SCHOOL OF POSTGRADUATE STUDIES

MODELLING COUNTRY RISK: A COMPARATIVE STUDY OF THE BOTSWANA AND ZAMBIAN ECONOMIES (1994-2018)

BY

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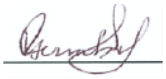
First Supervisor: Dr. Victor Gumbo **Signature:** 

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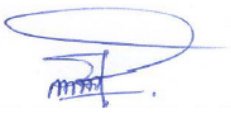
Second Supervisor: Prof. Gelson Tembo **Signature:** 

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DEDICATION

To the whole Muwando family, I have you all and I am proud to be part of you. May the Lord God continuously binds us together with love.

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OPERATIONAL DEFINITION OF TERMS

Country risk refers to the uncertainty related with investing in a particular country, and more specifically the degree to which that uncertainty could lead to losses for investors. This uncertainty can come from any number of factors including political, economic, exchange-rate, or technological influences. In particular, country risk signifies the risk that a foreign government will default on its bonds or other financial commitments increasing transfer risk. In a broader sense, country risk is the degree to which political and economic unrest affect the securities of issuers doing business in a particular country.

Country risk modelling involves the assessment of all social, economic and political uncertainties related with investing in a particular country and ascertain how these could lead to loses for an investor. Alternatively, country risk modelling is an assessment of the degree to which social, political and economic unrest affect the securities of issuers doing business in a particular country by use of econometric models such as ARDL to ascertain the loses that are likely to be borne by the investors.

County beta, a proxy for country risk, is the covariance of the local index returns and world market index returns relative to the variance of the world markets index returns

Country Risk Analysis is an assessment of political, economic and financial factors of a 'borrowing country' or 'an FDI host country' which may interrupt timely repayment of principal and interest or may adversely affect returns on foreign investment

Political stability and Absence of Violence index is an indicator of how non-business political events such as wars, regime changes and terrorist attacks affect profitability of business

Autoregressive Distributed Lag (ARDL) cointegration approach is an econometric technique for finding the short run and long run relationship between series with different order of integration (regardless of being stationary at level and or at the first difference) and is most suitable with accommodates small sample size

Correlation matrix indicates multicollinearity as it depicts the linear association between two variables.

Covariance is the crude measure of the relative movement between two variables

Variance is a measure of the dispersion of the observation from the mean

Error term stands for other variables that affect the dependent variable but were not included in the model due various reasons privy to the researcher.

ABSTRACT

The world has experienced a dramatic increase in the flow of transnational investments following increased internationalization and globalization of firms in the previous decade. Country risk exposure is a cause for concern for all Institutions that are engaged in multinational trade and finance. Accordingly, there is need for modelling country risk (see page iv) so that the governments of the two countries and investors can use the tool for assessing country risk. The main objectives of the study are to establish annual country betas, identify possible determinants of country risk, assess the impact country risk drivers have on country risk, and establish short run and long run country risk model for Botswana and Zambia. A mixed method with concurrent research design was employed. Personal Interviews were the main instrument for collection of primary data. Snowball sampling was used to select the sample. The researcher first visited the central banks of these two countries to collect secondary data. Secondary data was collected from the Lusaka Stock Exchange (LUSE) and Botswana Stock Exchange (BSE), Ministry of Finance, Central bank and Central Statistical Offices of the two states. An autoregressive distributed lag (ARDL) technique was employed on annual data for the period 1994 to 2018.The findings of the study revealed that the drivers for country risk of Botswana in the short run are beta, current account balance and GDP deflator**,** one year lagged political stability and absence of violence index and weighted short term interest rates, whereas those of the country of Zambia are beta**,** current account balance, political stability and absence of violence index, unemployment rate and weighted short term interest rates. The study findings also revealed that current account balance positively affect country risk of Botswana and Zambia, while beta, political stability and absence of violence and weighted short term interest rates negatively influence the country risk in the short run. The study findings further established that the long run determinants of country risk of Botswana are beta, current account balance, GDP Deflator and weighted short term interest rates whereas those of the country of Zambia are current account balance**,** betas, political stability and absence of violence index and unemployment rate. Furthermore, from the study findings, current account balance positively influences country risk of Botswana and Zambia whereas beta, GDP Deflator and weighted short term interest rates negatively affect Botswana country risk, beta, political stability and absence of violence negatively influence country risk of Zambia. In this regard, the study concluded that Zambia is riskier than Botswana because most of the estimated annual betas are slightly bigger than that of Botswana even though the estimated annual betas of these two countries are smaller. Additionally, the study concluded that the major determinant of country risk of Botswana and Zambia in the short run and long run is current account balance as it has significant positive influence. Effective policies need to be implemented by the authorities of these two countries to manage or reduce persistent current account deficits and political risk, hence country risk would be managed. There is need to appraise the potential impact of country risk on international investments made in emerging markets where there is inadequate risk information and there is need to consider other econometric methodologies to assess the impact of the set of macroeconomic factors on country beta for Botswana and Zambia so as to evaluate whether there is consistence in findings.

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LIST OF ABBREVIATIONS AND ACRONYMS

AEO	African Economic Outlook
AfDB:	Africa Development Bank
ARDL:	Autoregressive Distributed Lag
ARIMA	Autoregressive Integrated Moving Average
ECAs	Official Export Credit Agencies
BSE:	Botswana Stock Exchange
CPI:	Corruption Perception index
CSO:	Central Statistical Office
DPRU:	Development Policy Research Unit
EU	European Union
FDI:	Foreign Direct Investment
GAN	Global Area Network
GDP:	Gross Domestic Product
GoB	Government of Botswana
GoZ	Government of Zambia
HIPC:	Heavily Indebted Poor Country
IFIs	International Finance Institutions
IMF:	International Monetary Fund
IPDL	International Poverty Datum Line
LuSE:	Lusaka Stock Exchange
MSEMI:	Morgan Stanley Emerging Markets Index
OECD:	Organisation for Economic Co-operation and Development
OCMT	World Organization against Torture
PSAV	Political Stability and Absence of Violence index
SADC:	Southern African Development Community
UNCTAD:	United Nations Conference on Trade and Development
UNDP:	United Nations Development Programme
SOEs	State Owned Enterprises
USD:	United States Dollars
UK:	United Kingdom
NYSE	New York Stock Exchange

BERI:	Business Environment Risk Intelligence (BERI)
WDI	World Bank's World development indicators
CART	Classification and Regression Tree (CART) Method
ICAPM	International Version of Capital Asset Pricing Model

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CHAPTER ONE: INTRODUCTION AND BACKGROUND OF THE STUDY

1.1 Introduction

The computation of country risk and interconnection between country risk and macroeconomic variables has been a major subject of engagement within the multinational trade and finance circus. According to Vij (2005), country risk is "the risk that economic, social and political events in a foreign country would adversely affect an institution's financial interest". Alternatively, Shapiro (1999) also defined country risk as "the general level of political and economic uncertainty in a country affecting the value of loans or investments in that country". According to Bouchet, Clark and Groslambert (2003), San-Martin-Albizuri and Rodriguez-Castellanos (2015), and San-Martin-Albizuri and Rodriguez-Castellanos (2018), country risk was mainly originated by a various sequence of crises: political crises in the 1960s and 1970s, oil crisis and collapse of the fixed exchange rate system in the 1970s, financial debt crises in the 1980s, financial crises in the 1990s and subprime lending of 2007. These entire crises renewed the interest of different stakeholders in the concept of country risk. The sovereign and private debt crisis in the Euro area and non-Euro member countries fuelled an on-going debate among rating agencies, policymakers (including public debt managers, bank regulators, fiscal authorities and central bankers) and academics on how to measure or estimate country risk (Blommestein and Turner, 2012). There is confusion and lack of consensus among gurus on inherent complexity of this type of risk (San-Martin-Albizuri and Rodriguez-Castellanos, 2018, p.82). In addition, modern contributors to this debate advocate for a set of indicators that they think capture country risk, these criteria range from macroeconomic to financial formulas through to credit ratings (Blommestein, Guzzo and Holland, 2010). Despite the presence of both pros and cons in each of the recommended measures, no single one has emerged as entirely acceptable (Blommestein and Turner, 2012).

1.2 Background of the study

The intensified process of globalization and increasing financial integration in the recent years has led to a vigorous growth in international lending, foreign direct and institutional investment. Different economies across the globe are increasingly interdependent, in terms of trade and finance due to increased volume of cross border investments. With this in mind contagion effect associated with global markets, political and economic events taking place in one part of the world affect the returns in another (Gumbo and Muwando, 2013). All

institutions that are involved in managing international investment portfolios are vulnerable to country risk.

As noted by Hoti (2005) and Toma, Chirita and Sapre (2010), country risk is of utmost concern to global investors nowadays, with all the economic crisis, financial crisis, political crisis and natural disasters in one country threatening to surpass to another country. Various academics, economists and experts (Basu, Deepthi and Reddy, 2011; Vij, 2005; Tourani-Rad, Choi and Wilson, 2006; Andrade and Teles, 2004; Gangemi, Brooks & Faff, 2000; Brewer and Rivoli, 1990; Feder and Uy, 1985; Burton and Inoue, 1985) studied the impact of a set of macroeconomic factors on country risk. According to Oetzel, Bettis and Zenner (2001) and Erb, Harvey and Viskanta (1996), empirical researchers came to a conclusion that country risk is mainly influenced by political, socio-economic and financial factors. The major differences are that the magnitude of the impact of these variables, research methodology for determining country and the proxy for country risk differs from one research study to another. Experts of country risk analysis have a gloomy time in the selection of variables and systems of assessment to represent and interpret the various political, economic and financial factors. There is no doubt that there is a link between country risk and macroeconomic fundamental but the problem of identifying the accurate proxy for country risk and selection appropriate variables to establish this relationship still exists.

As the globalization of the world's economies and capital mobility takes its toll, international businesses are willing and have capacity to invest in emerging economies like that of Botswana and Zambia in pursuit of higher returns on capital employed, presence of natural resources, diversification, exchanging in trade treaties, and expansion of markets. Zambia and Botswana are attractive countries for foreign investors as they have a huge market, abundant natural resources and a great potential for increasing firms' productivity. There are vast opportunities for investments in these two emerging countries. Nevertheless, country risk is a major constraint hindering international investors from setting up their businesses operations in these certain countries.

