer of the Appraisal Process

The value of the company also varies depending on the customer for whom that value is being appraised. There are three types of buyers: the venture capitalist; the strategic investors; and the financial investor, as outlined below:

- The venture capitalist: The goal of a venture capitalist is to provide initial financing for transforming a business with uncertain or poor results into a target that is more likely to be attractive to a strategic buyer.
- The strategic investor: The goal of such an investor is to grow by means of acquisition(s). The investor operates in the same markets as the target company, with the objective of their investment being to significantly improve the productivity and performance of the acquired firm. Typically, the investor has an in-depth knowledge of the target's operations, the features of the market, and the production and distribution technologies, to be able to compete successfully with others.
- The financial investor: Such an investor invests in the stock of corporations already quoting in the public financial markets, taking a minority interest in the entity which allows them to buy and sell their shares relatively quickly. The investor has no control over the company, in contrast to the other two types of investors mentioned above.

2.6.3 Definition of Value

Intrinsic value, which is also referred to as the fundamental value of a firm, is the figure arrived at by an unbiased, qualified appraiser. The value is based on qualitative and quantitative analysis of the economic value that the firm will generate in the future. Intrinsic value is seen as the present value of the free cash flow that the company is deemed to be able to generate in the future (Pereiro, 2002).

Fair market value is also referred to as extrinsic value. The Canadian Institute of Business Valuators (CICBV) defines fair market value as the highest price that is available in an open and unrestricted market between informed and prudent parties, acting at arm's length and under no compulsion to act, expressed in terms of money or money's worth. Extrinsic value emerges as an equilibrium price between the supply of the asset and the demand that is expressed in the financial markets via the stock market.

3. DATA AND METHODOLOGY

3.1 Sources of Data

The current study's objective is to evaluate the different approaches and models used by both acquiring companies and vendors (targets) to value real investments in emerging markets, using South Africa as a reference. The study intends to put forward a model that works well when valuing emerging markets' real investment that can be used on emerging market-based companies.

Data for emerging markets country risks analysis and evaluation were collected from various sources, including the following: the United Nations Conference on Trade and Development (UNCTAD); credit rating agencies S&P and Moody's; Ibbotson; Euromoney; World Bank; the International Monetary Fund (IMF); the International Finance Corporation (IFC); Transparency International; the ICRG (PRS Group); The Economist; the EIU; Professor Aswath Damodaran's website; Goldman Sachs; professional service firms, such as Ernst and Young and PWC; Reuters' website and Bloomberg's website. Data from the above-mentioned sources are updated regularly and are used by researchers, investors and analysts to evaluate country risks (Sabal, 2002)[12].

A comprehensive literature review was conducted on work that has been done in the field of emerging market company valuation and the concept of country risk. A survey was intended, but not conducted, with industry experts involved in cross-border transactions, such as with financial advisers to investigate how they conduct valuations, in particular the impact of country risk. The survey was not conducted because there was insufficient time to collate the data. Companies were also generally hesitant to share private information regarding their investment analyses, which posed a challenge for this part of the study. Some companies consider the valuation approach as a part of their strategy and sharing this information would put them at a disadvantage during their next deal negotiations.

[12] Other sources included company websites, industry journals, analysts' research reports, and government institutions' websites.

In future studies on this topic, the survey could be made more acceptable to companies by focusing on model(s) that they used for valuation – and which exclude any actual numerical inputs.

The study compared the actual deal price with fundamental/multiple/real options valuation of the companies involved in transactions, using different valuation methodologies.

3.2 Market Integration

One proposition that was tested in the current study is the level integration across the world equity markets, in particular the integration of the emerging markets with the rest of the world markets. Capital markets are considered fully integrated if an international investor can freely move in and out of the market, without incurring extra transaction costs. The intuition of the CAPM framework is that world capital markets are fully integrated and that the assets within a particular country are rewarded in terms of their risk and return contribution to a well-diversified world portfolio.

Integrated international capital markets tend to be highly correlated and to have similar risks and returns profiles. Therefore, the extent of a given country's market integration can be determined by whether the beta of its equity market index versus the US index or the MSCI world index is materially different from 1.0 (Soenen and Johnson, 2008). The determination concerned should pick up on whether a country has the same (or higher/lower) systematic risk compared to the US index or to the MSCI world index.

According to a study conducted by Sabal in 2000, the data suggested that public stock returns of developing and developed countries were not highly correlated (Sabal, 2002). This study conducted a similar test,[13] considering the amount of time that has elapsed since his study was conducted.

[13] The study tested the correlation of different emerging equity markets against the US S&P 500 index for a period of up to 10 years, depending on the availability of data.

To test the hypothesis that public stock returns of developing and developed countries are not integrated, the study calculated the correlation and beta of a number of emerging equity markets versus those of the US equity markets. The equity return data[14] used in the study were sourced from Bloomberg for 8 developed countries and for 24 emerging market countries (see Appendix P for the list of countries concerned). The monthly returns of the equity markets were regressed against the US S&P 500 index to derive the respective correlation and beta data. Data were collected from 1998 to 2010, and, for some indices, the data were only available for a shorter period, which was post-1998. 1998 was chosen as the cut-off date in order to include data from the 2001 world financial crisis in the analysis. Part of the data used (the 2008 price data) is contained in Exhibit G.

3.3 Measure of Country Risk

Traditionally, the country risk premium is measured as the yield spread between bonds issued by an emerging market country in a strong currency (such as the USD or the Euro) and a bond issued by a developed country that is considered a default-free bond, such as the US Treasury bond (Damodaran, 2003). By using bonds denominated in the same currency, the currency impact is eliminated, with the yield differential reflecting the credit (or sovereign) spread.

Due to the country premium being directly derived from capital market prices, it can be seen as a representation of the consensus view regarding the level of emerging market country risk.

The three approaches used to estimate the country risk premium in the current study are discussed below.

Spread over US Treasury Bond Yield

The first approach applied was to estimate the country risk premium using bond yields differentials between a US Treasury 10-year bond and a number of emerging market sovereign bonds issued in USD and closest to the 10-year maturity. The key issues that were taken into

[14] The equity data used in the study were the indices data of the respective equity markets.

account when estimating the country risk premium using this methodology were that the bonds are:

- denominated in the same currency to avoid currency/inflationary mismatches;
- of identical maturity to avoid problems associated with the yield curve; and
- of similar liquidity to avoid problems associated with thin trading.

JPMorgan Emerging Markets Bond Index Plus (EMBI+) Sovereign Spread

JPMorgan Emerging Markets Bond Indices Plus (EMBI+) tracks total returns (capital growth plus dividend) for external-currency-denominated debt instruments of the emerging markets: Brady bonds; loans; Eurobonds; and USD-denominated external debt instruments.

The Sovereign Yield is a rate that refers to the EMBI+ portfolio's yield to maturity obtained after stripping out all credit enhancements (principal and interest collateral and interest guarantees for bonds with such characteristics contained in the EMBI+). The idea is that yield that remains after stripping all the enhancements reflects the true sovereign credit risk of the instrument. The yield-to-maturity is calculated as the discount rate that equates the total NPV of the sovereign risk cash flows to zero. It is quoted in percentage terms. The Sovereign Spread is EMBI+ portfolio's spread over the theoretical US zero-coupon curve, which equates the total NPV of the sovereign risk cash flows to zero.

The sovereign spread is assumed to represent the risk level of the sovereign government. JP Morgan publishes the EMBI+ spreads for a number of emerging market countries. For this study, we will also use the EMBI+ spreads as calculated by JP Morgan and published in July 2010 in the Emerging Markets Bond Index Monitor to represent spreads of different countries.

Derived Credit Rating and Sovereign Spread

As not all emerging countries have issued international bonds (bonds issued in foreign currency/USD), the following approach was used to estimate the country risk premium:

- An independent measure of risk was obtained from the following rating agencies: Moody’s, S&P and the ICRG.

- The risk rating was converted into numerical percentages in order to develop a regression curve. The AAA was equal to 100% and there was a 5% interval per notch going down the ratings.
- The numerical ratings were then regressed against sovereign default spreads for the countries where the sovereign information was available, in order to develop a regression curve, so as to be able to derive spreads from a rating.
- The credit rating / default spread regression curve was used to infer an appropriate credit spread for the different countries concerned.

3.4 Equity Market Risk Premium

The challenge in determining the equity risk premium in emerging economies is that most of their stock markets do not display even the weak form of market efficiency.[15] Most emerging equity markets have a short history of existence, which makes it difficult to estimate equity market risk premiums. Analysts recommend that a US equity market be used as the basis for determining the USD equity market risk premium.[16]

The following approach was adopted in the current study:

- The US equity market was used as the proxy for the world equity market. The market concerned is the biggest, accounting for more than 41% of world equity market capitalisation (S&P Factbook 2011) and is the most active capital market in the world.
- The average return for the equity market was calculated as the geometric mean of the annual returns of the US equity market for the period 1926 to 2010.

[15] This means that the local stock markets can be used to determine the expected equity return or a company's beta.

[16] The equity market risk premium is the excess return that an individual stock or the overall stock market provides over a risk-free rate. The excess return compensates investors for taking on the relatively higher risk of the equity market. The size of the actual premium varies as the risk in a particular stock, or in the stock market as a whole, changes; high-risk investments are compensated with a higher premium.

- To account for the high business volatility and for the low correlation with the US equity market in the emerging markets, the US equity market premium derived was adjusted, using the volatility differences between the US and a particular emerging market.

Data for calculating US equity market returns were obtained from the *Ibbotson SBBI 2011 Classic Year Book, Market Results for Stocks, Bonds, Bills, and Inflation 1926–2010*.

We calculated the equity risk premium as of 2006, which was the last year-end before the deals being analysed were announced. Therefore, the equity premium was calculated using the returns data from 1926 to 2006.

3.5 Beta Calculation

Estimating the beta of a company can be done by one of two methods. The standard approach is to estimate, or to look up, the correlation between the company's return against the market index return. The key issues with this approach are the choice of market index and the period concerned.

One of the biggest flaws of most emerging equity markets is that they are dominated by the stocks of a few companies. This flaw means that the equity indices of the markets concerned are not comprehensive enough to be used for beta calculation. The beta calculated using such market indices compares the target company's rate of return with that of a few big players in terms of the market's return.

The other approach is to use the betas of developed market (US) comparable companies, adjusting for leverage. A US company's beta is calculated by correlating it's return against the US equity market index return. This was the approach used in the current research study**. The b**eta data of the data of 45 comparable companies from the target industrial sector was obtained from the Bloomberg website. The Bloomberg beta is for 60 months on a monthly basis.

The local (South Africa's Johannesburg JSE) market beta was calculated using two different approaches. The first approach was to use the local comparable companies betas, calculated against the Johannesburg JSE All Share Index by Bloomberg. The second approach was to

directly calculate the beta by regressing the target companies' return against the Johannesburg JSE All Share Index return (the independent variable).

See Exhibit H for the comparables beta.

3.6 Emerging Markets Adjusting Factors

The approaches shown in Table 6 below were used to derive the factors used in the different methodologies to adjust for emerging markets risks when determining cost of equity.

Table 6: Emerging Markets Asset Pricing Models - Country Risk Factors

Methodology	Factor	Approach
Global CAPM	No country risk adjustment	
Local CAPM	Uses local equity market risk premium and country risk premium	The local equity premium calculated using Johannesburg JSE returns and the South African government 10-year bond yield
Adjusted Local CAPM	Ri^2 = amount of equity volatility that is explained by the country risk	Regressed the daily volatility of the returns of the JALSH Index and the GSAB10YR Index for the period 1998 to 2008 to establish the R^2
Godfrey–Espinosa Model	BA = σ_i / σ_{us} x 0.60 = adjusted beta	Standard deviation of the US (S&P 500) index and the South African (JSE All Share) index calculated using daily return data for period 1998 to 2008
Estrada Model	RM = beta (downside) = E{[min(Ri - μi),0]*[min(Rm - μm),0]/[min(Rm - μm),0]^2	Ratio of semistandard deviation of S&P 500 index and South Africa JSE index, data for between 1998 and 2008
Erb–Harvey–Viskanta Model	Semiannual returns & country credit risk rating	Semiannual returns of selected countries calculated for period 1998 to 2008 Country credit rating for the selected countries obtained from ICRG for June 2008 Returns regressed against the credit rating scores to derive returns regression equation See Exhibit R for details.

Methodology	Factor	Approach
Goldman Sachs Approach	Se/Su = daily volatility of local/US market index Re = extra component of spread, due to company characteristics Crr (S,B) = correlation of bond returns and equity return	Se/Su – for local market volatility used JSE and for US market used S&P 500 data for 1998 to 2008 Re = used % international sales revenue and business assets to calculate decrease in country risk exposure for companies concerned Used daily JSE equity return and daily returns of South African government (10 year) bond for period 1998 to 2008 Correlation calculated using Excel software
Salomon Smith Barney	γ1 : access to capital markets γ2 : susceptibility to political risk γ3 : importance of investment	γ1: full access to capital market for three investors in the study – assigned score of 0 out of 10 for both retail and banks γ2 : Banks are controlled to some extent by the central bank and the government – assigned 5 out of 10 for banks and 0 out of 10 for retail γ3: Size of investment as a percentage of company's market capitalisation and level of investment used for this factor. For bank investor, the investment was relatively small, whereas for the retail investor the investment was of significant importance. Retail factor 5 out of 10, with 0 for banks
Damodaran Model	λ = companies' revenue not affected by country risk	Companies' exposure to exports. None of the target companies had any significant international business in the form of exports or operations.
Godfrey and Espinosa Model	Adjusted country beta = σ_i / σ_{us}	Standard deviation of the US (S&P 500) index and South African (JSE All Share) index was calculated using daily return data for period 1998 to 2008

Methodology	Factor	Approach
Soenen and Johnson Model	Country beta = $\beta_{FM,US}$	Regressed the daily returns of the South Africa (JSE All Share) index against S&P 500 index to derive the beta

3.7 Cost of Debt

To estimate the cost of debt for Absa, Standard Bank and Edcon, we first derived the implied ratings for the companies using the company data and the Moody's scale. The factors that were used to rate the three companies are cost efficiency and profitability. The detailed of the Moody's scale is shown in Table 18.

The credit spreads for three companies were estimated using 10-year corporate bonds issued by the US banking and retail sector companies with similar credit ratings.

3.8 Inflation Differential

The cost of capital estimated was done in USD. Applying it in other currencies required an adjustment for the long-term inflation differential between the US and the target country. In the current study, as the cash flows concerned were in South African Rand (ZAR), we used the yield curve of the US and the South African governments to calculate the inflation differential. Ten-year maturity bonds were used as the basis.

3.9 Diversifiable Risks – Adjusting Cash Flow

An alternative way of handling country risk is to adjust the cash flow of an investment for the potential risk impact. The approach concerned requires a comprehensive analysis of those factors that would impact on the project and on the development of mitigating plans. The factors can be divided into macroeconomic factors and industry factors. Possible scenarios of the factors and their impact on cash flow can be developed. The scenarios are weighted to derive the average cash flows used in the valuation. According to financial theory, risks that are diversifiable must be accounted for in the cash flow of the investment and differences in the assessment of these risks can lead to very different valuations. However, even the best analysis

and modelling cannot anticipate all possible risks, especially political ones, as seen in Malaysia during the Asian crisis, when the government unexpectedly imposed capital controls in the middle of some financial institutions' transactions (Sabal, 2002). The challenge with this approach is how to quantify the potential impact on the cash flow.

3.10 Testing the Valuation Framework

The different asset pricing models and the valuation approach are expected to result in different valuation outcomes. The current study evaluates the different emerging markets valuation approach and the asset pricing models by applying them to historic transactions and comparing the outcome with the deal prices of the transactions. Three transactions were selected for the study, using the availability of key data for valuation as the selection criteria. The transactions were Absa / Barclays, Standard Bank / Industrial and Commercial Bank of China (ICBC) Ltd, and Edcon / Bain Capital deals. An overview of the above transactions is given below.

Absa Bank Ltd Transaction

The offer valued Absa Bank's 60% stake at ZAR 33bn (GBP 2.9bn) and Absa Bank's total outstanding share capital at ZAR 54.62bn (GBP 4.8bn). Under the terms of the agreement, Barclays initially acquired a 32% stake via a scheme of arrangement, and then launched a public tender offer for up to a further 28% of the outstanding share capital.

The offer price represented a premium of 3% to the ZAR 80 closing price on 6 May 2005, on the last trading day prior to the firm announcement of the offer. Furthermore, the offer represented a premium of 8.5% to the ZAR 76.01 closing price of Absa on 22 April 2005, the last trading day prior to the detailed cautionary announcement of the offer, and a premium of 36.4% to its ZAR 60.5 closing price on 22 September 2004, the date prior to the first cautionary announcement in relation to the transaction.

The acquisition is in line with Barclays' intention to expand its global product and international retail and commercial banking businesses in markets outside the UK. The acquisition is expected to speed up Absa's growth strategy in South Africa and in the rest of the African

continent. Barclays intends to finance the transaction from a combination of available resources and preference share finance, which will result in a reduction in Barclays Tier 1 ratio of approximately 60 basis points from the existing Tier 1 capital ratio of 7.6%, as at 31 December 2004.

The number of outstanding shares at the time of the transaction announcement was 655m.

Standard Bank Ltd Transaction

ICBC, the listed Hong Kong-based banking group, acquired a 20% stake in Standard Bank Group (SBG) Ltd, the listed South African bank, for a cash consideration of ZAR 36 671.6m (USD 5 413m). Under the terms of the agreement, ICBC acquired 304.87m shares, representing a 20% stake in two transactions. The first 152.4m shares were acquired from the shareholders at a price of ZAR 136 (USD 20.07) per share, and the second transaction SBG issued 152.4m new shares to ICBC at a price of ZAR 104.58 (USD 15.43) per share. ICBC funded the transaction from its internal resources.

The acquisition allowed both the banks to grow globally, especially in the emerging markets around the world. ICBC gained access to SBG's corporate and investment banking and personal and business banking services and its customers on appropriate commercial terms.

The number of outstanding shares at the time of the transaction announcement was 1 220m

Edcon Ltd Transaction

Bain Capital Limited Liability Company (LLC), the US-based private equity firm, acquired Edgars Consolidated Stores Ltd, the listed South Africa-based clothing, footwear and textiles retailing group, in 2007.

Each Edgars' shareholder received ZAR 46 (USD 6.48) in cash per ordinary and ZAR 2.00 per preference share held, valuing the entire share capital at ZAR 26bn (USD 3.6bn), 566.134m ordinary shares at ZAR 46 (USD 6.38) per share and 0.15m preference shares at ZAR 2 (USD 0.28) per share. The offer represented a premium of approximately 15.29% over Edgars' closing

share price of ZAR 39.9 (USD 5.52) as of 7 February 2007, the last trading day prior to the official announcement.

The number of shares outstanding was 566m.

Valuation of Target Companies

The three South African companies that were targets in the above deals, namely Absa Bank Ltd, Standard Bank Ltd and Edcon Ltd, were valued by applying the models being evaluated in the current study. The approach proposed by Pereiro was adopted for the current study to compute synthetic company values[17] for the three targets (Pereiro, 2002);

- The cash flows for Absa, Standard Bank and Edcon were estimated for a period of 5 years, with, from the sixth year, the cash flow being assumed to have a constant growth, with the cash being used to calculate terminal value. The valuation date is the date of the last audited results before deal announcement, with the businesses being assumed to operate into perpetuity.
- The cash flows, which were forecast in the ZAR, were adjusted for currency corrections.
- The 11 asset pricing models being evaluated in the study, both the CAPM-based and the non-CAPM based, were used to value the target companies.
- The three companies were also valued using multiples valuation, namely the price/earnings ratio and the price / book value ratio (BVR).
- The following unsystematic risk adjustments were made, depending on the method used for computing cost of capital;
    - ✓ Minority discount: The discount is one that is applied to the value of a company share when the investor is only acquiring a minority interest in a company, and will have little influence over how the company is run.

[17] Synthetic company value is the notional valuation of a company derived using a combination of valuation methodologies.

- ✓ Marketability or liquidity discount: The discount is one that is applied to shares of privately held companies that do not trade in public markets and which may be difficult to sell without incurring a significant discount.

- The final value of the company was reported.

Evaluating the Valuation Frameworks

The synthetic values of the three companies concerned, namely of Absa Bank, Standard Bank and Edcon, computed using the above approach, were compared to the actual prices paid for an interest in the companies. The assumption made in the study was that the prices paid for an interest in the three companies were a fair market value for the companies, as at the valuation date. The following methodologies evaluation approach was used:

- **Accuracy methodology:** The methodology calculated the absolute difference between the company valuations obtained using the different approaches and the price paid. The difference was used to measure the accuracy of the methodology, with the smaller the difference, the more accurate the approach concerned.

- **Negative or positive bias:** The premium or discount was used to establish whether the methodologies generally assumed lower or higher emerging country risk premia compared to the valuation done by the acquirers of the three target companies.

- **Feasibility of the methodology:** The number of variants and complexity of the methodology were used as a measure of the feasibility of the valuation framework.

4. RESULTS AND ANALYSIS

4.1 Results and Analysis Contextualisation

The objective of the current study was to evaluate methods and models that are used to value emerging markets investments; in particular, the study investigated the role played by the country risk premium in the valuation process. In this research study, we developed cost of capital based different asset pricing models that have been developed for the emerging markets. The process included derivation of all the variants of the different models[18].

The cost of capital derived from using the different models was used as the discount rates to value the Absa Bank, Standard Bank and Edcon immediately prior to their respective transactions. The results of the valuation process were compared with the prices that were paid for the companies at the time, in order to evaluate the significance of the methodologies to the valuation of the three companies concerned.

This chapter, which provides an insight into the results and the structure of the analysis used in the study, is presented as follows:

- **Market integration** – In integrated capital markets investors are able to move investments across markets at no extra transaction cost compared to the costs involved with transactions conducted within a country. In fully integrated markets, a specific country risk is irrelevant in the asset pricing model, because it can be diversified away. However, the proposition is that emerging markets are either partially or completely

[18] The study did not test for non-stationarity of the market returns data, therefore assumed random data. However, the emerging market returns are likely to non-stationary and future research should test the data for non-stationarity (Harvey, 1994). Asset pricing models assume that market returns are stationary data. Using non-stationary time series data in financial models produces unreliable and spurious results and leads to poor understanding and forecasting. The solution to the problem is to transform the time series data so that it becomes stationary.

segmented,[19] and, therefore, one cannot benefit from diversification resulting in full exposure to country risk.[20] The hypothesis that is proposed and that requires testing is that emerging markets are segmented. To test this hypothesis, we used the betas of the emerging markets against the US equity market, with significant difference of the betas from 1 being taken to mean that the markets concerned are segmented. The other measure of integration was the correlation between the returns of the emerging markets and the US equity market returns. For segmented markets, the asset pricing models must take into account the impact of country risk, because such risk is not fully diversifiable.

The results present both the betas and correlation factors of the emerging markets and the selected developed markets.

- **Country risk** – The general theme of emerging markets valuations revolves around the adjusting of the asset pricing models for the country risk, because the risk is considered non-diversifiable. The country risk is expressed as a premium above the developed market risk-free rate of return. The country risk premium is typically measured as the spread between an emerging market country USD-denominated sovereign bond and a US Treasury bond yield. Considering that a significant number of emerging market countries do not have a USD-denominated sovereign bond, we developed alternative models that could be used to derive the country risk premium for emerging markets.

  The study results present the estimates of country risk premium, based on the different methodologies used to calculate the premium.

[19] In a completely segmented market, international investors cannot invest in the country, and local investors cannot invest in the international capital markets. In such instances, local investors are only exposed to local market risk. Most emerging markets are partially segmented, with the investor having limited ability to invest in international markets.

[20] Full exposure to country risk means that the investor has no ability to diversify the country risk by investing in other markets.

- **Asset pricing models** – The study investigates the applicability of the different valuation frameworks, as well as asset pricing models developed for, and used in, the emerging markets' investments valuation. Cost of equity was calculated using 11 asset pricing models proposed from emerging markets. Variants for different asset pricing models were sourced or calculated as part of the study. The cost of equity was developed specifically for South Africa, because the three companies used in the study are based in South Africa. The models included both CAPM-based models and non-CAPM-based models. Some of the key variants are as follows:

  - ✓ Equity market risk premium for South Africa, which measures the return premium that investors require above South African government bonds (risk-free investments) yields when investing in South African equity markets.
  - ✓ Betas for Absa Bank, Standard Bank and Edcon, using the comparable companies approach and by regressing the companies' returns against the JSE.
  - ✓ Risk-free rate for South Africa from the South African government's 10-year bond yield.
  - ✓ Specific country risk adjust variants were developed according to the methodology approach.

- **Cost of capital** – The cost of capital was calculated using the cost of equity calculated using the 11 models that were selected for the current research, as well as the calculated cost of debt.

- **Model evaluation** – The different valuation models were evaluated by comparing the actual acquisition prices of South African companies with the values that could be computed by using the models concerned. Three transactions used for the purpose were the Absa / Barclay's Bank transaction, the Standard Bank / ICBC transaction, and the Edcon / Bain Capital transaction.

The difference between transaction value and valuation value (premium/discount) was used to assess the relevance of valuation frameworks to the valuation of the three transactions. These absolute values indicate the level of relevance of the method and the premium or discount indicates whether methods have a positive or a negative bias.

The following sections discuss the results and analysis structure in detail.

4.2 Market Integration

The level of equity markets integration[21] was evaluated by regressing selected emerging market equity returns against US equity market returns, as well as by comparing the volatility of the different markets concerned. The selected emerging markets are those that appear in the MSCI emerging markets index. The countries in the MSCI index have relatively developed equity capital markets, for which the market performance data are available.

Table 7 below shows the regression analysis of the return rates of emerging markets against those of the US equity market. The regression results discussed here are the correlation, relative volatility and beta.

The average correlation between the US equity market return rates and the return rates of the selected emerging markets is 0.45, which indicates a low relation between the two markets. Of the 27 markets considered, 11 have a correlation above 0.50, with the highest being Poland, with 0.77.

Volatility of the equity capital market returns is considered a measure of its risk and the emerging markets are expected to be more volatile than are the developed equity markets, because the emerging markets are less mature (i.e. with fewer shares trading and dominated by relatively few companies). According to the above analysis, the average volatility of annualised returns of the emerging equity markets is about 10%, which is twice that of the US

[21] Equity market integration is defined as the ability to move in and out of equity investments across different markets with no extra transaction costs, compared to the costs involved in local transactions.

equity market return. This means that emerging markets are much more risky than are the US equity markets on a stand-alone basis.[22]

[22] Stand-alone risk differs from the risk measured by beta, with the latter measuring the risk contribution to a diversified portfolio.

Table 7: Emerging Markets Correlation, Volatility and Beta

Country	Correlation (ρ)	Volatility (σ)	σ(local)/σ (US)	beta (β)
Poland	0.77	10.18%	2.20	1.68
Indonesia	0.73	11.87%	2.56	1.86
Mexico	0.69	7.28%	1.57	1.08
Turkey	0.69	13.88%	2.99	2.07
Brazil	0.69	9.68%	2.09	1.43
Chile	0.67	7.20%	1.55	1.04
Ukraine	0.65	11.95%	2.58	1.69
South Africa	0.65	6.41%	1.38	0.89
Philippines	0.64	6.71%	1.45	0.93
Thailand	0.54	12.63%	2.73	1.47
Colombia	0.53	9.92%	2.14	1.13
Malaysia	0.49	7.37%	1.59	0.78
Korea	0.48	13.58%	2.93	1.39
India	0.45	8.68%	1.87	0.84
Peru	0.43	12.70%	2.74	1.18
Bulgaria	0.42	11.47%	2.47	1.03
Qatar	0.40	10.64%	2.29	0.91
Argentina	0.40	12.01%	2.59	1.02
Egypt	0.34	10.22%	2.20	0.74
Nigeria	0.29	9.25%	2.00	0.58
Slovakia	0.27	7.38%	1.59	0.43
China A	0.27	8.65%	1.87	0.50
Kenya	0.23	5.98%	1.29	0.29
Pakistan	0.18	5.95%	1.28	0.23
Sri Lanka	0.17	10.75%	2.32	0.39
China B	0.14	14.61%	3.15	0.43
Jamaica	0.07	5.92%	1.28	0.10
Average	**0.45**	**9.74%**	**2.1**	**0.97**
Median	**0.45**	**9.92%**	**2.14**	**0.93**
standard Deviation	**0.20**	**2.65%**	**0.57**	**0.52**

Source: Author calculations

Beta is the measure of how risky an asset is relative to a market portfolio. In the current study, we measured the beta of different emerging markets against the US equity market, which was used in the study as the proxy for world equity market. The average beta of the above emerging markets is close to 1, at 0.97, meaning that, on average, the markets have a similar risk profile to that of the US equity market. However, based on the other two elements of relation between the markets analysed above, namely correlation and relative volatility, the emerging

markets are seen to differ significantly from the US equity markets. Beta can be divided into these two key terms, and lower beta can be directly attributed to low correlations between the US equity and a number of emerging markets.

The regression analysis results suggest a low correlation between the US equity markets and the emerging equity markets. This conclusion supports the proposition that the emerging markets are not integrated with the developed markets, in particular the US equity market. Based on this conclusion, the valuation frameworks used in the emerging markets will have to differ from those used in developed markets. In particular, the conventional valuation methodologies are adjusted with a country risk premium when applied to emerging markets.

4.3 Country Risk Premium

The additional country risk encountered by the investors in emerging markets is expressed as a premium. A number of different methods are used to measure the country risk premium of a country, but the method that is generally preferred is the bond yield spread between an emerging market country's USD-denominated sovereign bond and the US Treasury bond of the same maturity. However, as most emerging countries do not have USD or Euro-denominated sovereign bonds, for these countries implied SOT is calculated.

In this section, we discuss the results obtained as a result of the three approaches that were used to estimate the country risk premium. The first approach used was the conventional approach of the bond yield spread between the US Treasury bond and a sovereign bond. The second approach addressed the problem highlighted above, namely that many countries do not issue such sovereign bonds. In terms of this approach, we estimated the country risk premium by developing a predictive regression equation using available country risk premia and their respective credit rating score, after which we calculated the implied SOT of the different countries by using their rating score. The third approach addresses the issue that a significant number of countries are not rated by the credit rating agencies. To resolve this problem, we used the ICRG as the independent variable in the predictive regression equation instead of the credit rating score.

4.3.1 SOT

In the current paper, we used two sources of bond data to establish the bond yield spreads over US Treasuries. The results of the two approaches are given in Table 8 below.

The first approach was aimed at obtaining the USD-denominated sovereign bond data relating to emerging markets with maturity closest to 10 years as well, as the 10-year US Treasury data from Bloomberg. The SOT for the respective countries was then calculated using the bond data concerned.

JP Morgan, a reputable investment bank, calculates and publishes SOT data for all emerging markets with USD-denominated sovereign bonds, making the information available for a fee. For the current study, we used JP Morgan's EMBI+ SOT data, which were published in July 2010. JP Morgan only provides SOT data for countries that have USD or Euro sovereign bonds, which means that most of the emerging markets countries that are listed in Table 7 above do not have JP Morgan SOT data.

Table 8 below shows the ratings of the countries using four ratings sources, namely Moody's, S&P, IRCG and the OECD Country Risk Rating Class. The bond data in the table include JP Morgan's EMBI+ spread, the USD-denominated yield data and the SOT.

From the above analysis, it can be concluded that, in general, the SOT increases as the credit rating drops lower. However, within even one credit rating score the SOT could vary significantly. For example, for the A+ rated countries group, China has a SOT of 52 basis points and Israel has more than twice as high a SOT of 128 basis points. Based on such an analysis, one can conclude that the credit rating score is not the only criteria that investors use to evaluate the riskiness of the sovereign bonds, and therefore that of a country.

For countries that have issued the USD-denominated sovereign bonds, the actual data are, therefore, a good indicator of the country risk premium, and not the average SOT of the group with similar rating.

Table 8: Emerging Market Country Risk Premium

Country	Moody's	S&P	ICRG (%)	EMBI + spread	OECD Country Risk Class	Bond Maturity	Yields (%)	SOT (%)
Argentina	B3	B	70.5	7.0%	7	28 Feb. 2020	32.3	29.4
Brazil	Baa2	BBB-	73.8	2.1%	3	29 Dec. 2020	4.8	1.9
Bulgaria	Baa3	BBB	67.0	2.8%	4	15 Jan. 2015	3.5	0.6
Chile	Aa3	A+	78.8	1.6%	2	30 Aug. 2020	3.5	0.5
China	Aa3	AA-	76.0	0.9%	2			
Costa Rica	Baa3	BB	73.3	N/A	3	1 Aug. 2020	5.4	2.5
Colombia	Baa3	BB+	67.5	1.8%	4	28 Feb. 2020	5.2	2.3
Croatia	Baa3	BBB-	68.8	2.9%	5	30 Dec. 2020	5.1	2.1
Ecuador	Caa2	B-	64.5	4.1%	7	15 Dec. 2015	12.0	9.1
Egypt	Ba3	BB	66.3	10.3%	4	29 Apr. 2020	4.5	1.6
El Salvador	Ba2	BB-	69.3	3.6%	4	1 Dec. 2019	6.1	3.2
Gabon	NR	BB-	73.3	4.2%	5			
Georgia	Ba3	B+	N/A	5.2%	6			
Ghana	NR	B	66.8	4.7%	6			
Hungary	Baa3	BBB-	70.5	3.6%	0	20 Jan. 2020	5.7	2.7
Indonesia	Ba1	BB+	67.8	2.0%	4	13 Mar. 2020	5.1	2.2
Israel	A1	A+	74.0	0.0%	0	30 Mar. 2019	4.2	1.3
Ivory Coast	NR	NR	56.8	7.8%	7	31 Dec. 2032	14.1	11.1
Jamaica	B3	B-	63.5	4.8%	6	24 Jun. 2019	8.0	5.1
Kazakhstan	Baa2	BBB	70.3	3.5%	5			
Lithuania	Baa1	BBB	66.8	3.3%	4	2 Nov. 2020	6.6	3.7
Malaysia	A3	A-	78.8	1.8%	2			
Mexico	Baa1	BBB	73.5	1.8%	3	30 Dec. 2019	4.4	1.5
Nigeria	NR	B+	61.3	N/A	5	28 Jan, 2021	6.8	3.9
Pakistan	B3	B-	59.0	5.6%	7	1 Jun. 2017	8.6	5.6
Panama	Baa3	BBB-	74.3	1.8%	3	30 Dec. 2020	6.0	3.0
Peru	Baa3	BBB-	71.8	1.7%	3	30 Mar. 2019	4.5	1.6
Philippines	Ba2	BB	69.5	2.0%	4	30 Jan. 2020	5.1	2.2
Poland	A2	A-	73.8	2.1%	2	21 Apr. 2028	5.2	2.3
Portugal	Baa1	BBB-	68.3	N/A	0	25 Mar.2015	5.6	2.6
Qatar	Aa2	AA	81.3	N/A	2	20 Jan. 2020	4.7	1.7
Romania	Baa3	BB+	65.3	N/A	4	30 Jun. 2018	6.9	3.9
Russia	Baa1	BBB	73.3	2.7%	3			
Slovakia	A1	A+	70.0	N/A	0	30 Dec. 2020	4.0	1.0
South Africa	A3	BBB+	71.0	1.9%	3	30 Mar. 2020	5.0	2.1
Sri Lanka	B1	B+	64.3	3.7%	6	4 Oct. 2020	6.2	3.2
Turkey	Ba2	BB	63.3	2.3%	4	20 May 2030	5.4	2.5
Ukraine	B2	B+	65.5	5.2%	7	23 Sept. 2020	7.7	4.8
Uruguay	Ba1	BB	74.3	2.2%	4			
Venezuela	B2	BB-	53.3	10.8%	7	9 Dec. 2020	15.0	12.1
Vietnam	B1	BB-	68.3	2.7%	5	29 Jan, 2020	6.4	3.4

Source: Standard and Poor's, 2010; Moody's, 2010; PRS Group, 2011 and Bloomberg, 2011

Table 9: SOT Data for Emerging Market (Basis Points)

Credit Rating	SOT's - based from available sovereign bond data				Average SOT
A+	52	104	128		95
A					
A-					
BBB+	209				209
BBB	148				148
BBB-	188	214	264	304	243
BB+	219	230			224
BB	245	248	220		238
BB-	318				318
B+	342	1207	507		685
B	477				477
B-	562	511			537
CCC+	906				906
CCC-					
CCC					
NR	1114				1114

Source: Bloomberg, 2010

4.3.2 Implied SOT

To resolve the problem, for the majority of developing countries that do not have USD or Euro-denominated sovereign bonds, a number of approaches have been proposed to calculate the implied country SOT. The current study uses three methodologies to calculate the implied SOT of countries in Table 8.

Sovereign Bond-Derived SOT / Credit Rating Regression Model

The first model regress country's credit ratings given by Moody's and S&P (independent variable) against their SOT (dependent variable) were used to develop the predictive equation for SOT. The relationship between the SOT and country rating is assumed not to be linear, but is represented by a natural log. This is so because, as the rating of a country decreases, its risk premium increases exponentially.