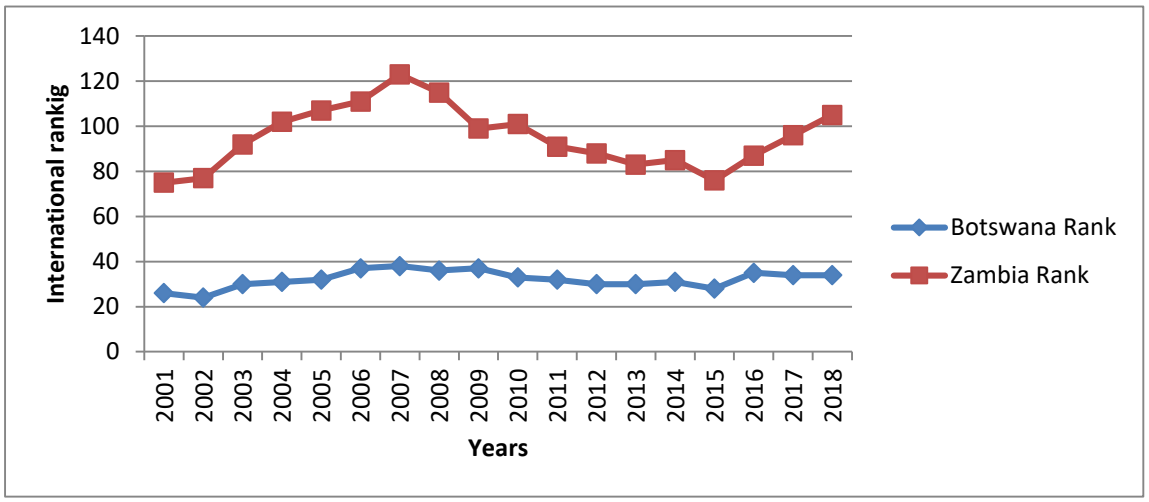
Botswana is among the countries with highest income earning GDP per capita of USD 8279.82 in 2018 rising from USD 2970.12 in 1994, notwithstanding its small population (World Bank, 2018; Muyambiri and Odhiambo, 2017). There are so many countries that have invested in Botswana and these include South Africa, Mauritius, Zimbabwe, Sri Lanka and India, with South Africa accounting 60% of Botswana FDIs. Diamond exports are the main driver of

economic growth of Botswana. Until late 2008, the country of Botswana has witnessed an extensive positive development of its economy and standards of living, and has developed into middle class (Honde, 2018). There is not much political instability and violence in Botswana as reinforced by the higher aggregate values on worldwide governance indicator on political stability and absence of violence. When it comes to political stability and absence of violence, Botswana is ranked number one in Africa because it has a very strong legislative regime to fight corruption (Transparency International, 2011). It is also a stable democratic country which for forty years experienced the highest economic growth rates in the world (Leith, 1997). Botswana is among the few countries which are politically stable and least corrupt in Africa (GAN Business Anti-corruption report, 2016; World Bank, 2019).

Unlike Botswana, Zambia is perceived as one of the impoverished countries in Africa with most of the people (58%) earning less than International Poverty Datum Line (IPDL) of $1.90 daily (as of 2015) despites of its abundant natural resources (World Bank, 2019). Its per capita GDP rose from 611.87USD in 1994 to 1352.16USD in 2018 (World Bank, 2018). Major investors in the economy of Zambia include US and South Africa, several EU countries that include UK, Netherlands, Sweden, India and Japan. Copper production is one of the key factors that drive its economic growth and development (Page and Velde, 2004). Its over-dependence on copper has made it exposed to volatile commodity prices.

The Zambian economy is perceived as a risky destination for FDI inflows due to increasing cases of political violence, ethnicity and corruption as shown by low aggregate values of control of corruption index from 1980 to 2012 (Mbao, 2011; GAN Business Anti-corruption report, 2017; World Bank, 2013). Furthermore, some analysts have observed that in Zambia, electoral malpractices were rampant during the period 1980-2012 (Yezi, 2013, p.17). Figure 1 overleaf shows the international ranking of Botswana and Zambia in terms of corruption.

Figure 1: International ranking of Botswana and Zambia in terms of corruption



Source: Transparency International (2019)

NB: rank, lowest="Very Clean" while highest = "very corrupt"

Figure 1 indicates that Botswana is perceived as a least corrupt country compared to Zambia because it has lower ranking than that of Zambia for the period 2001 to 2018.

According to Maravi (2007) and Banda (2013), Zambia still needs to revise its investment policies to lure more FDI inflows. Most of the emerging economies are well ahead of the Zambian economy in terms of FDI inflows performance. However, as a result of introducing new reforms in the 1990s, FDI inflows of Zambia grew positively (DPRU, 2000; UNCTAD, 2006), though FDI and portfolio investment inflows decreased in 2018 (World, 2019). In contrast, Botswana FDI inflows have been increasing except during the period 2007-2008, when the global financial crisis negatively affected the country (UNCTAD, 2013a; Mahembe and Odhiambo, 2013). The increase in FDI inflows was mainly attributed to prudent economic management and good government. Gross capital formation as a percentage of GDP for the country of Botswana rose from 25.9% in 1994 to 26.6% in 2018 while that of Zambia rose from 12.4% in 1995 to 35.1% in 2018 (World Bank Development Indicators, 2018). This implies these two countries experienced positive growth in gross investments during the period.

Interest rates and inflation levels are still high in these countries induced by the continuous surge in cost of living; that is, high commodity prices for fuel and food. The Zambia authorities termed down the inflation rate to a single digit figure in 2006 (CSO Zambia, 2012; World Bank, 2013). During this period, Inflation in Zambia hovered around its medium-term range of 6 - 8% (World Bank, 2019). Inflation rates in Botswana were fairly lower in the later years than

its neighbours as it managed to contain it to 4.1% in December 2013 (CSO Botswana, 2014; Kariuki, Abraha and Obuseng, 2014). Botswana official exchange rate depreciated, on average, from 2.685 pula per USD in 1994 to 10.4 pula per USD in 2018 while Zambian rates also depreciated from 0.669 kwacha per USD in 1994 to an average of 10.45 kwacha per USD in 2018 (Bank of Botswana, 2019; Bank of Zambia, 2019; World Bank, 2019). This shows that, during this period, Zambian local currency fluctuated more than the Botswana currency.

During the same period, unemployment rates were extremely high in Botswana and Zambia. The majority of the people are languishing in poverty and still unemployed in Zambia (Yezi, 2013:18). In 2010, unemployment rates stood at 17.5% and 13% in Botswana and Zambia, respectively, vis-a- viz, the countries' constant economic growth rate of at least 3% annually. This may imply that countries' public resources were concentrated among very few individuals (AfDB, OECD and UNDP, 2015). In 2017, unemployment rate in Zambia deteriorated further and stood at 41.2% (CSO Zambia, 2018) whilst in Botswana, it stood at around 18% in 2018 against the background of heavy investment in education (World Bank, 2019).

The Zambian economy has performed relatively well within the SADC region despite a decline in GDP per capita and economic growth rate due to lower production in the mining sector (Rasmussen, 2015; UNDP, 2012). On the other hand, through proper fiscal discipline and effective management, Botswana's economic performance continued to improve, with its GDP growth rate (in real terms) projected to rise from 4.2% in 2012 to 5.4% in 2013. The major driver of the growth was the mining sector which improved significantly to 6.3% in 2013 (Kariuki, Abraha and Obuseng, 2014; Harvey and Lewis, 1990). Moreover, Botswana's per capita GNP is way above the SADC target and is among the few countries in Africa to be ranked as a middle-income state (Maipose, 2008 citing Duncan *et al*., 1995).

The SADC region faces an unusual heavy debt burden in comparison with other low-income countries. Zambia's debt stood at 206.1% of GDP in 1991 and fells to 78.1% in 2018 (IMF, 2012; IMF, 2019) while Botswana's public debt was above 3% but less than the SADC target of 60% (IMF, 2018). The government of Botswana continuously devises and implements cautious debt management policy that limits public domestic and foreign debt each to a level which does not exceed 20% of GDP (AfDB, OECD and UNDP, 2015; Kariuki, Abraha and Obuseng, 2014). All these ratios are way above the recommended 3% of GDP indicating that these countries may suffer from the debt trap in the long run.

Persistent current account deficits continue to haunt these two countries (World Bank, 2019). The Botswana government managed to meet the SADC target of a current account deficit of less than 9% in 2011 as it reduced its lower propensity to import while that for Zambia is still higher as it relies more on imports (UNDP, 2014 and 2015; SADC, 2014). Despite of the risk associated with the country of Zambia, AfDB dedicated more than USD 1 billion on supporting the public sector infrastructure projects, moreover, it also profited from debt relief under the HIPC and Multilateral debt initiatives (AEO, 2019). AfDB committed USD 2.1 billion to Botswana, as of October 2012, in support of infrastructure, agriculture, finance and multi-sector (AEO, 2018).

According to IMF report on Zambia (2019), the country's medium outlook was oblique as it was facing many economic challenges that included severe debt exposures; drought and subdued mining sector which were negatively affecting growth of the economy; widening current account deficits and inflationary pressures led to exchange rate deprecation, increase in debt servicing costs and hence crowding out private social investment. On the other hand, the medium outlook of the economy of Botswana was favourable due to increasing diamond exports and comfortable buffers but there was need for quick implementation of fiscal and structural reforms (IMF report on Botswana, 2018).

Possibly due to country risk associated with these two economies, investments projects that would have been considered to be economically viable are never realized because the investors fear that non-market factors would negatively impact on their investments and thus making the investments less profitable. This anxiety could be well-founded and normal but might also be based on ill-judged explanations and preconception. Therefore, international investors are not so sure of whether they should invest, continue to invest, or divest in Botswana and Zambia due to deterioration of the political, social, financial and economic situation in these countries. This has necessitated the need to model the country risk of Botswana and Zambia.

1.2 Statement of the problem

Despite the two countries smoothening out the uncertainties that come from a number of factors such as social- political, economic, and technological influences which have been indicating a rise in country risk for these countries, foreign investors have been shying away from investing in these countries. Various investors, for instance, have always perceived that investing in government bonds in these economies is risky business as the two governments are likely to default on their bond issues or other financial commitments thereby increasing transfer risk for

investors thereby making them vulnerable to potential loss. Accordingly, because of the perceived high country risks associated with these countries due to political and economic hazards, foreign investors are averse in investing in Botswana and Zambia. However, other scholars have argued that notwithstanding the fact that both countries are characterised with country risks Botswana has lower risks compared to Zambia. It is in this regard that this research conceived the idea of modelling country risk: which is a comparative study of the Botswana and Zambian economies (1994-2018) to assess this perception and show which country between the two has lower country risk and the extent to which social-political, economic and financial variables affect these economies.

1.3 Objectives of the Study

In light of the statement of the problem above, the study sought to accomplish the following objectives:

1. To establish annual country betas for Botswana and Zambia.
2. To assess the impact of GDP per capita, inflation, unemployment, current account position on Botswana and Zambia's country risk or beta.
3. To evaluate the effect of political stability and absence of violence on Botswana and Zambia's country risk or beta.
4. To examine the impact of short term interest rates, external debt balances on Botswana and Zambia's country risk or beta.

1.4 Research Questions

1. What are the annual country betas for the economy of Botswana and Zambia?
2. What impact did GDP per capita, inflation, unemployment, current account position have on Botswana and Zambia's country risk or beta?
3. What effect did political stability and absence of violence have on Botswana and Zambia's country risk or beta?
4. How did short term interest rates, external debt balances impact on Botswana and Zambia's country risk or beta?

1.5 Significance of the study

These two countries of Botswana and Zambia are currently using or adopting the political stability and absence of violence (PSAV) index from the World Bank development indicators and country risk ratings from Standard & Poor's, Moody's, Fitch Ratings, Economist

Intelligence Unit (EIU) and Euromoney ratings as measures or proxies of country risk. The PSAV index is very subjective in its calculation of country risk while the country risk ratings are indicators of default risk instead of equity risk but they are determined by macroeconomic fundamentals (e.g., currency stability, inflation, current balance, economic growth rate and political stability) that drive equity risk. Moreover, rating agencies often are lag markets as they are slow to respond to changes in the underlying default risk (Damodaran, 2003). Against this background, the primary contribution of the research is not about the country beta approach to measuring country risk but to design a better proxy for country risk called country beta (dependent variable) in the country risk analysis field that objectively capture country risk of Botswana and Zambia, and then model the country risk of these two states. The country beta proposed is found by dividing the covariance of the local index returns and world market index returns by the variance of the world markets index returns. This approach is based on the belief that general risk models will not be able to capture the nature of risk in Zambia and Botswana, and therefore, will never present an adequate risk assessment for the existing and prospective domestic and foreign investors in these two countries. Furthermore, the risk model designed can be used by existing and potential domestic or international investors as a pre-lending as well as post-lending decision tool in these countries.

The rationale for carrying a comparative study of Botswana and Zambian economies is that there is a general perception that Zambia economy is riskier destination for FDIs than Botswana (Mbao, 2011; GAN Business Anti-corruption report, 2016, 2017; World Bank, 2019), hence there is need for comparative study to affirm or refute the findings. Moreover, these two countries have geographical, historical, political and mineral dependency similarities (Crain, 2010). Hence, comparison of the risk associated with these two economies is easier.

The researcher hopes that the study findings would be presented to the policy-makers (Ministry of Finance, Ministry of Investments Planning and Promotion, and Directors of the Central Banks) and then practical recommendations can be made. Since the research concludes with solid recommendations, it will benefit the Government of Zambia and Botswana in coming up with conducive monetary and fiscal policies necessary to lure more foreign direct investments, thus, accelerating economic development and growth, which will eventually reduce the countries' external debt.

Since current account deficits, inflation and unemployment are some of the microeconomic challenges facing the Zambian and Botswana economies, the research proposed and recommended appropriate polices to the governments of these countries that go a long way in arresting inflation, unemployment and addressing current account position thus bringing price stability in these economies. Overall, these policy recommendations reduce country risk of Botswana and Zambia.

The significance of this research, therefore, is to enlighten the government of Botswana and Zambia best method of computing or measuring country risk, key drivers of country risk and the extent to which current account, unemployment, external debt, GDP deflator, short-term interest rates and political risk have impacted on country risk, as well as remedies necessary to manage it. The deterioration of the economic fundamentals in neighbouring countries have a spill over effect on our existing and future investments.

1.6 Delimitations of the study

The study assessed the main drivers of country risk for Botswana and Zambia and then developed a beta model for estimating country risk. The country beta models were based on Botswana and Zambia's economic data from January 1994 to December 2018 to enable consistence in comparison purposes. During these period, macroeconomic fundamentals started to behave so strangely and deteriorating. Moreover, period prior to 1994, raw data is depleted and inadequate. The countries of Botswana and Zambia were chosen as they are researcher's neighbouring counterparts so a political, socio-economic and financial disturbance in these countries may have spillover effects to the country of Zimbabwe. Therefore, socio-economic, political and financial stability of these countries is of utmost essential to the Zimbabwean economy.

1.7 Limitations of the study

Due to data unavailability, the following set of macroeconomic variables were considered: political instability, per capita GDP, GDP deflator, current account balance, unemployment rate, external debt balance, short term interest rates. The variables chosen enable consistence in comparison of the results of the two economies. In addition, the complexity of the study led to the researcher employing snowball sampling to select interviewees. Thus, a fewer numbers of referrals who were experts in country risk analysis was interviewed which made the sample size small. Furthermore, some of the interviewees were not cooperating as they had busy

schedules at their workplaces. To remedy this, the researcher shortens the interview questions and reschedules the dates of the interviews.

1.8 Assumptions

It is the researcher's assumption that the data taken from the Central Banks, Local Stock Exchanges, Morgan Stanley Capital International Emerging Market Index, IMF and World Bank, Ministry of Finance and CSOs was reliable and useful in addressing the research questions. This helped the researcher in achieving the objectives of the study. It is also assumed that investors are comfortable "with the notion that all companies in a market are equally exposed to country risk, that is, a company's exposure to country risk is proportional to its exposure to all other market risk" (Damodaran, 2003). The other assumptions can be summarised as follows:

Information would be available and respondents would co-operate.

The prices and returns on stocks of company listed on Local Stock Exchanges were better explained by macroeconomic factors than by capital flows and speculation.

1.9 Study context

The study was carried out in Botswana and Zambia. The data was collected from the Ministry of Finance, Local Stock Exchanges, Local Banks, Central Banks and Central Statistical Offices of the respective countries. The researcher developed the country beta model for Botswana and Zambia using the theoretical framework of Erb, Harvey and Viskanta (1985). Embedded in the research was an assessment of the drivers of country risk for Botswana and Zambia and their development trends. This enabled the researcher to assess the extent of the impact of drivers on country risk for Botswana and Zambia.

1.10 Organization of the study

This Thesis comprise of six chapters. Chapter one is the Introductory Chapter. It introduces the research topic, the background of the study, statement of the problem, objectives, significance, delimitation, and assumptions of the study. Chapter two presents a review of literature concerning country risk, quantitative and qualitative country risk analysis and empirical evidence on case studies done in India, Latin America, Brazil, Australia, Poland, Argentina and New Zealand.Chapter three presents the theoretical framework and conceptual framework derived from the theoretical evidence presented in Chapter two. The framework is based on the

work of Erb, Harvey and Viskanta (1985). Chapter four presents the research methodology that was adopted when collecting the data. Chapter five covers presentation, analysis, and discussion of results. Finally, the summary of major research findings, conclusions and recommendations were covered in Chapter six.

CHAPTER TWO: LITERATURE REVIEW

Chapter two critically analyses what has been studied so far, as far as country risk models is concerned and makes a thorough review of literature available concerning quantitative and qualitative country risk analysis. The literature review is based on both theoretical and empirical evidence of country risk analysis done in India, Latin America, Brazil, Australia, Poland, Argentina and New Zealand. Even though scholars have touched on this area of study, this analysis goes a long way in in reviewing literature on political, economic and financial factors that influence country risk.

2.1 The concept of country risk

The definitions of country risk in the literature are many and changes with time. Country risk was defined by the pioneers, Harberger (1976) and Krayenbuehl (1985) of this concept as "the possibility that a sovereign borrower might not be able or willing to meet its payment obligations for a variety of reasons different to those that commonly arise in all types of loan. Such risks might range from the consequences of official decisions, social and political changes in the debtor countries; the consequences of unforeseen circumstances or events, such as natural disasters or external shocks linked to global phenomenon" (San-Martin-Albizuri and Rodriguez-Castellanos, 2018 citing linde, 2002, p. 2-3).

From investors' perspective, some definitions look at the impact of country risk on firms' profitability as they defined country risk "as the volatility of returns on international business transactions caused by events associated with a particular country, as opposed to events associated with a particular economic or financial agent" (Clark and Marois, 1996). Country risk is also defined as "the general level of political and economic uncertainty in a country affecting the value of loans or investments in that country" (Shapiro, 1999). Bouchet, Clark and Groslambert (2003) citing Haendel, West and Meadow (1975) defined country risk as "the probability of occurrence of political events that will change the prospects for profitability of a given investment". The previous definitions (Shapiro, 1999 and Haendel, West and Meadow, 1975) overlook the fact that country risk also originates froms natural disasters or external shocks arising from natural events which are unpredictable. Madhu (2005) defined it as "the risk that non-market events in a foreign country would adversely affect an institution's financial interest".

Other experts in country risk analysis have a different explanation of the concept. Basu, Deepthi and Reddy (2011) citing Saini and Bates (1984); Abassi and Taffler (1982) looked at country risk at a broader level and defines it as "the risk associated with those factors that determine or affect the ability and willingness of a sovereign country or borrower from a particular country to fulfil their obligations towards one or more foreign lenders and/or investors". From a sovereign state's perspective, this definition scrutinizes the default risk of borrowers in totality. Country risk also refers to "the risk assumed by the fact of awarding loans or credits to residents in a determined country or of acquiring fixed or variable-income securities issued by entities from that country, and taking into account the possibility that, for global reasons and for circumstances specific to the country, the collection of dividends, interest and /or principal of the debt may be delayed or proved impossible" (San-Martin-Albizuri and Rodriguez-Castellanos, 2018).