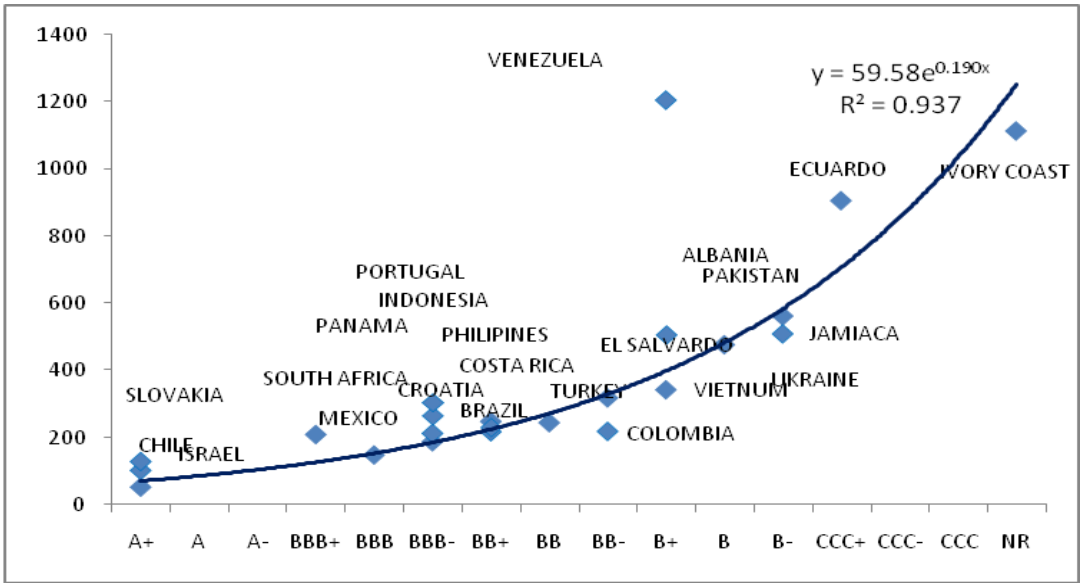
Proposed equation:

$$\ln(SOT) = \alpha + \beta \ln(\text{credit rating}) + e$$

For simplification, the current study assumes that the rating agencies have similar views of countries, which allows the ratings to be used interchangeably. This assumption was made because the two agencies do not rate all countries being reviewed. Although the assumption is a simplification, the ratings are driven by the same fundamentals, and they are relatively closely related. The data used in the analysis come from the emerging countries that are rated by either S&P or Moody's, and the country has sovereign bonds issued either in USD or in Euros. Note that not all the sample countries in Table 7 meet these criteria.

The SOT data in Table 8 above is plotted against the respective credit rating to produce a predictive equation for implied SOT. Credit rating is transformed into numbers by assigning 1 to A+ and the increment of 1 from between consecutive ratings. For example, A+ , A, A-, BBB+, CCC+, CCC, CCC-, and NR are represented as 1, 2, 3, 4, 13, 14, 15 and 16 respectively.

Figure 5: SOT as a Function of Ratings (Basis Points)



The bond-derived SOT / credit rating regression model:

- Each observation represents a particular country's sovereign bond SOT bond yield.

- The regression of the ratings with SOT results in the relation described by the equation: $y=59.58e^{0.190x}$, where y is SOT and x is the numerical figure representing the S&P, a credit rating.

- The R squared is 94%, which means that the 94% of SOT observations can be explained by the regression model.

- The exponential equation means that SOT increases at an increasing rate, from A+ to lower rated bonds. In other words, positive deviations from the mode rating are punished more heavily than any negative deviations are rewarded.

Sovereign Bond-Derived SOT / Country Risk Rating Regression Model

A significant number of emerging countries are not rated by the three prominent credit rating agencies (S&P, Moody's and Fitch). To resolve this problem, the study uses alternative country risk rating data that are provided by the ICRG of the PRS Group. The ICRG has much relatively wide coverage of almost all the countries, which makes it reasonably easy to apply.

ICRG rating is comprised of 22 variables that fall into three subcategories of risk: political; financial; and economic. A separate index is created for each of the subcategories. The Political Risk index is based on 100 points, the Financial Risk Index on 50 points, and the Economic Risk Index on 50 points. The total number of points from the three indices is divided by two to produce the weights for inclusion in the composite country risk score. The composite scores, ranging from zero to 100, are then broken into categories from Very Low Risk (80 to 100 points) to Very High Risk (zero to 49.9 points) (PRS Group, 2011).

Below is the example of South Africa ranking by ICRG, as at April 2011.

Table 10: South Africa Risk Assessment Ranking by ICRG, April 2011

			One Year Ahead		Five Years Ahead	
Risk Category	**Year Ago**	**Current 04/11**	**Worst case**	**Best Case**	**Worst case**	**Best Case**
Political Risk (max. 100)	67.5	66.5	61.5	71.5	59.0	74.0
Financial Risk (max. 50)	42.0	39.5	37.0	39.5	30.0	40.5
Economic Risk (max. 50)	32.5	34.0	32.5	34.5	28.0	35.5
Composite Risk (max. 100)	71.0	70.0	65.5	72.8	58.5	75.0
Risk Band	Low	Low	Moderate	Low	High	Low

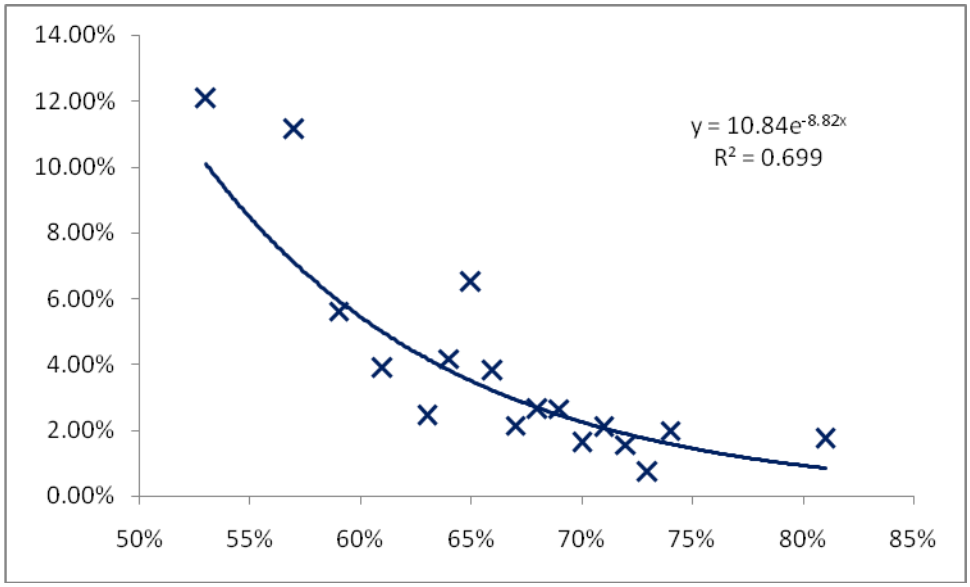
Source: PRS Group, 2011

Table 8 above contains the SOTs of a number of emerging countries and their respective ICRG ratings. The SOT predictive equation was developed by regressing actual sovereign bond yield spreads over US Treasury Bond yield on their respective ICRG ratings. The equation was then used to predict the implied SOTs of different countries, using their respective ICRG ratings.

For the current study we developed two regression models that used the ICRG ratings as the independent variable and two different sources of SOT, the dependent variable. The first model used SOT data calculated from the actual bond data, whereas the second model used SOT data from JP Morgan's EMBI+. The two models were used to predict/work the implied SOT of the different countries based on their ICRG. The regression models and their respective equation are discussed below.

ICRG / SOT Regression Model

Figure 6: Bond Yield SOT as a function of ICRG Rating

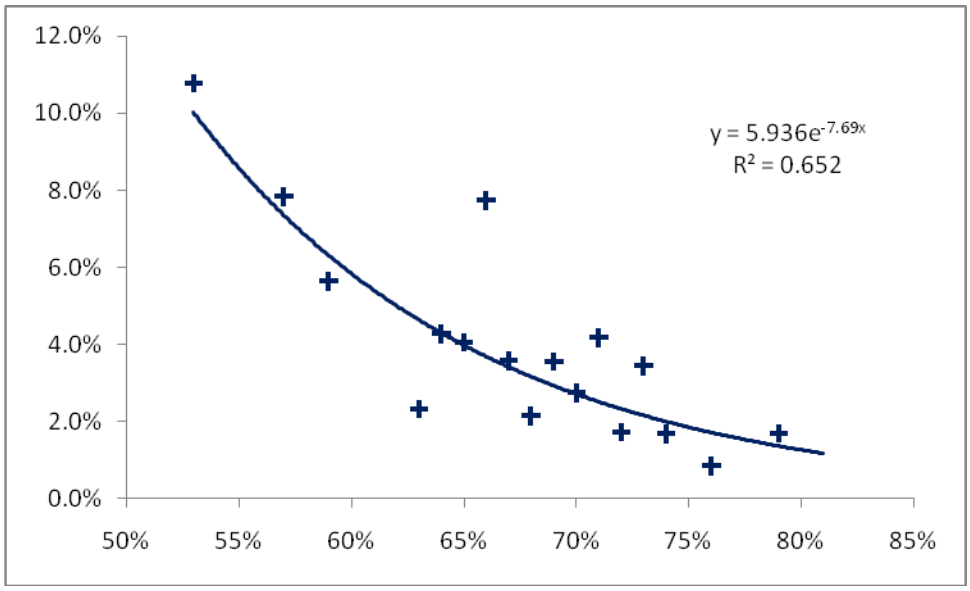


In terms of the ICRG / SOT regression model, the following applies:

- Data from Table 8 were used to develop the regression model, where ICRG rating data is the independent variable and the sovereign bonds SOT bond yield form the dependent variables.
- The regression of the ratings with SOT results in the relation described by the equation: $y = 10.84e^{-8.82x}$, where y is SOT and x is the ICRG rating.
- The R squared is 70%, which means that 70% of the SOT observations can be explained by the regression model.
- The exponential equation means that the SOT increases at an increasing rate, from 100% (risk-free) to lower rated countries.

ICRG / EMBI+ SOT Regression Model

Figure 7: EMBI+ SOT as a Function of ICRG Rating



In terms of the EMBI+ SOT regression model, the following applies:

- Each observation represents an average sovereign bond SOT bond yield for countries with given ICRG rating.
- The regression of the ratings with SOT results in the relation described by the equation: $y = 5.936e^{-7.69x}$, where y is SOT and x is the ICRG rating.
- The R squared is 65%, which means that 65% of the SOT observations can be explained by the regression model.
- The exponential equation means that the SOT increases at an increasing rate, from 100% (risk-free) to lower rated countries.

4.3.3 Estimated Countries Risk Premium of Selected Countries

The country risk premium can be estimated by using any of the five approaches discussed above, based on the availability of the sovereign bond data. For countries that do not have

sovereign bonds that are USD- or Euro-denominated implied sovereign bond SOT bond yield is calculated using the predictive equations that were derived from the available bond data.

Table 11 below gives an example of estimates of the countries sovereign bond yield SOT using the five sources discussed above.

Table 11: Country Risk Premia Estimates for South Africa, Chile, Colombia and Jamaica

Model	Sovereign bond over US Treasuries	EMBI+ SOT	Credit rating / Bond regression model	ICRG/Bond yield regression model	ICRG/EMBI+ regression model
Formulae	SOT	Blend	$y = 59.58e^{0.190x}$	$y = 5.936e^{-7.69x}$	$y = 10.84e^{-8.82x}$
South Africa	212	192	127	207	253
Chile	52	157	72	104	139
Colombia	230	178	225	281	331
Jamaica	511	482	582	401	450

The second and third columns of Table 11 above, which show sovereign bond yield over US Treasuries and EMBI+ sovereign SOT respectively, contain the actual bond data from the market. The other three columns estimate the SOT of the respective countries, using the predictive models developed in this study. The credit rating / SOT regression model (see column 4) has better predictive power than the previous models, based on the fact that its results are the closest to the actual bond spread reflected in the second column. However, the results from the different models do not significantly differ from one another and it can be argued that any of the five sources would produce acceptable results.

In the current study, where sovereign bond in USD or Euro was available, we used the actual data and for those that did not have bond data, an average of the three models in the last three columns in Table 11 were used.

4.4 Global (US) Equity Market Risk Premium

The equity market risk premium is computed as the difference between the equity market index return and the yield on a risk-free investment, such as a 10-year government bond. The study used the US equity market as the proxy for the global equity market. The S&P 500 index was used as the equity index for calculating the market risk premium, with the required data being obtained from Ibbotson Associates.

The equity market risk premium, which is the premium between the geometric mean of large company index return (US) and the geometric mean of US government bonds from 1926 to 2006, was estimated at 5.00%.

Table 12: US Annual Returns over the Period 1926 - 2007

	Geometric
US long-term government bonds	5.4%
Large company stocks (S&P 500 index)	10.4%
Equity market premium	5.0%

Source: Ibbotson SBBI 2011 Classic Yearbook, Markets Results for Stock, Bonds, Bills and Inflation, 1926–2010

4.5 Emerging Market (South Africa) Equity Premium

Table 13: South African Annual Returns over Period 1998 - 2008

	Geometric
South Africa long-term government bonds	11.4%
JSE All Share Index (S&P 500 index)	16.2%
Equity market premium	4.8%

The South Africa equity market premium was estimated at 4.8%, based on bond and equity yield data collected between 1998 and 2008. See Exhibit I for details.

The closeness of the South African equity market premium estimate of 4.8% to the US equity market risk premium estimate is assumed to be coincidental, rather than a reflection on the relationship between the markets. While we use long-term data for the US (1926–2007), the South African data were taken from over 10 years (1998–2008), in order to exclude the data that fell into the period of economic sanctions.

4.6 Calculating Beta[23]

The betas for Edcon, Standard Bank and Absa were calculated using comparable companies beta. The impact of financing was accounted for by converting individual companies' betas into unlevered beta, using their respective leverage ratios. The average betas for the comparable companies used in the study are shown in Exhibit Q.

The debt to equity ratio for Edcon, Absa and Standard Bank was calculated from the respective companies' audit financial statements. Edcon was not carrying any debt on its balance sheet at the time of valuation, with a resultant 0% leverage. Absa and Standard Bank had more debt than equity according to their financial statement.

Table 14: Beta of Edcon, Absa and the Standard Bank

	Comparables	Average unlevered beta	Debt to equity ratio	Marginal tax rate	Levered beta
Edcon	US retail firms	0.68	0:1	30%	0.68
Absa	US banks	0.59	1.53:1	30%	1.49
Standard Bank	US banks	0.59	1.20:1	30%	1.30

[23] Comparables beta sourced from Bloomberg, as calculated over a 60 months average on a monthly basis.

4.7 Calculating Risk-Free Rate

4.7.1 US Risk-Free Rate (Global)

The US government 10-year bond yield was used as the proxy for the global risk-free rate, with the US markets being considered the most efficient market. The bond yield data was sourced from Bloomberg.

The risk-free rate was estimated at 3.1%, using the 30-day moving average given in Figure 9 below.

Figure 8: US Government 10-year Bond Yield



Source: Bloomberg, 2011

4.7.2 South African Risk-Free Rate

To estimated South African risk-free rate the study used 10-year South Africa government bonds yield. The bond yield data was sourced from Bloomberg.

The South African risk-free rate was estimated at 8.4%, using the 30-day moving average for the date of 30 June 2010.

4.8 Adjusting for Currency Differentials

To evaluate the different emerging market valuation methodologies, we use South Africa and three South African companies, namely Edcon Ltd, Standard Bank and Absa Ltd. While the information relating to the companies is in ZAR, but the asset price models that are developed in the current study are developed in USD cash flows perspective. As a fundamental requirement of valuation is that the discount rate and the cash flows being valued must be in the same currency, in the current study the USD-based cost of capital models was converted into ZAR.

The following formula was used to convert USD cost of capital to ZAR cost of capital:

Cost of capital $_{ZAR}$ = ((1+ Cost of capital $_{US\$}$) x (1+inflation differential))-1

The 10-year consumer price inflation differential between the United States and South Africa was estimated at 4.97%, based on the Bloomberg forecast.

The South African inflation rate used to calculate the above inflation differential was the same rate that was used for estimating the cash flows of the three companies.

4.9 Calculating Cost of Equity

Country Risk Adjustment Variants

The current section presents the emerging markets risk-adjusting variants for the different emerging markets asset pricing models, excluding the country risk premium, which is presented in a separate section. The methods used to derive the variants are outlined in section 4.6, and the background to the variants is discussed in subsection 2.5.3 above. The emerging market country risk variants of the different models are presented in Table 15 below.

Table 15: Emerging Markets Valuation Models Variants

Methodology	Factor	Approach	Factor
Global CAPM	No country risk adjustment		
Local CAPM	Uses local equity market risk premium and country risk premium	The local equity premium was calculated using JSE returns and the South African government 10-year bond yield.	Local equity risk premium = 4.8%
Adjusted Local CAPM	Ri^2 = amount of equity volatility that is explained by the country risk	Regressed the daily volatility of the returns of the JSE (FTSE/ JALSH) Index and the GSAB10YR Index for the period 1998 to 2008 to establish the R^2.	Ri^2 = 0.8377
Godfrey–Espinosa Model	BA = σ_{RSA} / σ_{us} x 0.60 = adjusted beta	Standard deviation of the US (S&P 500) index and the South African (JSE All-Share) index was calculated using the daily return data for the period 1998 to 2008.	σ_{RSA} = 2.4% σ_{us} = 1.78% BA = 1.374% x 0.6 = 0.83
Estrada Model	RM = beta (downside) = E{[min(Ri - µi),0]*[min(Rm - µm),0]/[min(Rm - µm),0]^2	Ratio of semistandard deviation of S&P 500 index and the South African JSE index, using the data from between 1998 and 2008, was applied.	RM = 1.37

Methodology	Factor	Approach	Factor
Erb–Harvey–Viskanta Model	Semiannual returns & country credit risk rating	Semiannual returns of selected countries were calculated for the period 1998 to 2008. Country credit rating for the selected countries was obtained from the ICRG for June 2008. Returns were regressed against the credit rating scores to derive returns regression equation. See Exhibit R for details.	y = -0.78ln(x) - 0.012 **= 25.5%** Where x = RSA credit score = 71% See Graph 4 below.
Goldman Sachs Approach	Se / Su = daily volatility of local market index / US market index Re = premium / discount on risk spread, company operating model Crr (S,B) = correlation of bond returns and equity return	Se / Su – For local market volatility used JSE, and for US market used S&P 500 data for 1998 to 2008. Re – Percentage of international sales contribution to total revenue – decrease in local country risk exposure Crr (S,B) – Used daily JSE equity return and daily returns of South African government (10-year) bond for period 1998 to 2008.The correlation was calculated using Excel software.	S_{RSA} = 19.5745 S_{US} = 17.3679 R = 0% (None of the companies had international operations or sales at the time.) Crr (S,B) = -0.004306

Methodology	Factor	Approach	Factor
Salomon Smith Barney	γ1: access to capital markets γ2: susceptibility to political risk γ3: importance of investment	γ1: Full access to capital market for three investors in the study – assigned score of 0 out of 10 for both retail and banks. γ2: Banks are controlled to some extent by the central bank and government – assigned 5 out 10 for banks and 0 out of 10 for retail. γ3: Size of investment as a percentage of company's market capitalisation and level of investment was used for this factor. For banks as investor, the investment was relatively small, while for retail as investors the investment was of significant importance. Retail factor was 5 out 10 and 0 for banks.	γ1 = 0 γ2 = 5 γ3 = 5 SSB factor = 10 / 30 = 0.333
Damodaran Model	λ = companies' revenue not affected by the country risk	Companies' exposure to exports. None of the target companies had any significant international business in the form of exports or operations.	λ = 1
Godfrey and Espinosa Model	Adjusted country beta = σ_i / σ_{us}	Standard deviation of the US (S&P 500) index and the South African (JSE All-Share) index was calculated using daily return data for period 1998 to 2008.	Adjusted South Africa beta = $\sigma_{RSA} / \sigma_{us}$ = 2.4% / 1.78 = 1.38

Methodology	Factor	Approach	Factor
Soenen and Johnson Model	Country beta = $\beta_{FM,US}$	Regressed the daily returns of the South Africa (JSE All Share) index against S&P 500 index to derive the beta.	South Africa beta = $\beta_{RSA,US}$ = 0.89

Table 16: Summary of Asset Pricing Models Risk Adjustment Variants

Cost of Equity (ZAR)	Local Market Risk Premium	(1 - R2) bond/ market	Re	BA (Godfrey - Espinosa)	RMi (Estrada's factor)	Credit rating	Se/Su σi/σus	1-crr(S,B)	λ	Country β	SSB factor
Adjusted Local CAPM											
Local CAPM	4.80%										
Goldman Sachs Model	4.80%	83.77%									
Global CAPM				0.83							
Salomon Smith Barney Model					1.37						
Godfrey- Esppinosa model						72%					
Soenen Model			0				1.13	1.00431			
Domandaran Model											0.3333
Estrada Model Model									1		
Godfrey Model							1.38				
Erb-Harvey-Viskanta Model										0.89	

Cost of Equity

Using the variants discussed above, the cost equity for the companies used in the study, namely Absa Ltd, Standard Bank Ltd and Edcon Ltd, was calculated for each asset pricing model. Table 17 below shows the cost of equity for the three companies calculated from the different models.