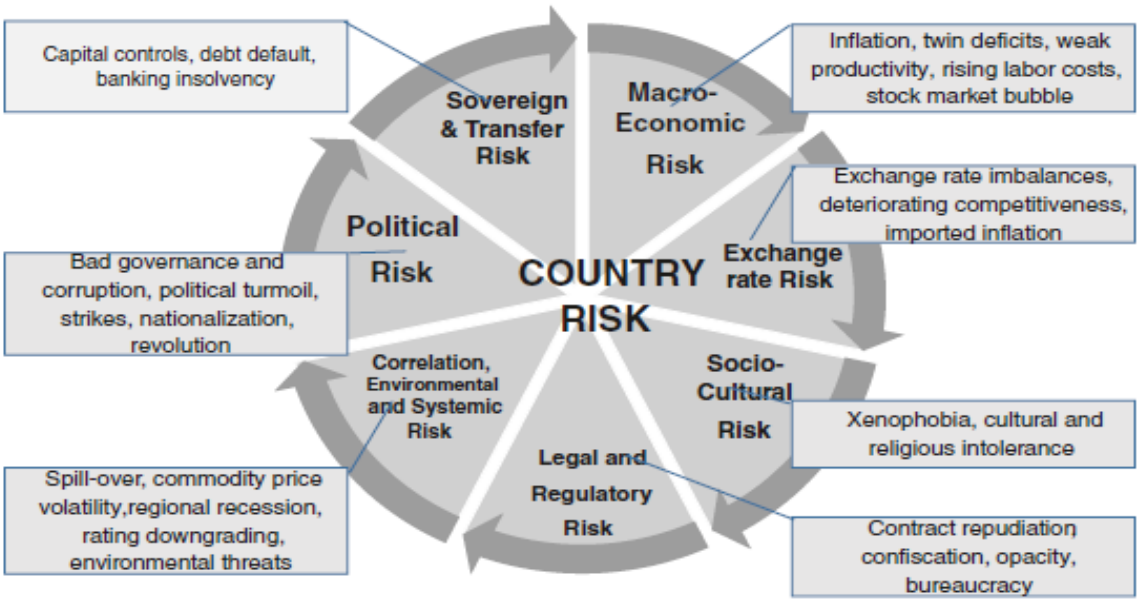
All the definitions identified three key determinant factors of the specific country risk, namely economic, financial and political factors (Lee and Lee, 2016). Furthermore, the definitions put forward by the various experts clearly coincide in that country risk has a potential negative effect on the expected return on an investment or firm's operations. Therefore, the researcher refers country risk to "the risk associated with economic, financial and political factors that impact the image or reputation of a borrowing country or FDI host country". This implies that these factors affect the capability and willingness of a borrowing country to repay and service the loan and negatively impact on yield on foreign/ international investments of a lender.

2.2 Components of country risk

According to San-Martin-Albizuri and Rodriguez-Castellanos (2018) and Bouchet, Fishkin and Goguel (2018), country risk may arise due to changes in economic-financial factors that includes inflation, employment, balance of payment, public debt interest rates, public debt, political factors, sovereign factors, transfer factors, regional contagion and systemic factors. They argued that economic-financial factors arises from variation in the return on investment and the manner in which it is financed, due to the host country specific features; political factors encompasses likelihood of losses, bankruptcy or harm to individuals through the actions of government or political and social forces from the host country or from the neighbouring countries that might directly affect it, for example expropriation, nationalization, trade restrictions, foreign exchange controls; sovereign risk occurs when the debtor or guarantor of the debt is state, refuses to pay the debt whilst transfer risk happens when the debtor is a private

institution that cannot access sufficient amount of the necessary currencies to pay its debt. This is in line with Abassi and Taffler (1982), Saini and Bates (1984), Erb, Harvey and Viskanta (1985), Clark and Marois (1996), Shapiro (1999), Basu, Deepthi and Reddy (2011), Batool and Rehab (2014) who opines that county risk is mainly influenced by economic, financial and political variables. Political variables are composed of legal factors, political instability, for instance, terrorism, civil war, corruption in government, expropriation; economic factors include per capita GDP, GDP deflator/Inflation, current account balance, and unemployment rate while financial variables are composed of external debt balance, short term interest rates. Bouchet, Clark and Groslambert (2003) and Meldrum (2000) further argue that country risk is caused by 'national differences in economic structures, policies, socio-political institutions, geography and currencies' when a business transaction occurs beyond the country's borders. They also mentioned that actions of the government are not only the main drivers of risk but there are others factors that hinder the smooth operation of foreign institutions overseas. The components of country risk are summarised in Figure 2 below.

Figure 2: Components of country risk



Source: Bouchet, Fishkin and Goguel (2018)

Figure 2 overlooks the natural disasters' (for instance, earthquakes, draughts) effects on country risk.

2.3 Types of investments affected by country risk

Meldrum (2000) identified four types of investments that are affected by country risk and these include direct investment in private sector, short term financial to private sector, short term loan and long term loan to government. Direct investment is defined as "new equity capital, reinvested earnings, net borrowing from a parent' company or its affiliates. It is investment made to acquire an interest in the management of an enterprise and generally involve the transfer of rescores, including technology, managerial and marketing expertise in addition to capital" (Hope, 1989). Short term financial/ private sector is provision of finance that will be used cater for the private companies' operational needs. It provides shorter matures (less than a year) than long-term financing making it best-suited for working capital needs of company's Short term loan to government is loan given to the government that is supposed to be repaid in full in less than year whilst long term loan to government is repaid after a year. All the investments/ lending assumed to be made in the foreign currency. FDIs are investments involving a long-term relationship and reflecting a lasting interest and control by a resident entity in one economy (foreign direct investor or parent enterprise) in an enterprise resident in an economy other than that of the foreign direct investor (FDI enterprise or affiliate enterprise or foreign affiliate) (IMF, 1993; OECD, 1996; Fernández and Fernández, 2018; Meldrum, 2000 p.7). However, most researches have devised four major groups of investments that are affected by the risk and these are:

(a) Foreign direct investments (FDIs) - they occur when an investor based in one country (the home country) acquires an asset in another country (the host country) with the intent to manage that asset (Fernández and Fernández, 2018),

(b) Commercial bank loans-these are loans made by local commercial banks to a foreign country;

(c) Portfolio investments, defined as "cross-border transactions and positions involving equity or debt securities, other than those included in direct investment or reserve assets"(IMF, 2015); and (d) exporters/ importers, which are affected by transfer risk, exchange rate risk, confiscation, expropriation and nationalization risk, breach of contract and regulation risk, war or political violence and convertibility risk in conducting their cross border business(Rodríguez, 2016; Bouchet, Clark and Groslambert, 2003; Bouchet, Fishkin and Goguel, 2018).

2.4 Classification of country risk in terms of diversifiable or non-diversifiable risk

Private party borrowers have little control over the major drivers of country risk, so in this case, country risk may symbolize a non-diversifiable systemic risk that is rewarded by investors through high returns (Erb, Harvey and Viskanta, 1997). On the other hand, this implies that public borrowers have a greater control over these factors, thus, country risk to them represents diversifiable market risk. This coincides with Esch, Keiffer and Lopez (2005) and Naumoski (2012) who claim that country risk is systematic in nature and is barely diversified in the country's financial portfolio, and Gangemi, Brooks and Faff (2000) who assert that country risk depends on the exposure of a specific country to the global markets, thus, it is a non-diversifiable risk especially if a county has high correlation. According to Damodaran (2003), country risk is cannot be eliminated even if, either the marginal investor does not have an internationally diversified portfolio or the risk is correlated across markets' (that is, the returns are significantly positively correlated across states). In this case, it is treated as a market risk component that needs to be factored in when valuing company equities.

Country risk can also be looked at from the type of the market perspective. From the developed markets' perspective, investors treat it as diversified risk, hence no extra premium is earned by investing because highly developed markets have high correlation between them (Yang, Tapon and Sun, 2006) and are fully integrated with world capital markets whereas in emerging markets, it is systematic nature as these markets are have very limited integration with global capital markets (Harvey, 2004; Damodaran 2011). Hence, investors need to be compensated with country risk premium for investing in these countries. However, Clark and Marois (1996)'s definition of country risk implies that it can diversified away as it is risk associated with a particular country not an economic or financial agent, hence an investor can avoid this risk by diversification. In this context, the researcher noted that country risk is non-diversified or systematic risk due to increasing globalization and financial integration where investors are now willing and capable of investing beyond their borders.

2.5 Determinants of country risk

Institutional Investor and International Country Risk Guide (ICRG) and other empirical researchers propounded that country risk is composed of two major components: ability to pay and willingness to pay, where political risk measures the willingness to pay while economic and financial risk relate to the ability to pay (Erb, Harvey and Viskanta, 1996, p.30). This implies that country risk is mainly influenced by political, financial and economic factors.

Political factors encompass political leadership, economic expectations vs reality, economic planning failures, external conflict, corruption in government, military in politics, organized religion in politics, law and order tradition, racial and national tensions, political terrorism, civil war, political party development, and quality of the bureaucracy. Financial factors include loan default or unfavourable loan, restructuring, delayed payment of suppliers' credits, repudiation of contracts by governments, losses from exchange controls and expropriation of private investments, Finally, economic variables include the following: inflation, debt service as a percentage of exports of goods and services, international liquidity ratio, foreign trade collection experience, current account balance as a percentage of goods and services and parallel foreign exchange rate market indicators(Erb, Harvey and Viskanta, 1996, p.31; Chopra, 2010).

Country risk analysis hinged on an empirical theory that which states that the asset prices adjust themselves more quickly to a change in domestic and external factors than the quantities of capital flows (Teixeira, Klotzle and Ness, 2008 citing Ok and Padilla, 2000). This implies that the variables that influence country risk can also be classified into two categories: internal and external factors (Muhammad et al., 2015). The internal risk factors refer to country-specific factors, that is risk related to changes in macroeconomic variables of a country, for example, unemployment, inflation rate, exchange rate, capital flight, economic growth, money supply and public debt whilst the external risk caters for all the global risks factors with a contagion effect to the global market, for instance, increase in world price of oil and effect of financial crisis (Calvo, Leiderman and Reinhart, 1993 ; Kim, 2000; Calvo, 2005).

Furthermore, external factors were believed to originate from shocks in developed countries (Montes and Tiberto, 2012 citing Rozada and Yeyeti, 2008).

Some research studies classified the determinants of country risk into two groups: local and global risk factors. Local factors are opportunities and risks associated with investment done locally, and these include unemployment, economic growth rate, money supply and many others while global factors include US real interest rates and the degree of risk aversion of international investors, yield spread, world price of barrel of crude oil in US dollars (Fiess, 2003; Verma and Soydemir, 2006; Verbenik, Horvath and Gazda, 2011; Verma and Verma, 2014). Many empirical researchers have concluded that country risk is mainly determined by both external (Montes and Tiberto, 2012 citing Rozada and Yeyati, 2008) and domestic factors (Montes and Tiberto, 2012 citing Arora and Cerisola, 2001; Kamin, 2002). The domestic

factors include public debt, inflation, real economic growth rate, external debt, international reserves and current-account balance while external variables include the U.S. Treasury Notes interest rate, the degree of international investors risk aversion and financial crisis effects (Teixeira, Klotzle and Ness, 2008). However, all the empirical researchers had a torrid time in choosing the appropriate variables that influence the country risk, thus the choice of the variables for modelling country risk depends on the researcher's perception of major drivers of country risk.

In this study, the drivers of country risk chosen were categorized into economic, financial variables and political variables. Political variables are composed of legal factors, political instability; economic factors include per capita GDP, GDP deflator, current account balance, and unemployment rate while financial variables are composed of external debt balance and short term interest rates. The chosen variables are explained in detail in chapter three. Choice of the variables was dependent on previous empirical researches (Erb, Harvey and Viskanta, 1985and 1996; Hoti, 2005) and was subject to data availability.

2.6 Country Risk Analysis

According to Nath (2008), Country Risk Analysis (CRA) "consists of the assessment of political, economic and financial factors of a 'borrowing country' or 'an FDI host country' which may interrupt timely repayment of principal and interest or may adversely affect returns on foreign investment". CRA is an attempt to identify imbalances that increase the risk of a shortfall in expected return on a cross-border investment (Toma, Chirita and Sapre, 2010). This concurs with Meldrum (2000) who argues that CRA rests on the fundamental premise that growing imbalances in economic, social, or political factors increase the risk of a shortfall in the expected return on an investment. This fundamental premise provides a simple theoretical underpinning to CRA. According to Asiri and Buhail (2014), CRA is essential process when investors want to create global portfolio. This implies that investors assess the behaviour of macroeconomic variables in a particular country before making informed strategic decisions on their investments since credit ratings agencies are slow to downgrade a country when a crisis has started.

2.7 Approaches used for Country Risk Analysis (CRA)

Banks and other agencies generally categorise these methods as qualitative or quantitative. Other agencies integrate both qualitative and quantitative information into a single rating. Staff

analysis, survey, and expert panel and published data sources are the main sources of data (Nath, 2008). Nath (2008, p.6), Coccia (2007) and Timurlenk and Kaptan (2012) categorized methods of country risk appraisal into four types: fully qualitative method, structured qualitative method, checklist method and other quantitative method.

2.7.1 Fully qualitative method

The *fully qualitative method* involves an in-depth analysis of a country without fixed format. It generally takes the form of a report that includes a general discussion of a country's economic, political and social conditions and prospects. It is more of an ad hoc approach which makes it difficult for users to compare one country with another. The major merit of this method is that it can be adapted to the unique strengths and problems of the country undergoing appraisal.

2.7.2 Structured qualitative method

This *method* uses some standardized format with specifically stipulated scope and focus of analysis. Since it adheres to a uniform format across countries and is augmented by economic statistics, it is easier to make comparisons between countries**.** This method was the most popular among the banks during the late seventies. The political risk index provided by Business Environment Risk Intelligence (BERI) and World Bank's World development indicators (WDI). S. A. is an example of country risk rating by Structured qualitative method. Table 2.1 below presents the components of this index.

Table 2.1: Components of Structured qualitative method *"The Business Environment Risk Intelligence Political Risk Index"*

Components
Political Fractionalization
Linguistic/Ethnic/Religious Tension
Coercive Measure to Maintain Regime
Mentality: Nationalism, Corruption, Nepotism
Social Conditions: Population, Income Distribution

Radical Left Strength
Dependence on Outside Major Power
Regional Political Forces
Social Conflict
History of Regime Instability

Source: Nath (2008) citing Harvey (1996)

2.7.3 Checklist method

The *checklist method* involves rating and weighting of all the identified factors of the country under consideration and then consolidating the rates and weights to produce an overall assessment. The variables can either be qualitative or quantitative. In case of quantitative variables, the scoring requires no personal judgment or even first-hand knowledge of the country being scored. However, in case of qualitative variables, the scoring requires subjective determinations. Each item is scaled from the lowest to the highest score. The sum of scores is then used as a measure of country risk. It is possible to vary the influence that each component variable has on the final score by assigning a weight to each indicator; this is the *weighted checklist approach*. The main advantage of this method is that the final summary score it yields is amenable to sophisticated quantitative treatment. Such exercises could provide valuable insight into the checklist's past accuracy in evaluating country risk. In recent years, this method has become popular with the banks and other country rating agencies. Table 2.2 below shows the components of Checklist method

Table 2.2: Checklist method *"The ICRG Composite Rating System"*

Political Variables	**Weight**	**Financial Variables**	**Weight**
Economic expectations versus Reality	6%	Loan default or unfavourable loan Restructuring	5%
Economic planning failures	6%	Delayed payment of suppliers' Credits	5%
Political leadership	6%	Repudiation of contracts by Government	5%
External conflict	5%	Losses from exchange controls	5%
Corruption in government	3%	Expropriation of private	5%

		Investment	
Military in politics	3%	Total Financial Points	25%
Organized religion in politic	3%	**Economic Variables**	
Law and order tradition	3%	Inflation	5%
Racial and nationality tension	3%	Debt service as a % of exports of goods and services	5%
Political terrorism	3%	International liquidity ratios	2.5%
Civil War	3%	Foreign trade collection Experience	2.5%
Political party development	3%	Current account balance as % of goods and services	7.5%
Quality of bureaucracy	3%	Parallel foreign exchange rate market indicators	2.5%
Total Political Points	50%	**Total Economic Points**	**25%**
		Overall Points	**100%**

Source: Nath (2008) citing Erb et al. (1996) and Harvey (1996)

NB: In Table 2 of Erb et al. (1996) and Table 1 of Harvey (1996), the weights for last four economic variables are reported to be 3%, 3%, 8%, and 3% respectively which do not add up to 25%. These discrepancies appear to arise from rounding to the nearest integers.

Based on the Table 2.2 above it can be clearly noted that country risk is mainly influenced by political, financial and economic factors.

2.7.4 Other Quantitative methods

Several quantitative methods are being used for addressing various issues concerning country risk. For example, these methods can be useful in establishing relationships between political, economic, and financial factors on one hand and some indicator that reflects risk exposure or risky behaviour on the other. Since the objective is to classify the countries under consideration into one or the other risk category, these methods are applied to data to identify patterns or/and factors that help assess the risk associated with a particular country. In most cases, the observable indicator of risky behaviour or risk exposure takes the form of a discrete (mostly binary) choice variable (e.g. debt rescheduling or not, defaulting or not etc.) or values in a limited range, and the econometric approaches are usually different from simple regression analysis. Sometimes quantitative methods are also used to unveil the importance of various

factors in the risk ratings of various agencies. These techniques are further used to evaluate the usefulness of country risk measures published by various banks and agencies in predicting major financial events. A few major approaches used in country risk analysis are discussed below along with their main advantages and shortcomings.

Other quantitative methods that include discriminate analysis, principal component analysis, logit, probit and tobit analysis, country beta method and classification, and regression tree method are also used measure country risk (Nath, 2008, p.4; Timurlenk and Kaptan, 2012 p.1093). Discussion of these methods and analysis of their main advantages and shortcomings is done next.

(a) Discriminate analysis

This method is used to classify countries into debt rescheduling and non-rescheduling countries by choosing appropriate variables. Let $X_1, X_2, ..., X_k$ be a set of *k* explanatory variables. These *k* variables are assumed to have a multivariate normal distribution in each population. The discriminant function, $Y = \sum_{i=1}^{k} B_i X_i\ ,\ t = 1, 2, \dots, k$ is a linear combination of the explanatory variables. B_i's are to be estimated in such a way that the ability of Y to differentiate between members of the two groups is maximized. This is done by maximizing the ratio of the weighted between-groups variance to the pooled within-groups variance of Y. Using the observations on X_i's, one can then obtain the estimates of Y for each country. Performing this operation for each rescheduling and non-rescheduling country yields a frequency distribution of Y-values for each group from which mean Y-values are computed. Then a country is assigned to one group or to the other looking at the proximity of its Y-value to the respective mean values of the two groups. In most instances, there may be a few overlaps and statistical type I and type II errors may occur. Type I error occurs when debt rescheduling countries are incorrectly classified as non-rescheduling countries, whereas type II error occurs when non-rescheduling countries are incorrectly classified as rescheduling countries. Hence, the next task is to determine the optimal cut-off or critical value for Y so that type I error or a combination of two errors can be minimized. This is an example of predictive use of discriminant analysis.

One major criticism of this approach is that the variables are assumed to have a multivariate normal distribution, which may not be true. In practice, the data may not often arise from a population having multivariate normal distribution.

(b) Principal Component Analysis

In this approach, a large number of variables or indicators are replaced by a smaller set of composite indicators, known as principal components with special properties in terms of variances. For example, the first principal component is the normalized linear combination with maximum variance. Since the objective of the studies using this approach is to describe and analyze how countries differ with respect to various indicators which may be large in number, one way of reducing the number of variables to a manageable quantity is to discard the linear combinations which have small variances. The principal components give a new set of linearly combined variables, which show considerable variation. Formally, suppose that we have k explanatory variables: X_1, X_2, ..., X_k. Then we consider linear functions of these variables:

$$z_i = \sum_{j=1}^{k} B_j X_j , \quad j = 1, 2, \dots etc \quad \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots [1]$$

Suppose we choose the B's in such a way that the variance of Z_1 is maximized subject to the condition that $\sum_{j=1}^{k} {B_i}^2 = 1$ .....[2]

This is the normalization condition. This maximization exercise produces *k* solutions. Corresponding to these, we construct *k* linear functions Z_1, Z_2, ..., Z_k. These are called the principal components of the X's. They are then ordered so that
var(Z_1) > var(Z_2) > ... , > var(Z_k). Z_1 with the highest variance is called the first principal component, Z_2 with the next highest variance is called the second principal component, and so on. One important property of Zs is that the sum of the variances of Zs is equal to the sum of the variances of Xs. Now if, for example, this analysis shows that two principal components account for a large part of the variation in the explanatory variables then by looking at the coefficients, we can identify the countries whether they are rescheduling debt or not. One problem with this method is that often it becomes difficult to interpret the principal components or the composite indicators.