Table 17: Cost of Equity for Absa, the Standard Bank and Edcon

Cost of equity (ZAR)	Absa	Standard Bank	Edcon
Adjusted Local CAPM = RfG + RC + BLL x (RML – RfL) x (1 – Ri2)	**13.49%**	**13.37%**	**12.68%**
Local CAPM = RfL + BLL x (RML – RfL)	**14.13%**	**13.98%**	**13.17%**
Goldman Sachs = Rf + [(Re + Rc) + β x (Se / Su) x Eu x (1 – crr(S,B))]	**14.83%**	**14.66%**	**13.70%**
Global CAPM = RfG + BLG x (RMG – RfG)	**15.52%**	**14.57%**	**11.47%**
Salomon Smith Barney = Rf + βi x MRPGlobal + [γ1 + γ2 + γ3] x PRP	**16.23%**	**14.68%**	**11.81%**
Godfrey–Espinosa model = RfUS + RC + BA x (RMUS – Rf US)	**16.36%**	**15.57%**	**13.01%**
Soenen and Johnson = Rf + pr + (β project x β FM, US) MRP	**16.82%**	**15.98%**	**13.22%**
Domandaran = E(Rp) = Rf + βp[E(Rm) – Rf) + λCRP	**17.64%**	**16.69%**	**13.59%**
Estrada Model = RfUS + (RMG – RfG) x RM	**18.31%**	**17.00%**	**12.74%**
Godfrey-Espinosa = [RFus + Credit Spread] + [β x (US Equity Premium]	**20.47%**	**19.16%**	**14.88%**
Erb–Harvey–Viskanta Model = CSi,1+t = γ0 + γ1 x ln(CCRit) + εi, t+1	**30.48%**	**30.48%**	**30.48%**
Average cost of equity	**17.66%**	**16.92%**	**14.61%**
Standard deviation	**4.69%**	**4.78%**	**5.34%**

4.10 Estimating Cost of Debt

Companies are usually financed using both equity capital and debt, and the company's cost of debt is the weighted average of the cost of the different sources of financing. Whereas the previous sections discussed the estimation of the cost of equity, which is the most contentious issue at stake here, in the current section we discuss the cost of debt.

The cost of debt is mostly based on the credit rating of the debt issuer. A number of methods for estimating the long-term cost of debt for companies in the emerging markets exist. The methods concerned involve: i) using the data relating to the bonds and other credit instruments that are issued by the target company in the currency of the analysis; ii) using the credit ratings of the company and estimating the cost of debt, using comparable companies with similar ratings; and iii) synthesising the credit rating of the company and estimating the cost of debt as in ii above. The approach used was dependent on the available information.

In the current study, we used three South African companies to evaluate the valuation methodology for emerging markets. The three companies, namely Edcon Ltd, Standard Bank Ltd and Absa Ltd, did not have issued long-term bonds or credit notes at the time of valuation. Therefore, to estimate the cost of debt for the three companies the third approach mentioned above was used.

Synthetic Credit Rating

To synthesise the credit ratings of the three companies mentioned, we used the Moody's rating drivers, as shown in Table 18 below, in terms of which cost efficiency and profitability are the key drivers for the credit rating estimation.

Table 18 reflects the use of Moody's rating scale to rate companies, where the different columns represent the credit ratings score and the rows 1 to 3 represent the scoring given by Moody's for the different credit ratings. The bottom three rows contain the credit rating assessment of the three companies undertaken in this study. The ratios, EBITA margin and EBITA over Average Assets, were based on the information available on the latest audited financial statement before the valuation date.

Table 18: Credit Risk Rating Factor Mapping – Cost Efficiency and Profitability

	Aaa	Aa	A	Baa	Ba	B	Caa
Qualitative assessment	Highly efficient operations, systems & supply chain	Very efficient operations, systems & supply chain	Efficient operations, systems & supply chain	Some efficiency improvements required, possibly in operations	Reasonably cost efficient, but scope for improvement	Weak efficiency of operations, systems & supply chain	Inadequate cast structure
EBITA Margin	>20%	>16%–20%	>13%–16%	>10%–13%	>7–10%	>3%–7%	<3%
ABITA / Average Assets	>25%	>20%–25%	>15%–20%	>12%–15%	>10%–12%	>7%–10%	<7%
Qualitative Assessment	Absa; Standard Bank – South African banks highly rated			Edcon – limited by the South African level of infrastructure development			
EBITA Margin	Standard Bank; Absa		Edcon				
ABITA / Average Assets	Edcon			Absa; Standard Bank			

According to the assessment, the three companies' credit rating score was found to range from Aaa to Baa, depending on the parameter used. However, because of the limited information available to analyse the creditworthiness of the companies concerned, the study took a conservative view and took the lowest of the scores, which was Baa for all three companies involved.

Debt Margin

The debt margin was estimated in USD, using comparable sectors in the US market. The debt margin for Absa and Standard Bank was calculated as the difference between the US bank sector's average bond yield for Baa-rated banks and the US Treasury bond yield. For Edcon, the US retail sector credit ratings and respective yield were used. The sector bonds and sovereign bond used were those with 10-year maturity.

Table 19 below shows the average yields of the bank and retail sectors' 10-year bonds and their respective margins, based on the credit rating. The information was obtained from Bloomberg, with the detailed yields curves for the two sectors being shown in Exhibit 3.

Table 19: Ten-year Bond Yields and Margin for US Bank and Retail Sectors

Bond ratings	10-year maturity yield (%)		Margin (basis points)	
	Banks	**Retail**	**Banks**	**Retail**
US Treasury	3.03	3.03		
AA+	4.00		97	
A	4.71	4.33	168	130
BBB	5.28	4.60	225	157
BB		6.12		309

According to the above analysis, the debt margin estimate for Absa and Standard Bank was 225 basis points and for Edcon was 157 basis points for 10-year debt, as at their respective valuation dates.

Cost of Debt

The cost of debt for the three companies concerned, as based on the debt premia, was calculated using the following general formula:

USD cost of debt = 10-year US Treasury bond yield (risk-free rate) + company debt premium

The cost of debt was converted to ZAR cost by adding the inflation differential between US and South Africa to the USD cost of debt. Table 20 below shows the cost of debt for the three companies concerned.

Table 20: Cost of Debt for Edcon, Standard Bank and Absa

	Risk-free Rate	Country risk premium	Company rating	Company default spread	Cost of debt (USD)	Cost of debt (ZAR)
Edcon	3.10%	2.12%	BBB+	157	6.79%	11.76%
Absa	3.10%	2.12%	BBB+	225	7.47%	12.44%
Standard Bank	3.10%	2.12%	BBB+	225	7.47%	12.44%

4.11 Cost of Capital

The opportunity cost to shareholders and creditors for investing in one particular business instead of in another business with similar risk is measured by its cost of capital. The cost of capital of a company is calculated by taking the account weightings and the marginal cost of all sources of financing, such as debt and equity for the company. The WACC is then used as the discount rate to convert the expected future cash flow into present value for the investors. WACC must be computed on a similar basis as that on which the cash flow is being valued, especially when the cash flow is nominal or real and after or before the tax basis.

The general WACC formula is as follows:

WACC = Kd (1 –T) D/V + Ke E/V

where:

Kd = the pre-tax market expected yield to maturity on non-callable, nonconvertible debt;

Tc = the marginal tax rate for the company being valued;

D = the value of interest-bearing debt;

V = the market value of the company being valued (V = D + E);

Ke = the market-determined opportunity cost of equity; and

E = the market value of equity.

Although the above formula and the current study consider the two basic sources of funding, there are a number of other possible instruments, such as non-callable preference shares, leases and warrants, that can be used to fund the company and which, therefore, form part of the WACC.

Using the above formula, the following three steps must be taken in developing the WACC:

- Step One: Establish the cost of equity financing.
- Step Two: Establish the cost of debt financing.
- Step Three: Establish the target market value weights for the capital structure and the debt to equity ratio.

4.11.1 Capital Structure

The previous sections of the study have discussed both the cost of debt and the cost of equity financing for the three target companies for the study, namely Edcon, Absa and the Standard Bank. To establish the capital structure for the three companies, we reviewed their existing capital structure, comparing it with the capital structures of comparable companies and looking at the management's target capital structure.

Based on the analysis shown in Table 21, a target capital structure of 50% debt weighting and 50% equity for the two banks, Absa and Standard Bank, was assumed for the purposes of the current study.

Based on the analysis shown in Table 22, a target capital structure of 25% debt weighting and a 75% equity weighting was assumed for Edcon for the purposes of the current study.

Table 21: South African Banking Sector Capital Structures, June 2010

Name	Debt/Capital	Debt / Equity
Absa Group Ltd	76%	3.1
Standard Bank Group Ltd	53%	1.1
First Rand Ltd	0%	0.0
Nedbank Group Ltd	35%	0.5
Sanlam Ltd	16%	0.2
RMB* Holdings Ltd	4%	0.0
African Bank Investment Ltd	70%	2.3
Average	**36%**	**1.0**

Source: Bloomberg

*RMB = Rand Merchant Bank

Table 22: South African Retail Sector Capital Structure, June 2010

Name	Debt/Capital	Debt / Equity
Massmart Holdings Ltd	14.7%	0.173
Shoprite Holdings Ltd	33.4%	0.501
Steinhoff International Ltd	39.9%	0.664
Truworths International Ltd	1.0%	0.010
Woolworths Holdings Ltd	21.0%	0.266
The Foschini Group Ltd	22.6%	0.291
Pick n Pay Stores Ltd	23.9%	0.314
Mr Price Group Ltd	7.6%	0.083
Spar Group Ltd	19.5%	0.243
Clicks Group Ltd	15.4%	0.182
Lewis Group Ltd	22.5%	0.290
JD Group Ltd	25.3%	0.340
Average	**20.6**	**0.32**

Source: Bloomberg

4.11.2 WACC

The WACC for Edcon, Standard Bank and Absa was calculated, using as its basis the respective capital structure, cost of debt and cost of equity derived in the previous sections. The WACC formula discussed above was used to calculate the costs of capital applying different asset pricing models, for which the results are given in Table 23 below:

WACC = Kd (1 –Tc) D/V + Ke E/V

The South African corporate tax at the time that the transaction involving Absa, Standard Bank and Edcon was done was 29% (for 2005 and 2007).

Table 23: WACC Based on Emerging Market Asset Pricing Models for Absa, Standard Bank and Edcon

Weighted cost of capital (ZAR)	Absa	Standard Bank	Edcon
Adjusted Local CAPM = RfG + RC + BLL x (RML – RfL) x (1 – Ri2)	**11.16%**	**11.10%**	**11.24%**
Local CAPM = RfL + BLL x (RML – RfL)	**11.48%**	**11.41%**	**11.56%**
Goldman Sachs = Rf + [(Re + Rc) + β x (Se / Su) x Eu x (1 – crr(S,B))]	**11.83%**	**11.75%**	**11.92%**
Global CAPM = RfG + BLG x (RMG – RfG)	**12.18%**	**11.70%**	**10.43%**
Salomon Smith Barney = Rf + βi x MRPGlobal + [γ1 + γ2 + γ3] x PRP	**12.53%**	**11.75%**	**10.66%**
Godfrey–Espinosa model = RfUS + RC + BA x (RMUS – Rf US)	**12.60%**	**12.20%**	**11.45%**
Soenen and Johnson = Rf + pr + (β project x β FM, US) MRP	**12.83%**	**12.40%**	**11.59%**
Domandaran = E(Rp) = Rf + βp[E(Rm) – Rf) + λCRP	**13.24%**	**12.76%**	**11.84%**
Estrada Model = RfUS + (RMG – RfG) x RM	**13.57%**	**12.92%**	**11.28%**
Godfrey-Espinosa = [RFus + Credit Spread] + [β x (US Equity Premium]	**14.65%**	**14.00%**	**12.70%**
Erb–Harvey–Viskanta Model = CSi,1+t = γ0 + γ1 x ln(CCRit) + εi, t+1	**19.66%**	**19.66%**	**23.11%**
Average WACC	**13.25%**	**12.88%**	**12.53%**
Standard deviation	**2.34%**	**2.39%**	**3.56%**

4.12 Models Evaluation – Transactions Analysis

The analysis of emerging markets valuation models conducted in the current study showed that the methods vary so significantly that the valuation results would be affected by the choice of the valuation framework. In this section of the study, we describe applying the valuation frameworks discussed in the previous sections to three cross-border transactions involving South African companies as targets. The transactions concerned were acquisition of 60% of Absa Group Ltd ordinary shares by Barclays Bank Plc of the UK, the acquisition of 20% of the SBG Ltd by ICBC Ltd and the acquisition of 100% of Edcon Ltd shares by Bain Capital LLC of the US.

The supposition is that the three acquiring companies must have used at least one of the emerging market valuation principles or frameworks discussed in this report when valuing the three target companies, since the targets were based in South Africa, which was an emerging market at the time. The valuation frameworks are used to value the three companies, Absa Bank, Standard Bank and Edcon, using the date of the last audited results before the transaction was concluded as the valuation date. The valuation dates for the companies were as follows: for Absa it was 1 April 2005; for Standard Bank it was 31 December 2007; and for Edcon it was 1 January 2007.

The notional valuations resulting from applying the emerging markets valuation frameworks was compared to the price that was actually paid for the interest in the three companies (market valuation). The frameworks and models were ranked according to how close the valuation result was to the market valuation, which was in the form of a premium or discount.

The three valuations are summarised below, with the detailed valuation reports being contained in exhibits D, E and F.

4.12.1 Absa Transaction

Transaction Overview

The first transaction analysed was the acquisition of 60% of Absa Bank ordinary shares by Barclays Bank for ZAR 33bn. The price was quoted in ZAR since the target was a South Africa-based company. Barclays plc, the UK-based global financial services provider, acquired a majority stake of 60% in Absa Bank Ltd, the South African commercial bank, for ZAR 82.5 cash per Absa share, plus a final dividend for the year ended March 2005 of ZAR 2 per share.

The offer valued Absa's 60% stake at ZAR 33bn and Absa's total outstanding share capital at ZAR 54.62bn. Under the terms of the agreement, Barclays initially acquired a 32% stake via a scheme of arrangement, and then launched a public tender offer for up to a further 28% of the outstanding share capital.

The transaction was announced on 9 May 2005, and was completed on 8 July 2005.

Valuation, Approach and Assumptions

For detailed Valuation Report see Exhibit D.

Absa equity was valued as at 1 April 2005, using the 2005 financial statements that were the last audited results before the transaction.

The security was valued using the DCF methodology and relative valuation discussed above. The cash flows were projected in ZAR, using the 2005 financial year as the base year. The sustainable growth rate was estimated as the South Africa long-term inflation rate, which was projected to be 4.58% by Bloomberg, with no future projects being included in the valuation. No synergies from the transaction were included in the cash flows.

North American peers were used to derive the valuation ratio, the PER and the BVR for relative valuation approaches. The value was adjusted for emerging country risk by means of applying a discount of 5.6%, which is the average price earnings multiples difference between emerging and developed market peers. Due to the emerging markets being considered riskier than their developed counterparts, they are expected to trade at lower multiples. The multiple discount was estimated by comparing the emerging markets banking sector average PE multiple with the

average PE multiple for the US and Canadian bank sector. The results are presented in Table 24 below.

Table 24: Average PE Multiple for Emerging Markets and US/Canadian Bank Sector

	P/E
Emerging markets	13.8
US/Canada	14.6
EM discount	**-5.6%**

Source: Bloomberg

Absa shares were valued between ZAR 83 and ZAR 139 per share, depending on which approach was used. The valuation compared well with the ZAR 84.50 per share price paid by Barclays Bank.

4.12.2 Standard Bank Transaction

Transaction Overview

The second transaction analysed was the acquisition of 20% of Standard Bank ordinary shares by the ICBC for a cash consideration of ZAR 36 671.6m. The ICBC, the listed Hong Kong-based banking group, acquired a 20% stake in SBG Ltd, the listed South African bank, for a cash consideration of ZAR 36 671.6m. Under the terms of the agreement, ICBC acquired 304.87m shares, representing a 20% stake in two transactions. The first 152.4 million shares were acquired from the shareholders at a price of ZAR 136 per share, and in the second transaction SBG issued 152.4m new shares to ICBC at a price of ZAR 104.58 per share. ICBC funded the transaction from its internal resources.

The transaction was announced on 25 October 2007, and was completed on 3 March 2008.

Valuation, Approach and Assumptions

For the detailed Valuation Report, see Exhibit E.

Standard Bank equity was valued as at 1 January 2008, using the 2007 financial statements, which were the last audited results before the transaction.

The security was valued using the DCF methodology and the relative valuation discussed above. The cash flows were projected in ZAR using the 2007 financial year as the base year. The sustainable growth rate was estimated as the South African long-term inflation rate, which was projected to be 4.58% by Bloomberg. No synergies from the transaction were included in the cash flows.

North American peers were used to derive the valuation ratio, the PER and the BVR for relative valuation approach. The value was adjusted for emerging country risk by means of applying a discount of 5.6%, which was the average price earnings multiples difference between emerging and developed market peers.

Standard Bank shares were valued between ZAR 106 and ZAR 183 per share, depending on which method was applied. The value per share compared with the ZAR 120.29 weighted average price per share that the ICBC paid.

4.12.3 Edgars Consolidated Stores Ltd (Edcon) Transaction

Transaction Overview

The final transaction analysed was the acquisition of 100% of Edcon shares by Bain Capital for a cash consideration of ZAR 26bn. Bain Capital LLC, the US-based private equity firm, acquired Edcon Ltd, the listed South Africa-based clothing, footwear and textiles retailing group in 2007. Each Edgars' shareholder received ZAR 46 in cash per ordinary and ZAR 2.00 per preference share held, which valued the entire share capital at ZAR 26bn, 566.134m ordinary shares at ZAR 46 per share and 0.15m preference shares at ZAR 2 per share. The offer represented a premium of approximately 15.29% over Edgars' closing share price of ZAR 39.9, as of 7 February 2007, the last trading day prior to the official announcement.