(c) Logit, Probit, and Tobit Analysis

(i) Logit Model

The basic assumption of this approach is that the relationship between the probability of debt rescheduling and a set of explanatory variables can be described by the following functional form that represents a logistic distribution:

$$\Pr(Y_i = 1) = P_i = \frac{1}{1 + \exp[-(\beta_0 + \sum_{j=1}^{k} \beta_i X_{ij})]}, \quad i = 1, 2, \ldots, n \quad \ldots\ldots\ldots\ldots [3]$$

Where $\beta_0 + \sum_{j=1}^{k} \beta_i X_{ij}$ represents a linear combination of *k* explanatory variables and a set of coefficients $\beta = (\beta_0, \beta_1, \ldots..)$ which are to be estimated, $Y_i = 1$ for rescheduling cases and $Y_i = 0$ for non-rescheduling cases. Note that *i* indexes country and *n* is the total number of countries. It is assumed that there is some linear combination of independent variables that is positively related to the probability of rescheduling. Thus, the higher values of $\beta_0 + \sum_{j=1}^{k} \beta_i X_{ij}$ indicate a higher probability of rescheduling, conditional on the country's values for explanatory variables. The coefficient vector β is estimated from the known values of explanatory and dependent variables since it is not known a priori. There is another variation of this logit model used in country risk analysis. This is based on the observation that the country risk ratings that often range between 0 and 100 can be linked to P_is, the probabilities of debt rescheduling [as in equation (3)]. Generally, the higher the country risk rating the lower is the risk of debt rescheduling. Thus, the relationship between country risk rating R and P can be written as follows: $P_i = 1 - \frac{R_i}{100}$ ……[4]

where R_i is the country risk rating for country *i* and $0 \leq R_i \leq 100$.

Then, suitable transformation of equation (3) yields

$$\ln\left[\frac{1-\frac{R_i}{100}}{\frac{R_i}{100}}\right] = \beta_0 + \sum_{j=1}^{k} \beta_i X_{ij} \quad \ldots\ldots\ldots\ldots [5]$$

The above equation represents a linear regression model with transformed country risk rating scores as the dependent variable. In comparison with other models mentioned discussed above, this approach has more desirable statistical properties for empirical work involving a binary valued dependent variable for rescheduling and non-rescheduling cases. One major weakness of this approach is that a common β is used for all countries. That is, we assume that the countries are homogeneous in nature,

which may not be the case. To overcome this shortcoming, Generalized Logit Analysis was suggested (Oral et al., 1992).

Generalized Logit Model

The only difference with the Logit model is that in this model the coefficients, βs, are allowed to be different for different countries. The objective of the model estimation is to find values of βs that minimize the difference between the actual and predicted values of the country risk rating scores. Oral et al. (1992) developed a mathematical programming model to estimate the parameters βs. This model produces estimates of R_is by minimizing various errors that result from over- or under-estimation of the parameters and from incorrect ordinal ranking of countries.

(ii) Probit Model

Probit analysis is very similar to the logit model except for the fact that the relationship between the probability of debt rescheduling and the explanatory variables is represented by a normal distribution function instead of a logistic distribution function. Thus,

$$\Pr(Y_i = 1) = P_i = F(Z_i) = \int_{-\infty}^{\frac{Z_i}{\sigma}} \frac{1}{\sqrt{2\pi}} \exp\left(-\frac{t^2}{2}\right) dt \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots [6]$$

Where $Z_i = \beta_0 + \sum_{j=1}^{k} \beta_i X_{ij}$ and σ is the standard deviation of the distribution to be estimated. Both logit and probit analysis suffer from the lack of any explicit criterion for selecting the critical probability value for distinguishing rescheduling from non-rescheduling countries.

(iii) Tobit Model

The studies that use the logit and probit model are mainly concerned with predicting the timing of debt rescheduling by a developing country. However, using a Tobit model can help explain both the quantity and timing of a debt rescheduling. A Type 2 Tobit Model suggested for this purpose assumes that the probability of country *i* rescheduling its debt in a given time period can be represented by a probit equation:

$$Y^*_i = \beta_0 + \sum_{j=1}^{k} \beta_i X_{ij} + \varepsilon_i \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots [7]$$

where Y^*_i takes the value 1 if rescheduling takes place and 0 otherwise, and Xs are the variables that influence the rescheduling decision. The quantity of rescheduling is given by a linear regression:

$$Y_i = \begin{cases} k \\ 0 \end{cases} + \alpha_0 + \sum_{j=1}^{k} \alpha_1 Z_{ij} + \varepsilon_i \quad if\ Y^* > 0 \quad \text{.....[8]}$$

where Zs are variables that influence the quantity of debt rescheduled, Y_i. Note that $\varepsilon \rightarrow N(0,1)$ and $\varepsilon \rightarrow N(0,\sigma^2)$. Both errors may be correlated and hence $E[\varepsilon_i, \epsilon_i] = \sigma_{12}$. Type 2 Tobit model that combines a probit model with a standard linear regression model is more flexible than Type 1 Tobit model.

(d) Classification and Regression Tree (CART) Method

With CART method, estimates are obtained through a series of sequential binary splits of a given set of countries, based on critical values of independent variables. This is essentially clustering approach. To start with, a factor or an indicator is identified to split the countries into two distinct groups. This involves comparing a given country's score with the critical value of the discriminatory factor. These two groups are further split on the basis of other discriminatory factors and their critical values. This process continues until the entire group of countries is completely decomposed into purer or homogeneous groups. The final tree, thus, obtained is then used to estimate the country risk ratings of the countries. The country risk estimate for a given country is simply taken to be equal to the mean of the actual rating scores of the countries in the subgroup to which the country in question belongs.

More specifically, let C_1, C_2, ..., C_p be the disjoint subgroups of countries identified by CART. Then the country risk estimate r_i^* for country *i* is given by

$$r_i^* = \frac{(\sum_{j \in C_g} r_j)}{|C_g|} \quad \text{.....[9]}$$

for $i \in C_g$ and g=1, 2, ..., p

where $|C_g|$ is the number of countries in C_g.

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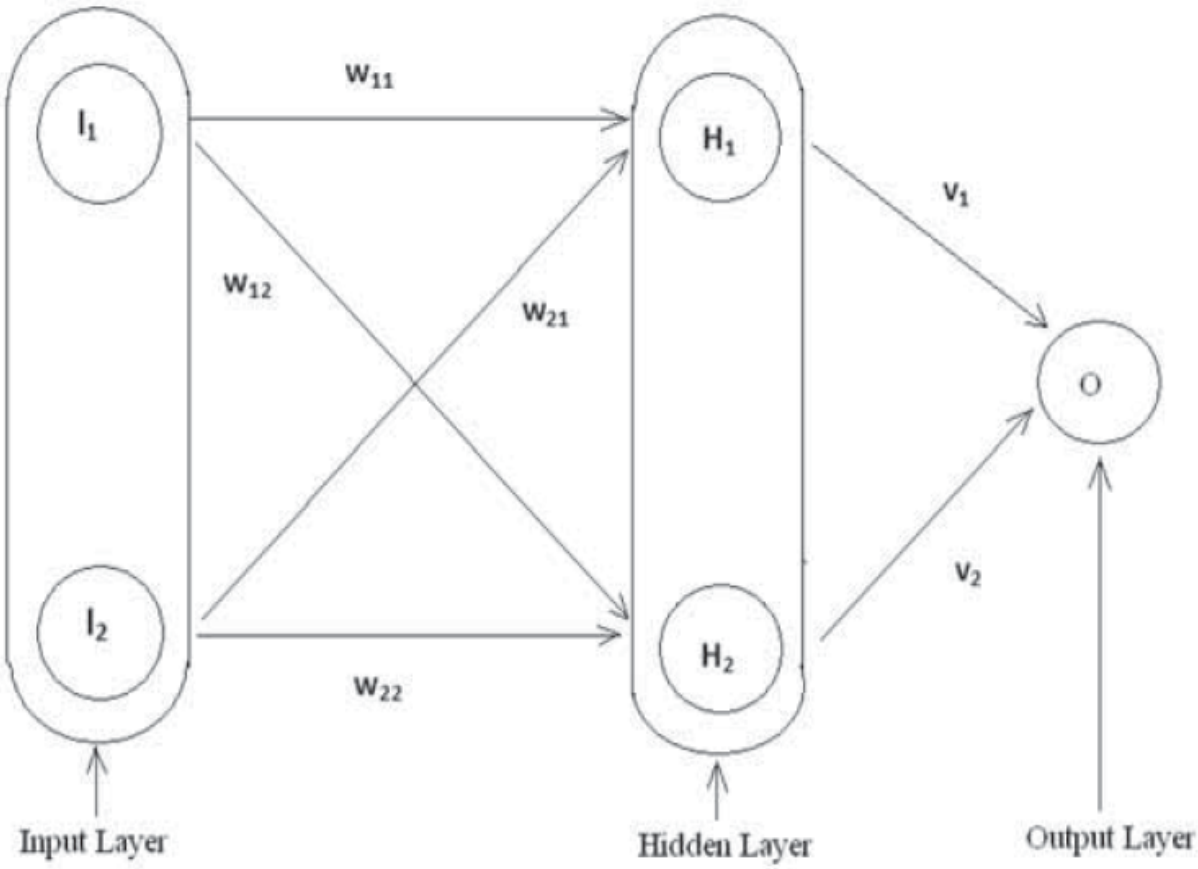
(e) Artificial Neural Network (ANN)

Artificial neural networks are also used for country risk analysis. An artificial neural network (ANN) is a computer model that mimics the brain's ability to classify patterns or to make forecasts based on past experiences. It has a hierarchical structure with neurons or information-processing units organized in several layers. The first layer is the input layer and the final one is the output layer, interspersed with one or more intermediate hidden layers that progressively transform the original input stimuli into final output. The multi-layer, feedforward ANNs, generally used for country risk analysis, are trained through an iterative process that brings the output (say, the probability of debt rescheduling by a country) sufficiently close to a desired or target level set by the researcher.

Figure 3: A Simple Feed-forward Artificial Neural Network



Source: Nath (2008)

Such an ANN can be illustrated by considering a simple 3-layer, feedforward ANN that comprises an input layer with I_j where j = 1,2, … J; a hidden layer with H_k, k = 1, 2, …,

K; and an output layer O. In Figure 2.1, an ANN with J = 2 and K = 2 is shown. In country risk analysis, each I_j would represent an explanatory variable for country risk rating. Let w_{jk} be the weight or the connection strength that links the j^{th} input unit to the kth hidden unit and v_k be the weight that connects the k^{th} hidden unit to the output unit. Suppose, for training purposes, n sets of inputs (2 explanatory variables for each of n countries) to the network with a set of desired or target output- say, some critical value of the rescheduling probability that discriminate the debt rescheduling countries from non-rescheduling countries. The inputs are processed to obtain the components of the hidden layer as follows:

$$H_k = (\sum_j W_{jk} I_j) \quad \text{[10]}$$

These hidden layer components are further processed to obtain the output as follows:

, $$O = G(\sum_j V_k H_k) \quad \text{[11]}$$

Substitution for H_k yields:

$$O = G[\sum_j V_k F(\sum_j W_{jk} I_j)] \quad \text{[12]}$$

This network is then fed with a set of inputs and an error is calculated as the difference between the desired and actual outputs. Thus, e = D – O where D is the desired or target level of output. Squaring all errors and summing over all n sets of inputs produces an error function given by:

$$E = \frac{1}{2}\sum_n e_n = \frac{1}{2}\sum_n (D_n - O_n) \quad \text{[13]}$$

The objective is to find a combination of w's and v's that minimizes E. One way is to use the back-propagation algorithm. The network is initialized with randomly selected weights so that it generates large errors when the input data are fed for the first time. These errors are then fed backwards through the network so that the weights can be updated. Each weight is updated by an amount proportional to the partial derivative of *E* with respect to that weight. The algorithm stops when *E* does not decrease any more. This so called 'gradient descent down the error surface' is accelerated by adding a momentum term that incorporates a proportion of the previous change in the weight.

Hybrid Neural Network.

The ANN approach has been shown to be at least as good as, or even better than the traditional statistical models (Cooper, 1999). In order to improve further the performance of this approach a hybrid neural network model has been suggested in the literature (Nath, 2008 citing Yim and Mitchell, 2005). This hybrid version combines statistical models with ANN: statistical models are used to select the variables to be used as inputs to the ANN. This procedure reduces the risk of overfitting and efficiently condenses information to be used in the neural network to generate output.

2.8 Quantitative Approaches to estimate or measure country risk

Citing Damodaran (2003) and Saad (2011), if country risk is not diversifiable, then there are two methods to measuring of country risk: historical risk premium plus approach and the implied premium approach.

2.8.1 Historical Approach

This approach looks at the difference between the return from the equities and risk-free rate of return (Damodaran, 2003) and this difference is classified as country risk. This approach is not used in the emerging markets to measure country risk unless otherwise modified because historical risk premium plus approach is associated with large standard error that makes the approach useless. The problem is exacerbated by the limited access to data of most emerging markets. To overcome the weaknesses of this approach, Damodaran advocated for the use of sovereign ratings provided by the famous ratings agencies like Standard and Poor, Moody's, Fitch's IBCA. However, these ratings are indicators of default risk instead of equity risk but they are determined by macroeconomic fundamentals (e.g., currency stability, inflation, current balance, economic growth rate and political stability) that drive equity risk. He further points that rating agencies often are lag markets as they are slow to respond to changes in the underlying default risk and they put more emphasis on default risk overlooking other risks that drive the equity markets.

2.8.2 Implied premium Approach

According to Damodaran (2003), historical information or corrections are not essential in determining country risk, but implied premium approach assumes that the whole market is correctly priced. Thus, it is forward looking and market-driven compared to historical risk plus

premium approach. The approach makes use of dividend growth model to determine required rate of return and then risk-free rate of return is deducted to deduce country risk. This approach can be extended to cover other models like cash flows based rather than only dividends based. However, the main weakness of this model is on whether appropriate and reliable inputs are available to measure country risk.

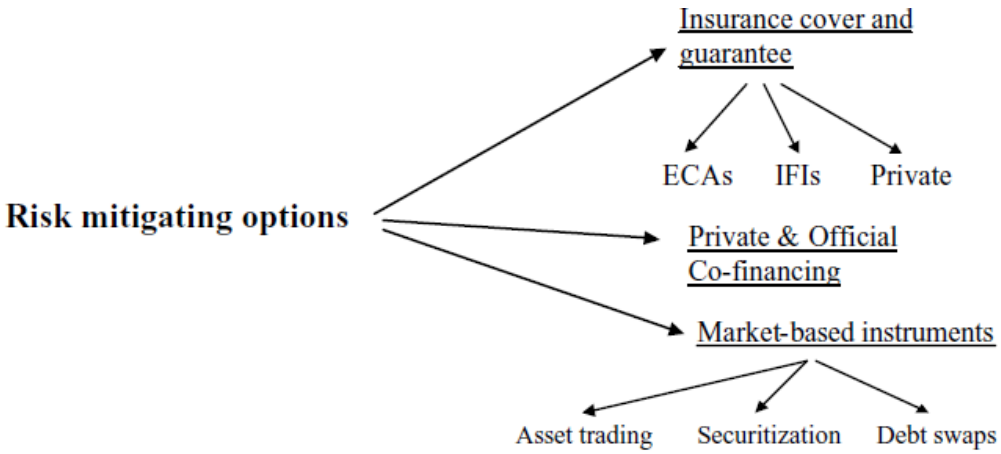
2.9 Ways of managing country risk

Investors and creditors that are involved in international business transactions can manage country risk in many ways. Bouchet, Clark and Groslambert (2003) and Bouchet, Fishkin and Goguel (2018) opine that export cover, investment insurance and a market-driven menu of financial innovations are strategies that increase liquidity flow while managing country risk. Official bilateral and multilateral agencies that are willing to take the risk provide insurance coverage. Investment insurance is achieved when an investor acquires market-based instruments that change the risk exposure of an investor, hence yielding abnormal risk-return combinations. Financial derivatives that comprise of asset securitization, asset-backed securities and debt conversion transactions providing ease access to privileged and concessionary exchange rate can be entered into. Before conducting a business transaction or investing across the border, country risk assessment should be done first. It encompasses monitoring, timely and intelligence gathering of information, scenarios analysis, credit risk assessment and comprehensive risk and opportunity analysis to assess whether it is worth invest in that host country.

According to the management of bank's international lending (1982) and Bouchet, Fishkin and Goguel (2018), banks (creditors) need to set and monitor the borrowing nation's credit exposure limits relative to the nation's perceived risk. Regular review of the country limits is essential so that they are adjusted in response to changing risk. However, the limits should not be compromised without the ratification of the Board of Directors and senior management who approved them, even if it means that they reject loan applications which promise a high return (Comptroller's Handbook, 2016).

Figure 4 overleaf shows a summary of risk mitigations that can be employed to manage country risk.

Figure 4: Ways of managing country risk



Source: Bouchet, Clark and Groslambert (2003)

2.10 Empirical evidence on drivers of country risk

Using international version of capital asset pricing model (ICAPM), Verma and Verma (2014) analysed the responsive of country risk in Asian markets to a group of macroeconomic variables that were classified as domestic and global. In a two-step process, they first estimated country beta models for Hong Kong, Indonesia, Malaysia, Philippines and Singapore and generate separate series of country risk variables for each market. In the second step, they analysed the response of these country risks to five local factors and seven global factors. The local factors include money supply, inflation, economic growth, interest rate and exchange rate while the international factors included the following: value of U.S. dollar against currencies of 15 industrialized countries, spread between 90-day Euro dollar deposit rate and 90 day U.S. Treasury Bill yield, weighted average inflation of G-7 countries, weighted average short term interest rates of G-7 countries, U.S. dollar price per barrel of crude oil, U.S. interest rate and U.S. inflation. Choice of factors was based on empirical studies done by Fama (1970), Chen, Roll and Ross (1986)., Jorian (1991), Groenewald and Fraser (1997), Ely and Robinson (1997), Kwon and Shin 1999, Serra (2000), Bilson, Brailsford and Hooper (2001), Ferson and Harvey (1994) where the factors had a significant association with emerging equity returns.

This study employed the country beta approach suggested by Gangemi, Brooks and Faff. (2000) which modelled Australia's country risk. The country risk under this approach is modelled in four steps. In the first step, the international version of the Capital Asset Pricing

Model (Sharpe, 1964; Lintner, 1965) is estimated. This model predicts that the expected return on any traded asset in excess of a risk free return is proportional to the systematic risk of the asset as measured by its covariance with the market wide portfolio return. Accordingly, the following time varying standard country beta model for the purpose of measuring country risk is estimated:

$$R_{jt} - R_{ft} = \beta_{jt}(R_{wt} - R_{ft}) + \varepsilon_t \quad \text{.....[1]}$$

where R_{jt} is the return on j^{th} country's stock market index, R_{ft} is return on a risk free asset, β_{jt} is the parameter; R_{wt} is the return on global stock market index; ε_t is the random disturbance term. Precisely, β_{jt} is a measure of relative risk, which is determined by a combination of j^{th} country's economic, financial, political factors, world market conditions and sensitivities of the country's market to the world market conditions at a particular time 't'.

In the second step, based on the arguments of Fama and French (1989), Mcqueen and Roley (1993), and Ferson and Harvey (1991), a time varying country beta model was estimated. Specifically, these studies suggest that equity returns are highly correlated with the business cycle through a variety of macroeconomic influences and that beta risk is time varying in nature as a result of business cycle. Accordingly, this study specified the following country risk model:

$$\beta_t = b_0 + \sum_{i=1}^{N} b_i E_{it} + U_t \quad \text{.....[2]}$$

where b_0 and b_i are the parameters; E_{it} is a set of local and global factors affecting beta at time 't'; u_t being the independent and identically distributed random disturbance.

In the third step, a set of local and global factors that can affect country risk of the Asian markets was specified. Accordingly, based on the selected five local factors and seven global factors which can have significant effect on country beta of Asian markets, equation (2) was further specified as follows:

$$\beta_t = b_0 + b_1 MI_t + b_2 CPI_t + b_3 IIP_t + b_4 IR_t + b_5 XR_t + b_6 dollar_t + b_7 Euro\$_t + b_8 G7\_INF_t + b_9 G7\_INT_t + b_{10} OIL_t + b_{11} US\_INT_t + b_{12} US\_INF_t + \cup_t \quad \text{.....[3]}$$

Where: *MI* represents money supply,

CPI is the goods prices (CPI),

IIP represents real activity,

IR represents interest rate,

XR represents exchange rates,

Dollar represents foreign exchange value of the U.S. dollar against the price of the currencies of 15 industrialized countries,

Euro$ represents spread between 90-day Euro dollar deposit rate and 90 day U.S. Treasury Bill yield,

G7_INF represents weighted average inflation of G-7 countries

G7_INT represents weighted average short term interest rates of G-7 countries,

OIL is the U.S. dollar price per barrel of crude oil,

US_INT is the U.S. interest rate,

US_INF is the U.S. inflation,

U_t is the random disturbance term.