The transaction was announced on 8 February 2007, and was completed on 16 April 2007.

Valuation, Approach and Assumptions

For the detailed Valuation Report, see Exhibit F.

Edcon equity was valued as at 1 January 2007, using the 2007 financial year interim results, which were the last audited results before the transaction.

The security was valued using the DCF methodology and relative valuation discussed above. The cash flows were projected in ZAR, using the 2007 financial year as the base year. For the first five years, a growth rate of 6.8% was used, which was the average growth over the previous two years. The terminal growth rate was estimated as the South Africa long-term inflation rate, which was projected as 4.58% by Bloomberg, with no future growth projects being included in the valuation. No synergies from the transaction were included in the cash flows.

North American peers were used to derive the valuation ratios, the PER and the BVR in terms of the relative valuation approach. The value was adjusted for emerging country risk by means of applying a discount of 16.7%, which was the average price earnings multiples difference between emerging and developed market peers. Due to the emerging markets being considered riskier than their developed counterparts, they were expected to trade at lower valuation multiples. The multiple discount was estimated by comparing the emerging markets retail sector average PE multiple with the average PE multiple for the US and Canadian retail sector. The results are presented in Table 25 below.

Table 25: Average PE Multiple for Emerging market and US/Canadian Retail Sector

	P/E
Emerging markets	13.6
US/Canada	16.4
EM discount	**-16.7%**

Source: Bloomberg

The value of Edcon shares was estimated between ZAR 13 and ZAR 38 per share, depending on which model was applied. The ZAR 46.00 for which the company shares were bought by Bain Capital fell outside the valuation range.

4.13 Valuation Summary

Table 26: Valuation Results Summary

Equity valuation (ZAR/share)	Absa	Standard Bank	Edcon
DCF valuation			
Adjusted Local CAPM = RfG + RC + BLL x (RML – RfL) x (1 – Ri2)	**145**	**191**	**33**
Local CAPM = RfL + BLL x (RML – RfL)	**140**	**185**	**32**
Goldman Sachs = Rf + [(Re + Rc) + β x (Se / Su) x Eu x (1 – crr(S,B))]	**135**	**178**	**30**
Global CAPM = RfG + BLG x (RMG – RfG)	**131**	**179**	**38**
Salomon Smith Barney = Rf + βi x MRPGlobal + [γ1 + γ2 + γ3] x PRP	**127**	**178**	**36**
Godfrey–Esppinosa model = RfUS + RC + BA x (RMUS – Rf US)	**126**	**170**	**32**
Soenen and Johnson = Rf + pr + (β project x β FM, US) MRP	**123**	**167**	**32**
Domandaran = E(Rp) = Rf + βp[E(Rm) – Rf) + λCRP	**119**	**162**	**31**
Estrada Model = RfUS + (RMG – RfG) x RM	**116**	**159**	**33**
Godfrey –Espinosa = [RFus + Credit Spread] + [β x (US Equity Premium]	**108**	**146**	**28**
Erb–Harvey–Viskanta Model = CSi,1+t = γ0 + γ1 x ln(CCRit) + εi, t+1	**83**	**106**	**13**
Average	**123**	**165**	**31**
Standard deviation	**17**	**23**	**6**
Median	**126**	**170**	**32**
Relative valuation			
Price earnings ratio valuation	**121**	**160**	**41**
Book value ratio valuation	**124**	**154**	**36**
Transaction price	**85**	**120**	**46**

Figure 9: Absa Bank Valuation Summary (ZAR / Share)

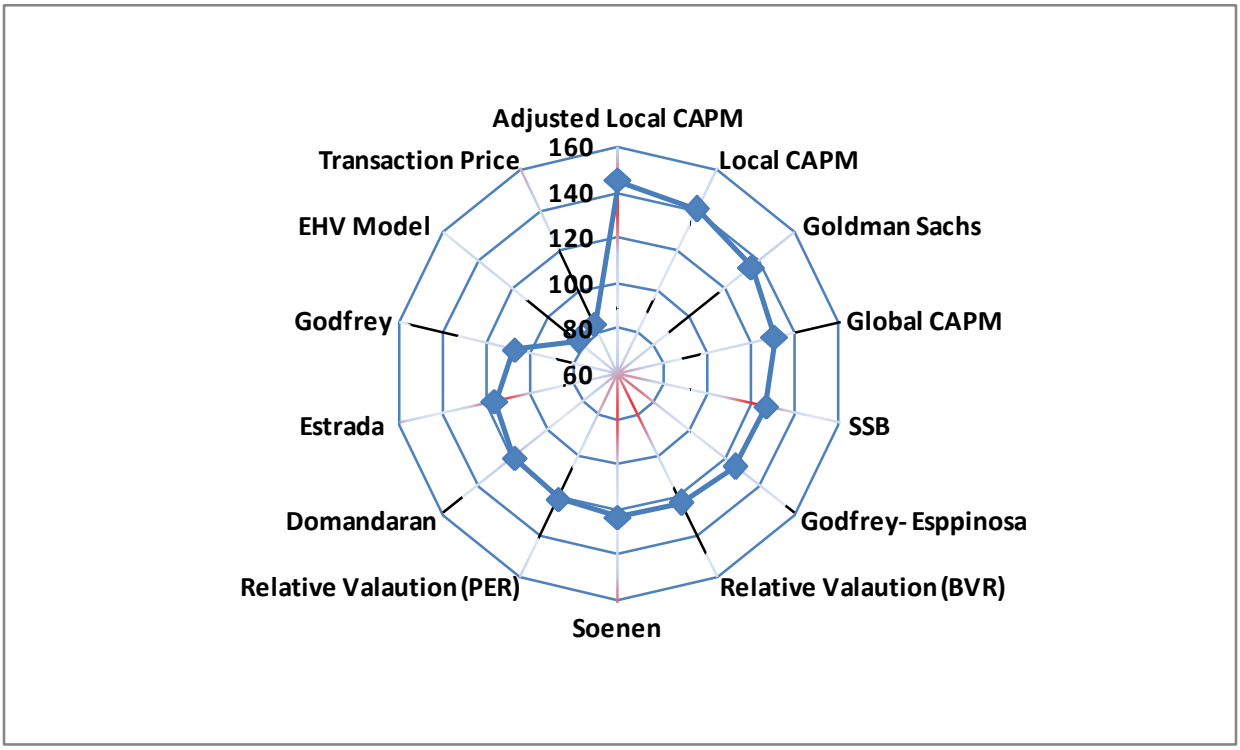


Figure 10: Standard Bank Valuation Summary (ZAR / Share)

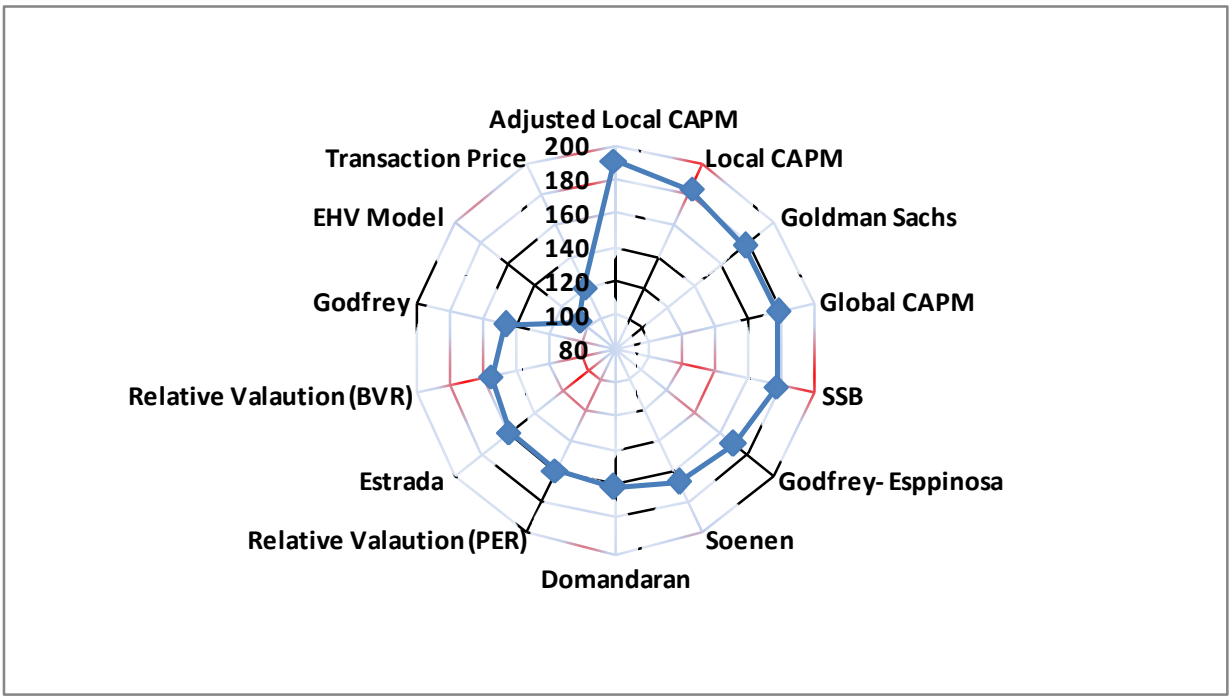


Figure 11: Edcon Valuation Summary (ZAR / Share)

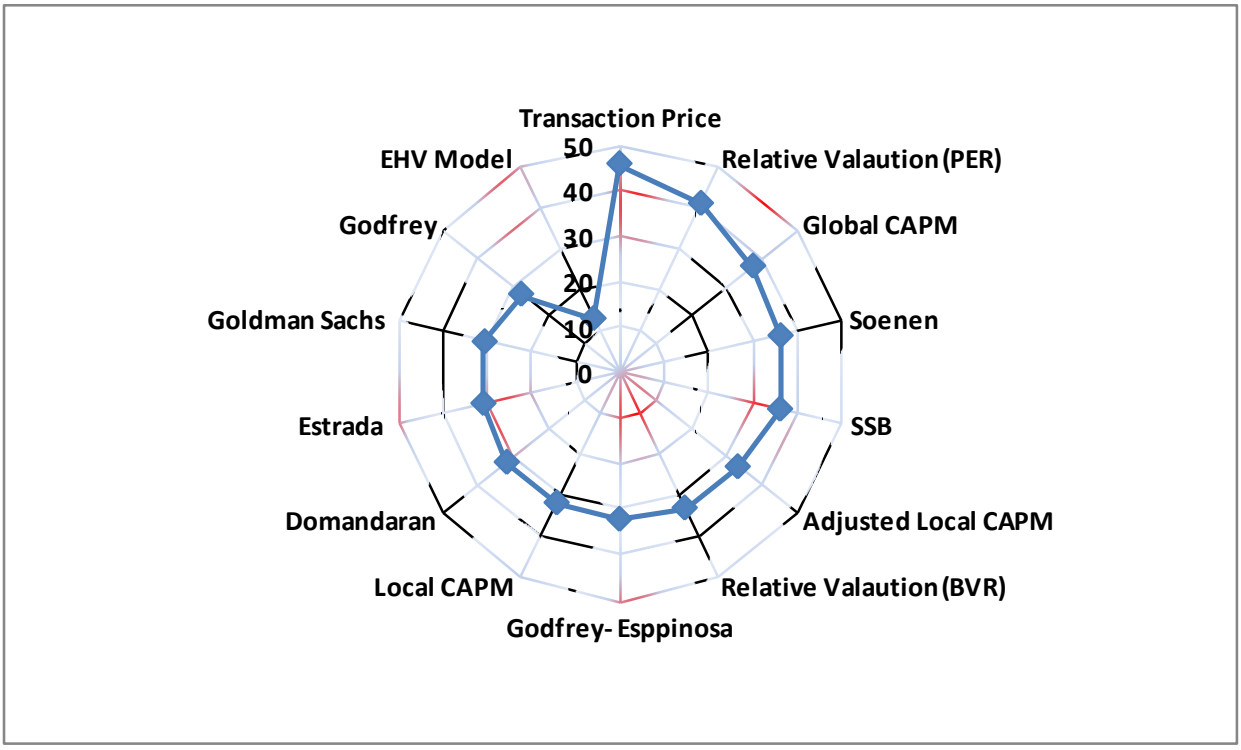


Table 26 and Figures 10, 11 and 12 above represent the valuation results of ABSA Bank, Standard Bank and Edcon derived from the valuation frameworks discussed earlier.

For Absa and Standard Bank, the EHV Model was the only model that valued the two companies lower than the transaction price. The other ten asset pricing models and the two relative valuation models (PE and BV) valued the two companies significantly higher than the transaction prices. The results concerned seem to suggest that Barclays Bank and ICBC applied a much higher emerging market discount than that which the asset pricing models analysed in this study propose.

For Edcon, Bain Capital paid more than any of the valuations resulting from the proposed valuation models, suggesting that a premium rather than a discount was paid for its acquisition comparing with the valuation models reviewed in this study.

4.14 Discussion of Research Results

Table 27: Average Absolute Difference between National Valuation and Transaction Price

Absolute premium on price & relative valuation	Market price	Relative valuation
Erb–Harvey–Viskanta Model = CSi,1+t = γ0 + γ1 x ln(CCRit) + εi, t+1	**28%**	**44%**
Godfrey-Espinosa = [RFus + Credit Spread] + [β x (US Equity Premium]	**30%**	**16%**
Estrada Model = RfUS + (RMG – RfG) x RM	**33%**	**7%**
Domandaran = E(Rp) = Rf + βp[E(Rm) – Rf) + λCRP	**36%**	**9%**
Soenen and Johnson = Rf + pr + (β project x β FM, US) MRP	**39%**	**8%**
Salomon Smith Barney = Rf + βi x MRPGlobal + [γ1 + γ2 + γ3] x PRP	**40%**	**8%**
Godfrey–Esppinosa model = RfUS + RC + BA x (RMUS – Rf US)	**40%**	**9%**
Global CAPM = RfG + BLG x (RMG – RfG)	**41%**	**8%**
Goldman Sachs = Rf + [(Re + Rc) + β x (Se / Su) x Eu x (1 – crr(S,B))]	**47%**	**15%**
Local CAPM = RfL + BLL x (RML – RfL)	**50%**	**17%**
Adjusted Local CAPM = RfG + RC + BLL x (RML – RfL) x (1 – Ri2)	**53%**	**18%**
Average	**40%**	**14%**
Standard deviation	**8%**	**11%**

The objective of the study was to examine the process of valuation of emerging market companies and the role of country risk in the process. The study reviewed and analysed research work that has been done in this field and tested these approaches by applying them to South African companies.

The generally accepted assumption is that emerging markets are segmented and riskier than developed markets. The study evaluated this hypothesis by comparing the level of risk between the developed markets and emerging markets measured by the equity market returns volatility. Equity market performance of a total twenty-seven emerging market countries was compared with that US equity market. According to the study outcome, between July 1998 and November 2008, the emerging equity markets were on average twice as risk as the US equity market. The average annually volatility of equity markets was 9.74% compared to the US annual volatility of 4.64%. This result supports the suggestion that the emerging markets are riskier than developed markets as measured by equity market volatility.

The next issue that the study investigated the level of integration of a number of emerging markets in the world capital markets, which was found to be significantly low. The level of integration measured by the correlation between the markets was estimated to be 0.45. And the industry proposition is that emerging markets should be valued differently because of low integration in the world capital markets. However, the segmentation of the emerging markets is also reflected in the trade and investment regulatory and political barriers imposed by the different countries such as foreign currency exchange controls.

The findings of the study that the emerging markets are riskier than developed markets and not well integrated in the global capital markets is the justification given by academics and researchers why these markets should be valued differently from the developed markets

Most valuation approaches developed for emerging markets propose that a country risk premium be added to the discount rate. This study investigated different methodologies of estimating the country risk premium. The generally accepted approach is to use spread of sovereign bond yield over US Treasury bond yields as the proxy for country risk premium. The study found that the majority of emerging market countries do not have US dollar or Euro denominated bonds. To estimate country risk premia of countries without US dollar sovereign bonds we developed predictive models to derive the premia using credit ratings as independent

variable and SOT as the dependent variable. The results of the predictive models and the actual SOT were shown to be close.

Eleven emerging markets valuation frameworks were reviewed in the current study and applied to three real transactions that took place in South Africa. In the study, South Africa was used to represent the emerging markets, and where country-specific data was required to analyse the models, South African data was used.

As the various valuation frameworks treat emerging market risks differently, the challenge was to retrieve all data required for the different variants of the various models, with such bond and credit information for the EHV model. Due to South Africa having one of the most developed capital markets among the emerging markets, it was possible to retrieve all the data for the different models and the cost of capital could be calculated for each of the eleven asset pricing models in the study.

Once the cost of capital was calculated, it was applied to three cross-border transactions in which the targets were South African. This approach entailed testing whether any of the frameworks or principles discussed in the report were used by the investors involved in the transactions. Table 27 above shows the average difference between the various valuation models and the actual transaction price (market price) that was paid and the valuation, using multiples. The EHV model had the lowest difference between the notional valuation and the actual price. EHV, which is a non-CAPM model that is based on the credit rating of a country, is one of the simplest models that are based on the variants that require inputting.

The Goldman Sachs model is one of the most complex models, with a number of variants that are complicated to derive. However, the valuation results from this model were no better, in being closer to the actual price, than were any of the other ten models.

The results from the study are not conclusive as to whether any of the eleven models used in the study is better than another, although EHV provides the best results.

5. CONCLUSION

The current study considered the valuation of emerging market companies and the role that country risk plays in the valuation process. The proposition is that, in an integrated markets environment, specific country risk can be diversified and the single global asset pricing model can be applied across the markets. The developed markets are considered well integrated and the international investors can move in and out of investments in such markets at no extra cost than would be encountered in trading within a single market.

The first hypothesis to undergo investigation was that the emerging markets are not integrated with developed markets due to the former being well developed. To investigate this hypothesis, the study looked at the correlation between the emerging and developed markets, with the latter being represented by the US equity markets. A total of twenty-seven emerging markets was used in the study. The correlation between the emerging markets and the developed market, as represented by the US market, was found to be low, which intimated that the markets were not integrated.

Most academics and practitioners suggested that a country risk premium should be added to the discount rate when valuing investments in the emerging markets. The study reviewed the different methods that are used to calculate country risk premium. The emerging market country's USD sovereign bond yields SOT bond yield is the generally accepted measure of country risk. The research study developed predictive equations that could be applied to calculate country risk premia for countries that do not have USD sovereign bonds. In such cases, the actual SOT is used as the dependent variable and the independent variable is the country risk ratings. The risk ratings that were applied were the credit rating (S&P and Moody's) and the ICRG ratings. The ICRG rates most countries in the world, which makes it the most useful rating to use for the SOT predictive equations.

Of the numerous valuation frameworks proposed for valuing emerging markets companies, the study reviewed eleven. Nine of the eleven asset pricing frameworks use CAPM as their basis, whereas the EHV and the Estrada models use non-CAPM approach. The frameworks considered

vary in the way in which they treat country risk. The country risk variants range from the simple country risk premium that is added to the risk-free rate in the local CAPM model to such complex applications as the Goldman Sachs, which has as many as five different variants that are used to adjust for emerging market country risk. The challenge in applying the various valuation models is the ability to derive the various variants proposed. Using South Africa as the emerging market representative, the study was able to derive the variants of all the models, due to the high level of capital market development in South Africa. However, use of the models would not be feasible for a number of emerging market countries, because of the low level of capital market development in such markets.

The models gave significantly different results in terms of cost of capital. The study calculated the average of cost of capital for three South African companies, namely Edcon, Absa and Standard Bank, with the results being as follows: the Edcon average was 12.53%, with a standard deviation of 3.56%; the Absa average was 13.35%, with a standard deviation of 2.34%; and the Standard Bank average was 12.88%, with a standard deviation of 2.39%. The results mean that the choice of valuation model to use in the valuation process is critical, since it affects the valuation of a business.

The study concludes that, because there are significant differences in the valuation models, both in terms of resulting value and theoretical basis, concerning how to address the challenge of valuing emerging market companies, the use of at three to four models is required, rather than relying on one approach. The resulting valuation range should form the relevant negotiation space. Therefore, the main objective of the study to search for a single “best practice” valuation framework that is both practical and theoretically sound for emerging markets remains unfulfilled. The choice of valuation frameworks will be driven among other things the data that is available to construct the valuation models.

There is scope for more research on asset pricing in emerging markets in order to establish “best practice” model for international investors looking to invest in these markets.

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Exhibit A: Determinants of Credit Ratings

DESCRIPTION OF VARIABLES			
Variable Name	**Defination**	**Impact on Ability to Pay**	**Data Sources**
Determinants of Sovereign Ratings			
Per capita income ('000 US$)	GNP per capita	Greater tax base; proxy for level of political stability	World bank, Moody's, FRBNY Esimates
GDP growth (%)	Average annual real GDP growth on a year-over-year basis	During high GDP growth existing debt burden becomes easier over time	World bank, Moody's, FRBNY Esimates
Fiscal balance (%)	Average annual central government budget surplus relative to GDP	Fiscal deficit absorbs private domestic savings, inability to collect tax	World bank, Moody's, FRBNY Esimates
External balance	Average annual current account surplus relative to GDP	Large current account deficit indicates that the country relies heavily on funds from abroad, thus growth in foreign indebtedness which become unstainable overtime	World bank, Moody's, FRBNY Esimates
Inflation (%)	Average annual consumer price inflation rate	High inflation points to structural problems in Government finance	World bank, Moody's, FRBNY Esimates
External debt (%)	Foreign currency debt relative to exports	A higher debt burden should correspond to a higher default risk	World bank, Moody's, FRBNY Esimates
Indicator for economic development (1 = industrialised; 0 = not industrialised)	IMF classification as an industrialised country	Once at a certain level of development or income the country is less likely to default	IMF
Indicator for default history (1 = default; 0 = no default)	Default on foreign currency debt	Other things being eqaul, a country with recent default history is considered high risk	Standard and Poor's
Other Variables			
Moody's and S&P ratings	Ratings assigned by the two agencies	Ratings based mostly on the above macroeconomic indicators	Moody's, S&P
Spreads	Sovereign bond spreads over Treasuries adjusted for maturities	Spread influnces by above variables	Bloomberg, J.P. Morgan FRBNY

Exhibit B: Twenty Largest South African Transactions (1991–2009)

20 Largest South African transactions (1991 - 2009)	Transaction value (Rb)	Year
Merger of Billiton Plc with Australian mining house BHP Ltd to form dual listedentity BHP Billiton	223.20	2001
Buy-out of De Beers minorities by Anglo American Plc, CHL and Debswana and the subsequent delisting of De Beers	153.70	2001
Merger of Anglo American Corporation and Minorco to form Anglo American Plc prior to Anglo American Plc's listing on the London Stock Exchange	71.30	1998
Merger of financial services interests of Anglo American Corporation and Rand Merchant Bank to form FirstRand	59.00	1998
Unbundling of 90% of Remgro's holding in British American Tobacco (BAT) to Remgro shareholders	58.80	2008
Sale of Dimension Data's assets to Dimension Data Plc and unbundling of consideration shares	57.50	2000
Acquisition from Philip Morris of a 100% interest in Miller Brewing Company by SA Breweries Plc to form SAB-Miller	53.90	2002
Old Mutual Plc acquisition of Forsakringsaktiebolaget Skandia in Sweden	38.00	2005
Industrial and Commercial Bank of China's (ICBC) acquisition of 20% stake in Standard Bank Group Ltd	36.70	2007
Anglo American Plc's unbundling of Mondi Plc and Mondi Ltd	35.80	2007
Sale of SA Breweries' assets to SA Breweries Plc and unbundling of consideration shares	34.30	1999
MTN Group's acquisition of a 100% interest in Investcom LLC	33.50	2006
Rembrandt Group restructuring	33.50	2000
Barclays Bank acquisition of Absa Group Ltd	29.80	2005
Restructuring of Kumba Resources and introduction of a new BEE partner	25.70	2005
Acquisition by Bain Capital LLC of Edgars Consolidated Stores Ltd	25.00	2007
Unwinding of MTN's Alpine Trust, resulting in distribution of shares to MTN employees and acquisition of an 11.5% stake in MTN by the PIC	24.40	2008
Gencor's sale of its non-precious metal interests to Billiton prior to Billiton's listing on the London Stock Exchange	23.50	1997
Vodafone Group Plc's acquisition from Telkom of a further 15% stake in the Vodacom Group in order to gain outright control	22.50	2008
Vodafone Group Plc's acquisition of Venfin Ltd	21.00	2005

Exhibit C: Key Credit Rating Drivers

Business risk profile:

- Product diversification
- Geographical diversification
- Customer base and supplier exposure
- Exposure to volatile markets

Industry analysis:

- Key trend in the industry
- Macroeconomic scenarios
- Competitive position and market share trend
- Political and regulatory environment
- Cyclical vs. stable demand

Strategy and management:

- Growth prospective and assumptions
- Shareholders' returns
- Management team experience
- Corporate governance

Financial risk and liquidity:

- Historic and forecast ratio analysis
- Peer group comparison
- Liquidity profile and debt maturity
- Structural consideration
- Off-balance sheet liabilities and adjustment

Exhibit D: Absa Valuation Report

This valuation report was prepared as part of a research report on the valuation of companies in emerging market approaches and the application of the country risk premium.

Introduction

1. The report was prepared to express an opinion as to the fair market value of the 60% interest bought by Barclays plc in Absa Bank Ltd. The valuation was done as at 1 April 2005 (the valuation date).

2. Subject to the qualifications outlined below, for the purpose of this report, fair market value is defined as the highest price available in an open and unrestricted market between informed and prudent parties, acting at arm's length and under no compulsion to act, expressed in terms of money or money's worth.

3. The purpose was to evaluate the valuation approaches proposed for emerging markets, in particular whether the country risk premium is included in the valuation.

4. Barclays plc, the UK-based global financial services provider, acquired a majority stake of 60% in Absa Bank Ltd, the South African commercial bank, for ZAR 82.5 (GBP 7.22) cash per Absa share, plus a final dividend for the year ended March 2005 of ZAR 2 per share.

5. The offer valued Absa's 60% stake at ZAR 33bn (GBP 2.9bn) and Absa's total outstanding share capital at ZAR 54.62bn (GBP 4.8bn). Under the terms of the agreement, Barclays initially acquired a 32% stake via a scheme of arrangement and then launched a public tender offer for up to a further 28% of the outstanding share capital.

6. The offer price represented a premium of 3% to the ZAR 80 closing price on 6 May 2005, the last trading day prior to the firm announcement of the offer. Furthermore, the offer represented a premium of 8.5% on the ZAR 76.01 closing price of Absa on 22 April 2005, the last trading day prior to the detailed cautionary announcement of the offer, and a premium of 36.4% on its ZAR 60.5 closing price on 22 September 2004, the date prior to the first cautionary announcement in relation to the transaction.

7. The acquisition is in line with Barclays' intention to expand its global product and international retail and commercial banking businesses in markets outside the UK. The acquisition is expected to speed up Absa's growth strategy in South Africa and on the rest of the African continent. Barclays intends to finance the transaction from a combination of available resources and preference share finance, which will result in a reduction in

Barclays Tier 1 ratio of approximately 60 basis points from the existing Tier 1 capital ratio of 7.6% as at 31 December 2004.

8. The number of outstanding shares at the time of the transaction announcement was 655m.

Statement of the Final Conclusion

9. Subject to the assumptions, qualifications, and restrictions noted herein, in our opinion the fair market value of Barclay's interest in Absa, as at the valuation date, was ZAR 46.67bn.

   The value of Absa shares was estimated at ZAR 118.74 per share, after a 25% discount for minority discount. The figure is much lower than the ZAR 84.50 per share for which the company shares were bought by Barclays.

Restrictions and Qualifications

10. This report is not intended for general circulation or publication, nor is it to be reproduced or used for any purpose other than that of the purpose stated above, without our prior written permission in each specific instance, which permission shall not be unreasonably withheld. We will not accept any responsibility for losses suffered due to unauthorised or improper use of the report.

11. We reserve the right (but are not obliged) to review all calculations referred to in this opinion and, if considered necessary by us, to revise our opinion in the light of any new facts, trends or changing conditions existing at any date prior to or at the valuation date, which become apparent to us subsequent to the date of this report.

12. All values expressed herein are in terms of South African rand.

Scope of Review

13. In forming our opinion as to value, we have relied on the following information:

    a) The Absa Ltd financial statements for 2005 dated 30 March 2005;

    b) The Transaction Circular sent to Absa shareholders relating to the purpose behind the acquisition of 32% of Absa Ordinary Shares issued on 25 May 2005; and

    c) Publicly available management presentations on the company's website.

14. No projections on the future financial performance of the business were available at the time of the report.

15. Barclays Bank was considered a special interest buyer, because of its current operations and future business strategy.

Description of the Business Being Valued

16. Absa is one of the top four banks in South Africa listed on the JSE stock market. Absa Group Ltd is the holding company of a banking and financial services group. The Group provides a range of retail and corporate banking, insurance, financial and property services through local and international networks.

Valuation Approach Used

17. In order to determine the en bloc fair market value of the shares of Absa Ltd, we valued the consolidated business and determined Barclay's interest value on a pro-rata basis, using DCF valuation and relative valuation to derive the value of the company.

Valuation

18. We reached the value conclusion by using a combination of valuation approaches, namely DCF and relative valuation. The discount rate used was 13.71% to reflect the risk that was associated with the cash flows concerned, including the country risk.

19. Although the calculations set out in the report are an attempt to reflect the underlying asset values, and what we perceived to be the long-term income and discretionary cash flow of Invest Ltd, it was important that the shareholders clearly understood that an arm's length, third-party purchaser might have been willing to pay a price for shares other than the one noted here.

20. In our opinion, Barclay's interest in Absa Ltd, as at 1 April 2005, fell in the range of ZAR 45.2bn and ZAR 48.2bn, rounded. The value is higher than the price that Barclays paid, which was ZAR 33.2bn.

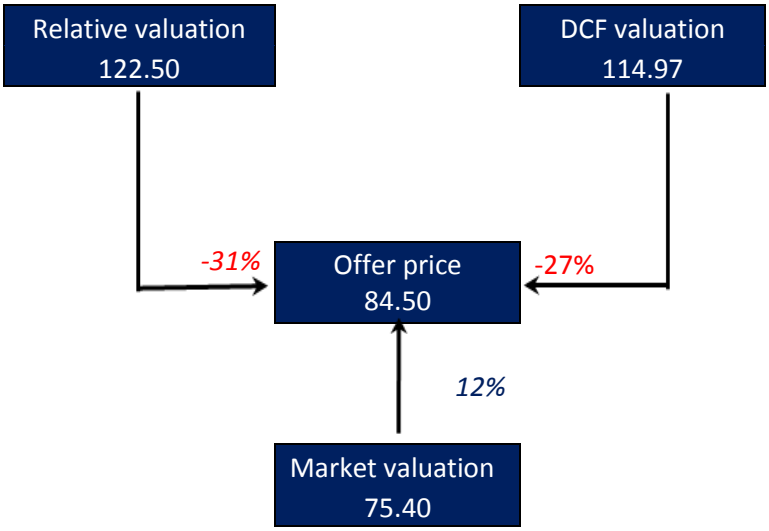
Key Assumptions

21. The key assumptions made in this report are as follows:

    a) The business concerned was expected to continue operating over the long term.
    b) The acquisition of Absa by Barclays was of a strategic nature, and would have an impact on its future operations.
    c) However, no synergy benefits were included in the valuation.

d) The growth rate was 4.5%, being the midpoint of the long-term inflation target.
e) The corporate tax rate was 29%.
f) The discount rate was 13.71%,

Valuation Summary – ZAR per Share



Appendix

Valuation breakdown

Offer	9 May 2005
Market cap (million)	55 352
Shares in issue (million)	655
Share price (ZAR)*	84.50

** Includes ZAR2 dividend*

Discount rate	13.71%
Corporate tax (RSA)	29%

Market valuation (JSE) – 31 March 2005	
Market cap (m)	49 391
Shares in issue (m)	655
Share price	75.4

DCF valuation – 1 April 2005 (million)	
Present value	19 404
Terminal value	65 829
Cash & cash equivalent	15 184
Enterprise value	100 417
Debt	0
Equity value	100 417
Equity value less minority discount (25%)*	75 313
Value per share	115

*see Pereiro (2002, 2007)

Relative valuation – 31 March 2005		
	Price /Earnings	Price / Book value
Peers	14.6	2.9
31 March 2005	5 759	29 443
Valuation	84 237	85 769
Country risk adjust. (rel. PER -5.6%)	4 717	4 803
Equity value	79 520	80 966
Value per Share (ZAR)	121.39	123.60

Financial statement – Forecast (ZAR m)	FY06E	FY07E	FY08E	FY09E	FY10E
Revenue	23 490	23 607	23 724	23 843	23 962
Operating income	9 196	9 610	10 042	10 494	10 966
Net income	6 529	6 823	7 130	7 451	7 786
-Reinvestment	1 664	1 739	1 817	1 899	1 984
Free cash flow	4 865	5 084	5 313	5 552	5 802
Discount factor	0.94	0.82	0.73	0.64	0.56
Present value	4 562	4 193	3 853	3 541	3 254

Return on capital	2.0%	Reinvestment rate	25.5%
Operating income	9 196	Net income (after tax)	6 529
Total assets	348 686	Capital expenditure	1 780
Cash & cash equivalent	15 184	Depreciation & impairment	116

Expected growth rate	0.50%
Terminal growth long-term RSA CPI	4.50%

Exhibit E: Standard Bank Valuation Report

This valuation report was prepared as part of a research report on the valuation of companies in emerging market approaches and the application of the country risk premium.

Introduction

1. The report was prepared to express an opinion as to the fair market value of the 20% interest bought by ICBC in Standard Bank Ltd. The valuation was done as at 31 December 2007 (the valuation date).

2. Subject to the qualifications outlined below, for the purpose of this report, fair market value is defined as the highest price available in an open and unrestricted market between informed and prudent parties, acting at arm's length and under no compulsion to act, expressed in terms of money or money's worth.

3. The purpose was to evaluate the valuation approaches proposed for emerging markets, in particular whether the country risk premium was included in the valuation.

4. ICBC Ltd, the listed Hong Kong-based banking group, acquired a 20% stake in Standard Bank Group Ltd (SBG), the listed South African bank, for a cash consideration of ZAR 36 671.6m (USD 5 413m). Under the terms of the agreement, ICBC acquired 304.87m shares, representing a 20% stake in two transactions. The first 152.4m shares were acquired from the shareholders at a price of ZAR 136 (USD 20.07) per share, and in the second transaction SBG issued 152.4m new shares to ICBC at a price of ZAR 104.58 (USD 15.43) per share. ICBC funded the transaction from its internal resources.

5. The acquisition allowed both the banks to grow globally, especially in the emerging markets around the world. ICBC gained access to SBG's corporate and investment banking and personal and business banking services and to its customers on appropriate commercial terms.

6. The number of outstanding shares at the time of the transaction announcement was 1 220m.

Statement of the Final Conclusion

7. Subject to the assumptions, qualifications, and restrictions noted herein, in our opinion the fair market value of ICBC's interest in Standard Bank, as at the valuation date, was ZAR 47.66bn.

   The value of Standard Bank shares was estimated at ZAR 156.34 per share, after a 25% discount for minority discount. This figure is much higher than the ZAR 120.29 for which the company shares were bought by ICBC.

Restrictions and Qualifications

8. This report is not intended for general circulation or publication, nor is it to be reproduced or used for any purpose other than that of the purpose stated above, without our prior written permission in each specific instance, which permission shall not be unreasonably withheld. We will not accept any responsibility for losses suffered due to unauthorised or improper use of the report.

9. We reserve the right (but are not obliged) to review all calculations referred to in this opinion and, if considered necessary by us, to revise our opinion in the light of any new facts, trends or changing conditions existing at any date prior to or at the valuation date, which become apparent to us subsequent to the date of this report.

10. All values expressed herein are in terms of South African rand.

Scope of Review

11. In forming our opinion as to value, we have relied on the following information:

    a) The Standard Bank Ltd financial statements for 2007 dated 31 December 2007;

    b) The Transaction Circular sent to Standard Bank shareholders relating to the purpose behind the acquisition of 11.11% of Standard Bank Ordinary Shares issued on 16 November 2007; and

c) Publicly available management presentations on the company's website.

12. No projections on the future financial performance of the business were available at the time of the report.

13. ICBC was considered a special interest buyer, because of its current operations and future business strategy.

Description of the Business Being Valued

14. SBG Ltd is the holding company for a group of companies offering financial services. The Group provides services in personal, corporate, merchant and commercial banking, including insurance broking, mutual fund management, and property fund management, as well as other services. Standard Bank is also the holding company of Liberty Life Group Ltd.

Valuation Approach Used

15. In order to determine the en bloc fair market value of the shares of Standard Bank, we valued the consolidated business, using DCF valuation and relative valuation to derive the value of the company. We determined ICBC's interest value on a pro-rata basis.

Valuation

16. We reached the value conclusion by using a combination of valuation approaches, namely DCF and relative valuation. The discount rate used was 13.31% to reflect the risk that was associated with the cash flows concerned, including the country risk.

17. Although the calculations set out in the report are an attempt to reflect the underlying asset values, and what we perceived to be the long-term income and discretionary cash flow of Invest Ltd, it was important that the shareholders clearly understood that an arm's length, third-party purchaser might have been willing to pay a price for shares other than the one noted here.

18. In our opinion, ICBC's interest in Standard Bank Ltd, as at 1 January 2008 fell in the range of ZAR 47.5bn and ZAR 47.9bn, rounded. The value is higher than the price that ICBC paid, which was ZAR 36.7bn.

Key Assumptions

19. The key assumptions made in this report are as follows:

a) The business concerned was expected to continue operating over the long term.

b) The acquisition of Standard Bank by ICBC was of a strategic nature, and would have an impact on its future operations.

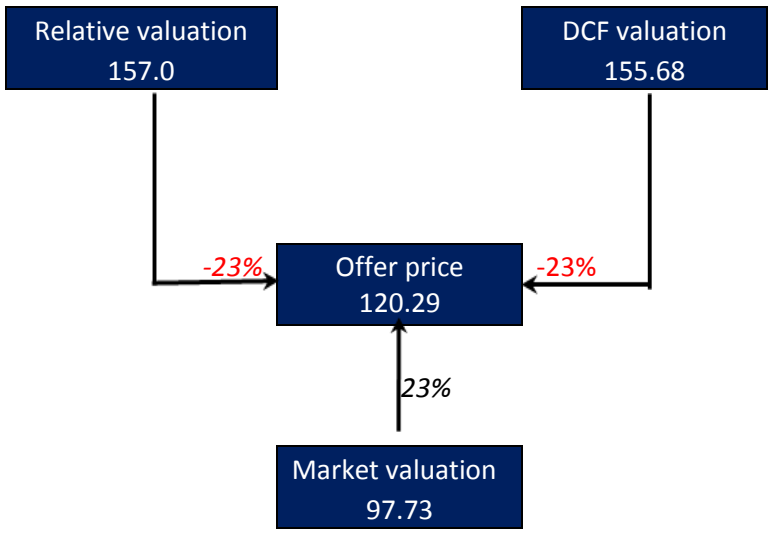
c) However, no synergy benefits were included in the valuation.

d) The growth rate was 4.5%, being the midpoint of the long-term inflation target.

e) The corporate tax rate was 29%.

f) The discount rate was 13.31%.

Valuation Summary – ZAR per Share



Valuation breakdown

Offer	1 January 2007
Market cap (m)	146 761
Shares in issue (m)	1 220
Total value of offer	36 672
Number of shares	305
Offer share price (ZAR) – WAP	120.29
Discount rate	13.31%
Corporate tax (RSA)	29%

Market valution (JSE) – January 2007	
Market cap (m)	119 236
Shares in issue (m)	1 220
# of shares ('000)	92 543
Value traded (m)	9 044
VWAP (ZAR)	97.7

DCF valuation – 1 January 2007 (m)	
Present value	49 039
Terminal value	172 495
Cash & cash equivalent	29 175
Enterprise value	250 709
Debt	0
Equity value	250 709
Equity value less minority discount – 25%*	188 032
Value per share (ZAR)	154

*see Pereiro (2002, 2007)

Relative valuation – 31 December 2007		
	Price/Earnings	Price / Book value
Peers	14.6	2.9
31 December 2007	14 101	68 506
Valuation	206 257	199 562
Country risk adjust. (rel. PER - 5.6%)	11 550	11 175
Equity value	194 707	188 386
Value per share (ZAR)	159.58	154.40

Financial statement – Forecast (ZAR m)	Year 1	Year 2	Year 3	Year 4	Year 5
Revenue	64 794	65 109	65 426	65 744	66 063
Operating income	25 069	26 197	27 375	28 607	29 895
Net income	17 799	18 600	19 437	20 311	21 225
-Reinvestment	5 604	5 856	6 120	6 395	6 683
Free cash flow	12 195	12 743	13 317	13 916	14 542
Discount factor	0.94	0.83	0.73	0.65	0.57
Present value	11 456	10 565	9 744	8 986	8 288

Return on capital	1.5%
Operating income	25 069
Total capital	1 182 126
Cash & cash equivalent	29 175

Reinvestment rate	31.5%
Net income (after tax)	17 799
Capital expenditure	5 619
Depreciation & impairment	15

Expected growth rate	0.49%
Terminal growth long-term RSA CPI	4.50%

Exhibit F: Edcon Valuation Report

This valuation report was prepared as part of a research report on the valuation of companies in emerging market approaches and the application of the country risk premium.

Introduction

1. The report was prepared to express an opinion as to the fair market value of the 100% interest bought by Bain Capital in Edgars Stores Consolidated Ltd (Edcon). The valuation was done as at 1 January 2007 (the valuation date).

2. Subject to the qualifications outlined below, for the purpose of this report, fair market value is defined as the highest price available in an open and unrestricted market between informed and prudent parties, acting at arm's length and under no compulsion to act, expressed in terms of money or money's worth.

3. The purpose was to evaluate the valuation approaches proposed for emerging markets, in particular whether the country risk premium is included in the valuation.

4. Bain Capital LLC, the US-based private equity firm, acquired Edgars Consolidated Stores Ltd, the listed South Africa-based clothing, footwear and textiles retailing group in 2007.

5. Each Edgars' shareholder received ZAR 46 (USD 6.48) in cash per ordinary, and ZAR 2.00 per preference, share held. The values of the entire share capital were, therefore, ZAR 26bn (USD 3.6bn), 566.134m ordinary shares at ZAR 46 (USD 6.38) per share and 0.15m preference shares at ZAR 2 (USD 0.28) per share. The offer represented a premium of approximately 15.29% over Edgars' closing share price of ZAR 39.9 (USD 5.52) as of 7 February 2007, the last trading day prior to the official announcement.

6. 566m shares were outstanding.

Statement of the Final Conclusion

7. Subject to the assumptions, qualifications, and restrictions noted herein, in our opinion the fair market value of Edcon equity, as at the valuation date, was ZAR 19.2bn.

The value of Edcon shares was estimated at ZAR 33.92 per share. The figure is 26% lower than the ZAR 46.00 for which the company shares were bought by Bain Capital.

Restrictions and Qualifications

8. This report is not intended for general circulation or publication, nor is it to be reproduced or used for any purpose other than that of the purpose stated above, without our prior written permission in each specific instance, which permission shall not be unreasonably withheld. We will not accept any responsibility for losses suffered due to unauthorised or improper use of the report.

9. We reserve the right (but are not obliged) to review all calculations referred to in this opinion and, if considered necessary by us, to revise our opinion in the light of any new facts, trends or changing conditions existing at any date prior to or at the valuation date, which become apparent to us subsequent to the date of this report.

10. All values expressed herein are in terms of South African rand.

Scope of Review

11. In forming our opinion as to value, we have relied on the following information;

    a) The Edcon Ltd financial statements for 2006 and 2007;

    b) The Transaction Circular sent to Edcon shareholders relating to the purpose behind the acquisition of 100% of Edcon Ordinary Shares; and

    c) Publicly available management presentations on the company's website.

12. No projections on the future financial performance of the business were available at the time of the report.

13. Bain was not considered a special interest buyer, because its sole role was that of financial investor.

Description of the Business Being Valued

14. Edgars Consolidated Stores Ltd (Edcon) engages in the retailing of clothing, footwear, textiles and accessories through credit and cash stores. The company also engages in the retailing of stationery through the CNA chain.

Valuation Approach Used

15. In order to determine the en bloc fair market value of the shares of Edcon Ltd, we valued the consolidated business. We used DCF valuation and relative valuation to derive the value of the company.

Valuation

16. We reached the value conclusion by using a combination of valuation approaches, namely DCF and relative valuation. The discount rate used was 12.30% to reflect the risk that was associated with the cash flows concerned, including the country risk.

17. Although the calculations set out in the report are an attempt to reflect the underlying asset values, and what we perceived to be the long-term income and discretionary cash flow of Invest Ltd, it was important that the shareholders clearly understood that an arm's length, third-party purchaser might have been willing to pay a price for shares other than the one noted here.

18. In our opinion, the value of 100% interest in Edcon at Valuation Date fell in the range of ZAR 16.4bn and ZAR 22bn, rounded. The value is lower than the price that Bain Capital paid, which was ZAR 26bn.

Key Assumptions

19. The key assumptions made in this report are as follows:

    a) The business concerned was expected to continue operating over the long term.

    b) The acquisition of Standard Bank by ICBC was of a strategic nature, and would have an impact on its future operations.

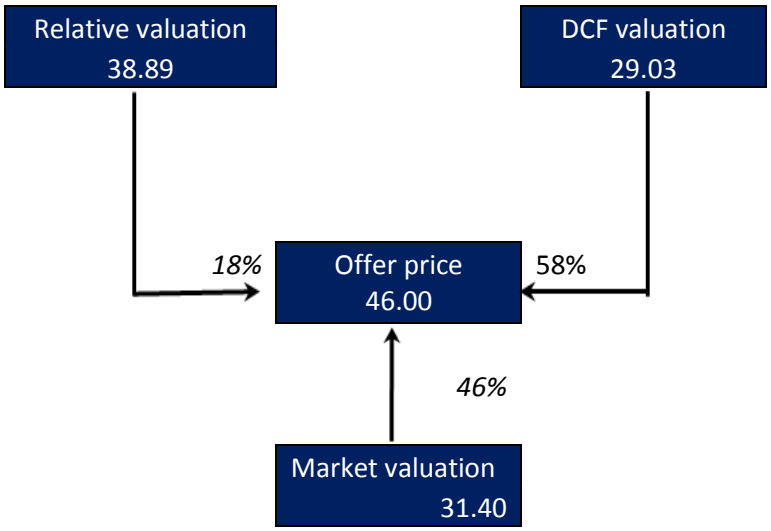
    c) However, no synergy benefits were included in the valuation.

d) The growth rate was 4.5%, being the midpoint of the long-term inflation target.

e) The corporate tax rate was 29%.

f) The discount rate was 13.31%.

Valuation Summary – ZAR per Share



Valuation breakdown

Offer	1 February 2007
Market cap (m)	26 042
Shares in issue (m)	566
Share price (ZAR)	46.00
Discount rate	12.30%
Corporate tax (RSA)	29%

Market valuation (JSE) – 16 October 2006	
Market cap (m)	17 777
Shares in issue (m)	566
Share price	31.4

DCF valuation – 1 January 2007 (m)	
Present value	4 832
Terminal value	11 153
Cash & cash equivalent	447
Enterprise value	16 432
Debt	0
Equity value	16 432
Value per share (ZAR)*	29

**No discount – acquiring majority interest*

Relative valuation – 1 April 2006		
	Price/Earnings	Price /Book value
Peers	16.4	3.0
Financial statement – 1 April 2006	1 718	8 144
Valuation	28 117	24 744
Country risk adjust. – (rel. PE – 16.7%)	4 696	4 132
Equity value	23 421	20 611
Value per share (ZAR)	41	36

Financial statement – Forecast (ZARm)	Year 1	Year 2	Year 3	Year 4	Year 5
Revenue	19 596	20 827	22 136	23 526	25 005
Operating income	2 398	2 506	2 619	2 737	2 860
Net income	1 703	1 779	1 859	1 943	2 030
-Reinvestment	526	550	574	600	627
Free cash flow	1 177	1 230	1 285	1 343	1 403
Discount factor	0.94	0.84	0.75	0.67	0.59
Present value	1 110	1 033	961	895	832

Return on capital	20.3%	Reinvestment Rate	30.9%
Operating income	2 398	Net income (after tax)	1703
Total capital	8 818	Capital expenditure	667
Cash & cash equivalent	447	Depreciation & impairment	141

Expected growth rate	6.28%
Terminal growth long-term RSA CPI	4.50%

Exhibit G: Extract of Country Index Price Data (Nov. 2007 – Nov. 2008)

Last Price		30-Nov-2007	31-Dec-2007	31-Jan-2008	29-Feb-2008	31-Mar-2008	30-Apr-2008	31-May-2008	30-Jun-2008	31-Jul-2008	31-Aug-2008	30-Sep-2008	31-Oct-2008	30-Nov-2008
US S&P 500	SPX Index	1481.14	1468.36	1378.55	1330.63	1322.70	1385.59	1400.38	1280.00	1267.38	1282.83	1166.36	968.75	896.24
Emerging Markets - MSCI	MSEMI Index	1242.06	1245.59	1088.72	1167.66	1104.58	1191.53	1210.04	1087.12	1041.86	956.25	786.92	570.52	526.97
Australia	AS30 Index	5824.79	5629.29	5105.08	5313.22	4942.30	5335.68	5517.54	5103.05	4757.02	4469.16	3659.65	2646.50	2408.56
Bulgaria	SOFIX Index	1324.49	1321.48	1062.46	1109.56	1017.42	906.58	1001.27	932.60	811.20	774.50	571.28	321.01	235.95
Chile	IPSA Index	6.33	6.13	6.01	6.24	6.66	6.46	6.35	5.72	5.96	5.65	5.01	3.70	3.64
Colombia	IGBC Index	5.41	5.32	4.70	4.99	4.90	5.62	5.75	4.85	5.04	4.83	4.22	3.04	3.16
Indonesia	ACIDN Index	0.15	0.15	0.15	0.16	0.14	0.13	0.14	0.14	0.13	0.12	0.09	0.06	0.05
Israel	ACISR Index	123.22	128.00	122.43	129.45	120.24	129.99	136.28	132.49	123.89	121.34	113.37	91.71	85.09
Nigeria	MXNI Index	54189.92	57990.22	58570.55	65075.02	63147.04	59440.91	58929.02	55949.00	53110.91	47789.20	46216.13	36325.86	33025.75
Peru	WIPER Index	34.96	34.46	36.21	40.89	38.77	36.95	37.38	36.80	31.33	27.65	25.57	14.32	17.79
Poland	ACPOL Index	241.08	234.10	204.71	211.13	226.13	220.97	223.50	200.98	220.45	189.02	165.73	110.35	97.79
Jamaica	JMSMX Index	1450.52	1533.20	1512.63	1520.17	1511.63	1532.64	1569.87	1526.91	1526.44	1499.06	1403.77	1228.71	1114.72
Thailand	FSTHA Index	29.18	29.66	27.92	31.77	30.88	31.16	30.26	26.66	23.46	23.42	20.45	13.41	12.69
Turkey	ACTUR Index	860.07	887.61	684.84	696.23	546.71	638.25	610.70	523.98	665.75	611.50	514.73	331.72	294.70
Slovakia	SKSM Index	651.27	639.73	665.06	677.97	728.00	694.95	698.29	688.86	711.73	653.80	637.68	470.11	444.38
Qatar	MXQA Index	230.55	233.13	231.14	254.63	228.07	281.30	295.97	293.72	286.23	256.30	227.80	167.47	148.00
Sri Lanka	MXLK Index	3.41	3.46	3.31	3.32	3.29	3.24	3.14	3.04	2.87	2.72	2.27	1.70	1.65
Italy	ITLMS Index	57664.11	57001.48	50985.92	51283.21	50387.12	53083.81	51967.14	46530.60	44829.54	42882.99	36217.30	27631.20	25857.67
Ukraine	MXUK Index	197.47	208.37	193.68	197.16	177.19	162.77	174.40	156.65	128.67	108.54	67.26	43.45	35.75
Japan	TOPIX Index	1.38	1.31	1.26	1.27	1.22	1.32	1.33	1.24	1.21	1.14	1.04	0.91	0.87
German	DAX Index	11572.03	11868.64	10174.16	10240.29	10331.13	10820.01	11029.12	10099.87	10102.28	9402.89	8201.91	6347.19	5932.52
S&P 500	INX Index	1481.14	1468.36	1378.55	1330.63	1322.70	1385.59	1400.38	1280.00	1267.38	1282.83	1166.36	968.75	896.24
South Africa	JALSH Index	30307.80	28957.97	27317.14	30673.74	29587.51	30743.49	31841.27	30413.43	27719.67	27702.06	23835.97	20991.72	21209.49
Kenya	KNSM Index	5234.54	5444.83	4712.71	5072.41	4843.17	5336.03	5175.83	5158.56	4868.27	4648.78	4180.40	3386.65	3386.65
Egypt	EGX 30 Index	9721.68	10549.74	10318.06	11335.21	11357.38	11786.51	11057.33	9827.28	9251.19	8449.56	7059.16	4716.25	4205.85
Malaysia	FBMKLCI Index	1396.98	1445.03	1393.25	1357.40	1247.52	1279.86	1276.10	1186.57	1163.09	1100.50	1018.68	863.61	866.14
Philippines	PASHR Index	2172.57	2216.75	1973.96	1921.16	1827.11	1715.57	1741.79	1571.68	1619.43	1668.75	1622.25	1272.57	1242.08
Korea	KOSDAQ Index	741.84	704.23	608.84	655.94	644.45	647.02	652.15	590.19	539.44	470.28	440.77	308.03	307.48
China	SHASHR Index	5112.13	5521.49	4600.12	4562.78	3643.24	3875.22	3602.66	2869.94	2911.65	2516.78	2408.88	1816.31	1965.19
Argentina	MERVAL Index	2207.16	2151.73	2007.27	2162.20	2103.72	2095.53	2205.72	2107.87	1919.82	1777.14	1598.17	1010.79	993.99
Brazil	IBOV Index	63006.16	63886.10	59490.40	63489.30	60968.07	67868.46	72592.50	65017.58	59505.17	55680.41	49541.27	37256.84	36595.87
Mexico	MEXBOL Index	29770.52	29536.83	28793.64	28918.52	30912.99	30281.41	31975.47	29395.49	27501.02	26290.99	24888.90	20445.32	20534.72
India	BSE 200 Index	2454.23	2656.52	2230.39	2217.47	1932.41	2157.52	2038.22	1644.18	1749.11	1782.08	1555.70	1145.68	1062.35

Source: Bloomberg

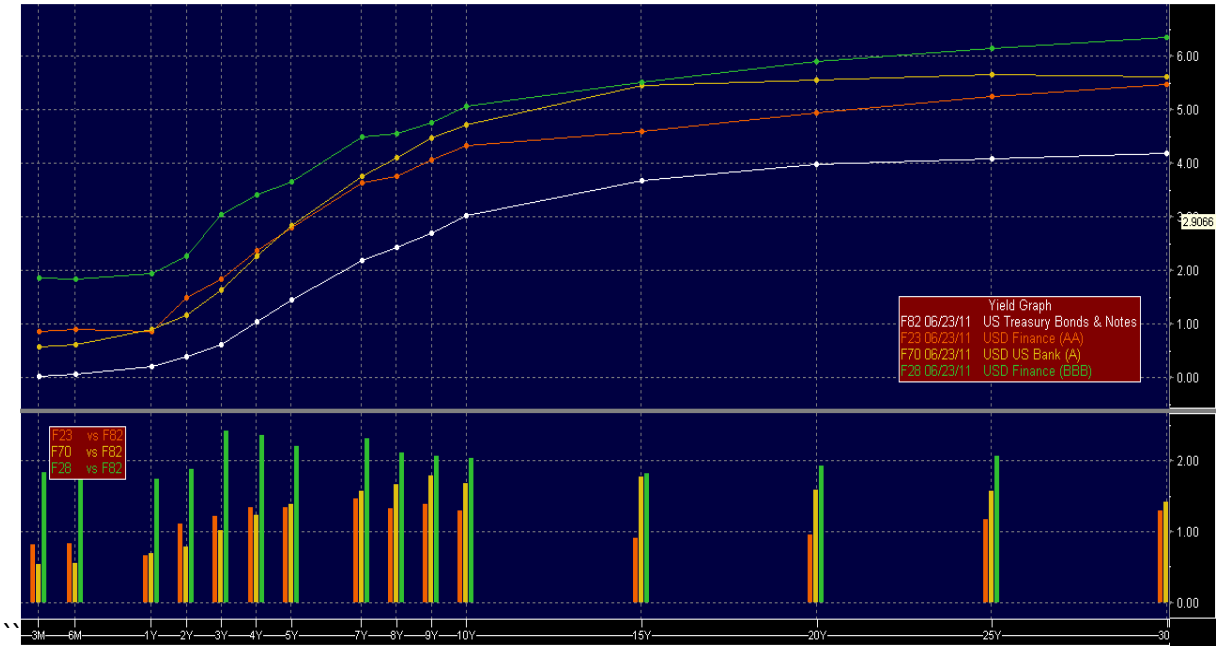
Exhibit H: Comparables Beta

Banks	Beta:M-1	Debt/Equity:%	Unlevered Beta
Average	**1.01**	**188.64**	**0.59**
BROOKFIELD ASSET MANAGE-CL A	0.87	109.87	0.41
PUBLIC STORAGE	0.68	6.52	0.64
SCHWAB (CHARLES) CORP	1.55	54.53	1.00
BLACKSTONE GROUP LP/THE	1.35	95.60	0.69
CME GROUP INC	1.12	32.61	0.85
CHUBB CORP	0.67	25.60	0.53
BB&T CORP	1.37	166.10	0.51
EQUITY RESIDENTIAL	0.73	177.89	0.26
VORNADO REALTY TRUST	0.83	133.53	0.36
LOEWS CORP	0.89	41.02	0.63
SUN LIFE FINANCIAL INC	0.96	35.58	0.71
MARSH & MCLENNAN COS	0.78	47.30	0.53
AON CORP	0.81	54.25	0.53
GENERAL GROWTH PROPERTIES	0.93	173.30	0.34
ALLSTATE CORP	1.02	31.02	0.78
BOSTON PROPERTIES INC	0.93	157.96	0.36
HCP INC	0.88	57.04	0.56
ANNALY CAPITAL MANAGEMENT IN	0.55	679.06	0.07
T ROWE PRICE GROUP INC	1.47	0.00	1.47
PROLOGIS INC	0.92	69.24	0.54
SUNTRUST BANKS INC	1.55	84.17	0.84
AMERIPRISE FINANCIAL INC	1.35	24.05	1.09
PROGRESSIVE CORP	0.91	32.37	0.69
IGM FINANCIAL INC	0.84	53.86	0.55
NATIONAL BANK OF CANADA	0.95	390.60	0.19
DISCOVER FINANCIAL SERVICES	0.92	274.22	0.25
WESTERN UNION CO	1.09	564.60	0.16
POWER CORP OF CANADA	0.90	33.16	0.68
FIFTH THIRD BANCORP	1.12	81.04	0.62
NORTHERN TRUST CORP	1.10	144.89	0.45
AVALONBAY COMMUNITIES INC	0.65	122.68	0.29
M & T BANK CORP	1.02	105.14	0.50
HOST HOTELS & RESORTS INC	1.01	83.96	0.55
WEYERHAEUSER CO	1.02	109.67	0.49
HARTFORD FINANCIAL SVCS GRP	1.26	32.53	0.95
KKR & CO LP	0.71	4.13	0.69
TD AMERITRADE HOLDING CORP	1.36	86.36	0.73
INVESCO LTD	1.33	76.71	0.75
PRINCIPAL FINANCIAL GROUP	1.23	17.11	1.05
BROOKFIELD OFFICE PROPERTIES	0.82	82.41	0.45
HEALTH CARE REIT INC	0.78	94.34	0.40
NYSE EURONEXT	0.76	35.65	0.56
INTERCONTINENTALEXCHANGE INC	1.33	20.54	1.11
VENTAS INC	0.90	121.33	0.41
CIT GROUP INC	1.01	382.63	0.21
LINCOLN NATIONAL CORP	1.47	44.90	1.01
SLM CORP	1.08	3843.35	0.03
MOODY'S CORP	1.10		1.10
FAIRFAX FINANCIAL HLDGS LTD	0.54	27.63	0.42
KEYCORP	1.20	121.22	0.54

Retail	Beta:M-1	Debt/Equity:%	Unlevered B
Average	**1.0**	**53**	**0.68**
WAL-MART STORES INC	0.65	70	0.38
AMAZON.COM INC	1.13	10	1.03
HOME DEPOT INC	1.13	52	0.75
CVS CAREMARK CORP	0.84	27	0.66
WALGREEN CO	0.59	17	0.51
EBAY INC	1.14	12	1.02
COSTCO WHOLESALE CORP	0.95	20	0.79
TARGET CORP	0.74	102	0.37
LOWE'S COS INC	1.08	36	0.79
MCKESSON CORP	0.86	55	0.55
TJX COMPANIES INC	0.66	25	0.53
SYSCO CORP	0.81	65	0.49
CARDINAL HEALTH INC	0.90	40	0.64
KROGER CO	1.05	149	0.42
KOHLS CORP	0.65	26	0.51
NETFLIX INC	0.99	81	0.55
BEST BUY CO INC	0.99	23	0.80
MACY'S INC	1.30	134	0.55
DOLLAR GENERAL CORP	1.48	81	0.82
AMERISOURCEBERGEN CORP	0.65	45	0.45
LOBLAW COMPANIES LTD	0.80	67	0.48
STAPLES INC	0.46	37	0.33
LIMITED BRANDS INC	1.36	170	0.51
GAP INC/THE	1.31	0	1.31
WHOLE FOODS MARKET INC	1.16	21	0.96
NORDSTROM INC	1.29	138	0.54
TIFFANY & CO	1.33	32	1.01
WESTON (GEORGE) LTD	0.87	71	0.51
SHOPPERS DRUG MART CORP	0.82	29	0.63
ROSS STORES INC	0.83	11	0.74
O'REILLY AUTOMOTIVE INC	0.67	11	0.60
SAFEWAY INC	1.20	97	0.61
SEARS HOLDINGS CORP	1.13	41	0.80
DOLLAR TREE INC	0.90	18	0.76
J.C. PENNEY CO INC	2.21	57	1.41
CARMAX INC	1.38	176	0.50
FAMILY DOLLAR STORES	0.86	18	0.73
APOLLO GROUP INC-CL A	0.81	42	0.57
ABERCROMBIE & FITCH CO-CL A	1.28	4	1.23
CANADIAN TIRE CORP-CLASS A	1.21	30	0.93
ALIMENTATION COUCHE-TARD -B	0.51	46	0.35
METRO INC -A	0.63	41	0.45
PETSMART INC	0.86	48	0.58
AUTONATION INC	1.21	155	0.48
H&R BLOCK INC	0.91	77	0.51
URBAN OUTFITTERS INC	0.78	0	0.78
ADVANCE AUTO PARTS INC	0.39	29	0.30
TRACTOR SUPPLY COMPANY	1.31	0	1.30

Exhibit I: US Banks and Retail Sector Bonds Yield Curve

US Bank Sector Bonds Yield Curve



Source: Bloomberg

US Retail Sector Bond Yields

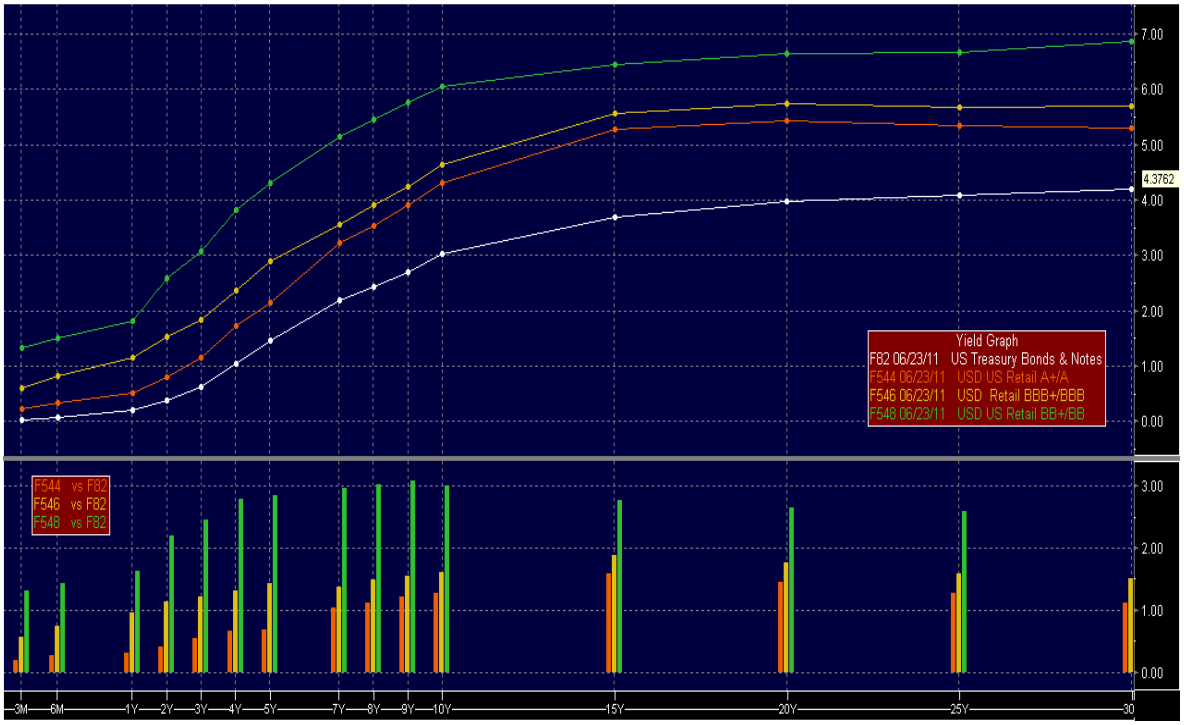


Exhibit J: South Africa Equity Market Premium Data (Extract)

Date	RSA 10 Year Gov. Bond Yield	Compounded Bond Return	JHB JSE Equity Prices	Average Equity Return	Average Bond Return	Equity Market Risk Premium
		1	5867	**16.1%**	**11.4%**	**4.8%**
Jan-98	13.55	1.60	6550			
Feb-98	13.39	1.62	7096			
Mar-98	13.20	1.64	7579			
Apr-98	12.99	1.65	8236			
May-98	13.93	1.67	7630			
Jun-98	15.14	1.69	6772			
Jul-98	15.51	1.72	7020			
Aug-98	19.54	1.74	4923			
Sep-98	17.34	1.77	5099			
Oct-98	15.53	1.79	5828			
Nov-98	16.03	1.82	5621			
Dec-98	15.92	1.84	5430			
Jan-99	15.63	1.86	5799			
Jul-99	15.22	2.01	7096			
Aug-99	15.26	2.03	6938			
Sep-99	15.04	2.06	6855			
Oct-99	14.81	2.08	7153			
Nov-99	14.30	2.11	7553			
Dec-99	13.66	2.13	8543			
Jan-00	13.73	2.16	8475			
Feb-00	13.67	2.18	7992			
Aug-00	13.55	2.34	8489			
Sep-00	13.53	2.37	8274			
Oct-00	13.74	2.39	8111			
Nov-00	13.23	2.42	7805			
Dec-00	12.71	2.44	8326			
Jan-01	12.35	2.47	9072			
Feb-01	11.65	2.49	9013			
Mar-01	12.20	2.52	8159			
Apr-01	12.05	2.54	8978			
May-01	11.82	2.57	9390			
Jun-01	10.87	2.59	9223			
Jul-01	10.62	2.62	8559			
Aug-01	10.79	2.64	8986			
Sep-01	10.69	2.66	8126			
Oct-01	10.42	2.69	8543			
Nov-01	10.27	2.71	9441			
Dec-01	11.52	2.74	10361			
Jan-02	12.12	2.76	10314			
Feb-02	12.52	2.79	10815			
Mar-02	13.24	2.82	10949			
Apr-02	12.10	2.85	11030			
May-02	11.78	2.88	11219			
Jun-02	12.01	2.91	10658			
Jul-02	11.29	2.94	9239			
Aug-02	11.61	2.96	9677			
Sep-02	11.88	2.99	9465			
Oct-02	11.62	3.02	9376			
Nov-02	10.74	3.05	9564			
Dec-02	10.74	3.08	9277			
Jan-03	10.41	3.10	8798			
Feb-03	10.24	3.13	8402			
Mar-03	9.88	3.16	7680			
Apr-03	9.79	3.18	7510			
May-03	9.47	3.21	8564			
Jun-03	9.41	3.23	8352			
Jul-03	9.50	3.26	8810			
Aug-03	9.52	3.28	9226			
Sep-03	9.32	3.31	8926			
Oct-03	9.18	3.33	9765			
Nov-03	9.22	3.36	9730			
Dec-03	9.11	3.38	10387			
Jan-04	9.61	3.41	10849			
Feb-04	9.48	3.44	10896			
Mar-04	9.72	3.47	10693			
Jul-05	7.91	3.90	15144			
Aug-05	8.03	3.93	15414			
Sep-05	8.12	3.95	16876			
Oct-05	8.08	3.98	16433			
Nov-05	7.75	4.01	16775			
Dec-05	7.47	4.03	18097			
Jan-06	7.40	4.06	19745			
Feb-06	7.32	4.08	19085			
Mar-06	7.51	4.11	20352			
Apr-06	7.38	4.13	21136			
May-06	7.75	4.16	20565			
Jun-06	8.65	4.19	21238			
Jul-06	8.70	4.22	20886			
Aug-06	8.78	4.25	21954			
Sep-06	8.62	4.28	22375			
Oct-06	8.06	4.31	23338			
Nov-06	7.92	4.34	23950			
Dec-06	7.73	4.36	24915			
Jan-07	7.71	4.39	25448			
Feb-07	7.52	4.42	25796			
Mar-07	7.74	4.45	27267			
Apr-07	7.62	4.48	28171			
May-07	7.93	4.51	28628			
Jun-07	8.40	4.54	28337			
Jul-07	8.49	4.57	28562			
Aug-07	8.47	4.60	28660			
Sep-07	8.15	4.63	29959			
Oct-07	8.01	4.66	31334			
Nov-07	8.40	4.70	30308			
Dec-07	8.40	4.73	28958			
Jan-08	8.62	4.76	27317			
Feb-08	8.97	4.80	30674			
Mar-08	9.20	4.84	29588			
Apr-08	9.43	4.87	30743			

Exhibit K: Erb−Harvey−Viskanta (EHV) Regression Model

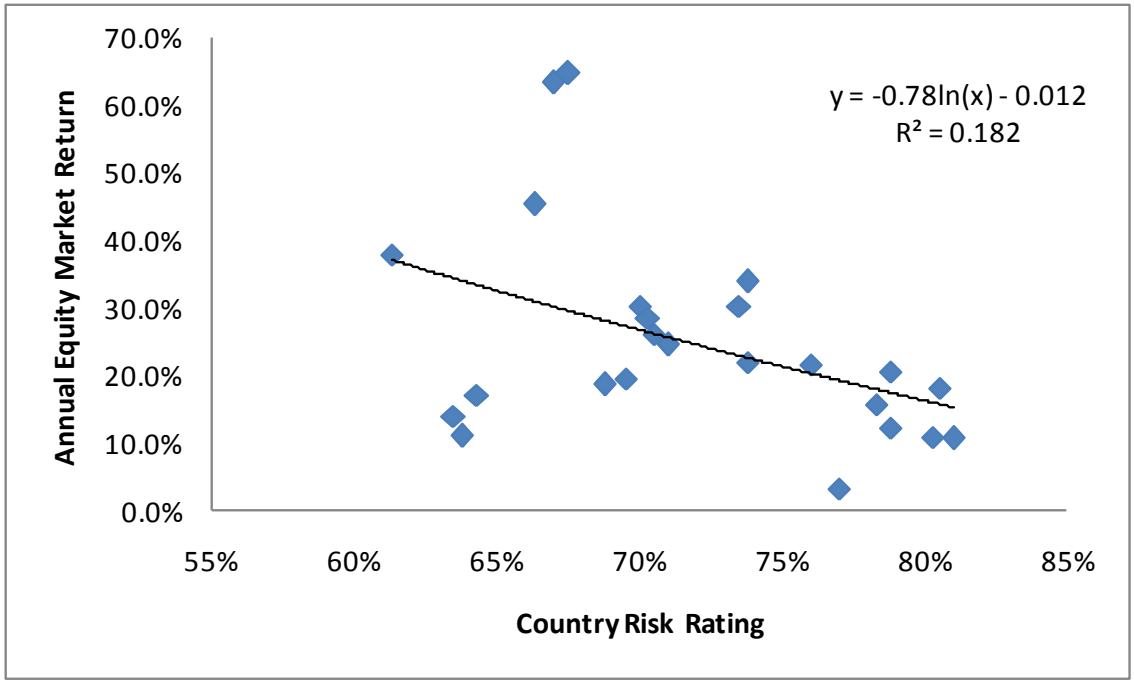


Exhibit L: Factors of Models

	Global Risk free	Country Risk Premium	Local Risk free	Beta agianst global index			Global Market Risk Premium	Beta against local index (JSE)			Local Market Risk Premium	(1 - R2) bond/ market	Re	BA (Godfrey - Espinosa)	RMi (Estrada's factor)	Credit rating	Se/Su	σi/σus	1- crr(S,B)	λ	Country β	SSB factor	ZAR conversion
				ABSA	Bank	EDCON		ABSA	Bank	EDCON													
Global CAPM = RfG + BLG x (RMG – RfG)	3.10%		3.10%	1.49	1.30	0.68	5.00%																4.97%
Local CAPM = RfL + BLL x (RML – RfL)	3.10%	2.12%	5.22%					0.8	0.8	0.6	4.80%												4.97%
Adjusted Local CAPM = RfG + RC + BLL x (RML – RfL) x (1 – Ri2)	3.10%	2.12%	5.22%					0.8	0.8	0.6	4.80%	83.77%											4.97%
Godfrey- Esppinosa model = $Rf_{US} + R_C + BA \times (RM_{US} - Rf_{US})$	3.10%	2.12%		1.49	1.30	0.68	5.00%							0.83									4.97%
Estrada Model = RfUS + (RMG – RfG) x RM	3.10%			1.49	1.30	0.68	5.00%								1.37								4.97%
Erb-Harvey-Viskanta Model = CSi,1+t = γ0 + γ1 x ln(CCRit) + εi, t+1																72%							4.97%
Goldman Sachs = Rf + [(Re + Rc) + β x (Se / Su) x Eu x (1 – crr(S,B))]	3.10%	2.12%	5.22%				5.00%	0.8	0.8	0.6			0				1.127		1.004306				4.97%
Salomon Smith Barney = $R_f + \beta_i \times MRP_{Global} + [\gamma_1 + \gamma_2 + \gamma_3] \times PRP$	3.10%	2.12%	5.22%	1.49	1.30	0.68	5.00%															0.3333333	4.97%
Domandaran = E(Rp) = Rf + βp[E(Rm) – Rf) + λCRP	3.10%	2.12%	5.22%	1.49	1.30	0.68	5.00%														1		4.97%
Godfrey = [RF_{us} + Credit Spread] + [β x (US Equity Premium]	3.10%	2.12%	5.22%	1.49	1.30	0.68	5.00%											1.38					4.97%
Soenen = R_f + pr + ($\beta_{project} \times \beta_{FM, US}$) MRP	3.10%	2.12%	5.22%	1.49	1.30	0.68	5.00%															0.89	4.97%