However, since beta is not observable, one cannot estimate the time varying equation of beta in its present form. Therefore, equation (3) is substituted in time varying international CAPM model presented in equation (1) and in order to estimate the parameters of the model. Accordingly, in step 4, they generated the following specific time varying country beta model for each Asian country in the sample:

$$R_{jt} - R_{ft} = a + b_1 \left(R_{wt} - R_{ft}\right) MI_t + b_2 \left(R_{wt} - R_{ft}\right) CPI_t + b_3 \left(R_{wt} - R_{ft}\right) IIP_t + b_4 \left(R_{wt} - R_{ft}\right) IR_t + b_5 \left(R_{wt} - R_{ft}\right) XR_t + b_6 \left(R_{wt} - R_{ft}\right) dollar_t + b_7 \left(R_{wt} - R_{ft}\right) Euro\$_t + b_8 \left(R_{wt} - R_{ft}\right) G7_{INF_t} + b_9 \left(R_{wt} - R_{ft}\right) G7_{INT_t} + b_{10} \left(R_{wt} - R_{ft}\right) OIL_t + b_{11} \left(R_{wt} - R_{ft}\right) US\_INT_t + b_{12} \left(R_{wt} - R_{ft}\right) US\_INF_t + U_t \quad \text{.....[4]}$$

The step 4, allows us to indirectly estimate the values of parameters for equation (3) in terms of observable variables. A significant (insignificant) parameter b_1 through b_{12} of this estimated equation would suggest a significant (insignificant) relationship between the local and global risk factors with country risk.

Multi-regression analysis technique estimated the beta parameters of the model. The findings of the study established that, among the global factors, the exchange rate (US dollar price) had a significant positive effect on country risk except in the case of Malaysia. The findings on impact of exchange rate volatility on country betas concurs with Oetzel, Bettis and Richards (2000), Gangemi, Brooks and Faff (2000), Jeon (2001), Verma and Soydemir (2006) and Basu, Deepthi and Reddy (2011) who found that currency risk is a major driver of country risk as we live in a global village where markets are highly integrated, thus global factors influence most the country risk. Furthermore, the dollar euro spread, real interest rates and inflation of G-7 countries have a significant negative impact on country risk in all the cases. On the other hand, exchange rate (in case of Malaysia and Singapore) and to some extent money supply (only in case of Hong Kong) were the only local factors, which had a significant effect on country risk of these markets. The difference between the return from the equities and risk-free rate of return was used as the proxy for country risk. This approach is associated with large standard error that makes the approach useless and rarely used in emerging economies to measure country risk

Basu, Deepthi and Reddy (2011) considered ten macroeconomic indicators for the period 1980 to 2009 in country risk analysis of Indian economy. The beta country risk model, as described by Erb, Harvey and Viskanta (1996) and used by Andrade and Teles (2004) for Brazil and Gangemi, Brooks and Faff (2000) for Australia, was used to estimate the country risk of India. The country beta model for their study was expressed as follows:

$$R_{Equity\_Country} = \alpha + \beta R_{Equity\_World} + \varepsilon_t \quad [1]$$

Where $R_{Equity\_Country}$ is the return on the Indian equity market, α is the intercept, R_{Equity}_World is the return on the world equity market and e_t is the error term. β is the basic measure of country risk, since it indicates the returns in a country specific to it and different from the rest of the world. As β increases, country risk decreases, that is, the returns in the country are affected only by factors common to the rest of the world, which is essentially a non-diversifiable risk for a particular country.

Country risk would be a variable affected by certain macroeconomic variables specific to the country. Thus, beta is further modelled as a linear combination of those variables:

$$\beta = b_0 + b_i X \quad [2]$$

where β represents country risk, b_0 is the intercept, b_i are regression coefficients and X represents a vector of macroeconomic indicators and Equation [2] was applied to the Indian context and the following model was used to estimate country risk:

$$R_{India} = \alpha + \beta R_{World} + e_t \quad \text{...}[3]$$

where R_{India} is the return on the Indian equity market and R_{World} is the return on the world equity market. β is an indicator of India's country risk. As β increases, country risk decreases. Equation *(2)* was substituted in *(3)* and subjected to OLS regression analysis to determine those variables that affect β, and thus, the country risk.

Based on the Efficient Market Hypothesis (Fama, 1970), only unexplained shocks in the explanatory variables affect country risk, since market expectations get incorporated into R_{India} and R_{World}. Thus, an Auto-Regressive Integrated Moving Average (ARIMA) model was run on each of the variables to filter out the expected components.

The macroeconomic indicators include GDP per capita, GDP deflator, public debt, current account, interest rates, foreign exchange reserves, exchange rate (against the USD), FDI inflows, unemployment and political risk. Interest rates and exchange rates indicated of the monetary policy in India, while public debt and current account balance reflect the fiscal policy of the economy. FDI inflows indicate how foreign economies perceive the Indian economy. The index for political stability and absence of violence from the world bank development indicators was used as a proxy for country risk. Ordinary least squares regression was run on the white noise (unexpected component) of these variables to explain the variation in country risk and to identify the relevant of these variables with significant influence. The study findings revealed that country risk increased significantly after 1991 due to liberalization. Furthermore, the years 1998 to 2001 β increased, or there was a reduction in country risk during the dot-com bubble. In 2003 and end of 2007, country risk also increased due to dot-com bubble burst and subprime crisis, respectively. Post the IT bubble, India was back on track and country risk decreased until around 2007, and again increased during the sub-prime crisis.

They further postulate that FDI inflows, exchange rate, unemployment rate and short term interest rates are the major drivers of country risk. They also found that exchange rate, FDI inflows, unemployment rate and interest rates were negatively related to country risk while inclusion of political risk in the model did not influence country risk because it had already been embedded in interest rates and FDI inflows variables. They used the index for political

stability and absence of violence index from world bank governance indicators as a proxy for country risk. This index is very subjective as it has many qualitative factors that considered when calculating it.

Goldberg and Veitch (2010) analysed the importance of economic factors in the country risk for South Africa for the period 1993 to 2008.The set of economic variables considered include consumer price index, exchange rate, net exports, International reserves and gold prices. Time-varying beta market model was used to analyse country. The model used to analyse time-varying betas for South Africa is expressed as follows:

$$\beta_t = b_0 + b_1 CPI + b_2 EXR + b_3 TRADE + b_4 IRES + b_5 GOLD + \mu_t \text{ ……..[1]}$$

where CPI represents consumer price index

EXR represents exchange rate

TRADE represents net exports

IRES represents international reserves

GOLD represents gold prices

b_is are model parameters

All independent variables take on the values of their unanticipated components, as computed in the ARIMA analysis. Given that β_t is not observable, they used the following general equation to extract the coefficients to be used in Equation (1):

$$R_{SA} = \alpha + \beta_t MSWI + e_t \text{ …….[2]}$$

where R_{SA} represents the US dollar monthly returns for the South African stock index which was obtained from the Emerging Markets Database (EMDB) published by Standard and Poor, α is a constant, *MSWI* represents the Morgan Stanley World Index monthly returns, e_t is the residual error from the model. By substitution of Equation (1) into Equation (2), they obtained the following equation that can be estimated:

$$R_{SA} = \alpha + b_0 MSWI + b_1 CPI * MSWI + b_2 EXR * MSWI + b_3 TRADE * MSWI + b_4 IRES * MSWI + b_5 GOLD * MSWI + \varepsilon_t \text{ ……. (3)}$$

Unanticipated components or residuals from an ARIMA analysis were used as the relevant variables in analysing South Africa's monthly stock returns. The study found that exchange rate surprises and fluctuations in gold prices are the main determinants of how South Africa's beta varies over the pre-financial integration period 1992 to mid-1998. This finding is in line with Goldberg and Veitch (2002) and Gangemi, Brooks and Faff (2000) who found that a gain in value of the local currency positively impact on Argentina and Australian country risk and external shocks are essential to the performance of the economy. Goldberg and Veitch (supra) also found that South Africa's beta trends lower over the pre-integration period, but shifts up and becomes more volatile in the post-integration period, 1998 present. Post-integration, the importance of these economic variables disappears and the only significant of the country risk is the MSWI, a measure of world financial markets. However, the study used the difference between local market index return and world market returns as a proxy for measuring country risk. This method is prone to large standard error making the method worthless.

Teixeira, Klotzle and Ness (2008) examined how the Brazilian country risk, in the period from 1992 to 2003, was influenced by fundamental macroeconomic variables that include GDP growth, fiscal surplus, public debt, inflation rate, current account balance and international reserves. The following three key models were estimate and applied to the analysis of Brazilian country risk.: (i) First, the internal economic determinants of the country risk; (ii) the second has the same purpose as the first, with the difference that the variable 'intensity of global risk aversion', that serves as proxy for the external component of the risk, is included in the group of explanatory variables; (iii) in the last model the emphasis is on the relation between specific country risk (country risk minus the external component) and the internal and external economic determinants. ARDL (Autoregressive Distributed Lag) Model was employed to analyse the country risk. This approach allows testing the influence of selected factors on Brazilian country risk both in the short and in the long run. The sovereign spread calculated on the basis of the difference between the returns of sovereign bonds of a given country and the returns of the U.S. Treasury Notes, considered to be free of risk was the measure for country risk. The ARDL method of testing the long run relationship between variables is based on the estimation, by ordinary least squares, of an unrestricted Error Correction Model (ECM) in following form:

$$\Delta y_t = \alpha_0 + \alpha_1 t + \phi y_{t-1} + \delta x_{t-1} + \sum_{i=1}^{p-1} \phi \Delta y_{t-1} + \sum_{i=0}^{q-1} y \Delta x_{t-1} + \boldsymbol{\varepsilon_t}; \quad t = 1,2,3,4, \dots, T \quad \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots [1]$$

where y_t is the dependent variable, x_t is a vector of independent variables of rank k and ε_t is random error term.

In this case, if $\phi \neq 0$ and $\delta \neq 0$ there is a long run relationship between the levels of y_t and x_t which is given by:

$$y_t = \theta_0 + \theta_1 T + \theta_2 x_t + \mho_t \quad \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots [2]$$

Where $\theta_0 \equiv \frac{-\alpha_0}{\phi}$, $\theta_1 \equiv \frac{-\alpha_1}{\phi}$, $\theta_3 \equiv \frac{\sigma}{\phi}$ and $\mho_t$ is zero mean stationary process.

If $\varphi < 0$, the long run relationship between y_t and x_t is stable. In this case, equation (1) can be expressed as an ECM of following form:

$$\Delta y_t = \alpha_0 + \alpha_1 t + \phi (y_{t-1} - \theta x_{t-1}) + \sum_{i=1}^{p-1} \phi \Delta y_{t-1} + \sum_{i=0}^{q-1} y \Delta x_{t-1} + \boldsymbol{\varepsilon_t}; \quad \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots [3]$$

Following equation (3), testing the null hypothesis that $\phi = 0$ can be interpreted as a test of existence of a long run relationship between y_t and x_t. In the ARDL methodology, this test is made following the joint hypothesis that $\phi \neq 0$ and $\delta \neq 0$ based on the ECM defined in equation (1).

To perform this test, Pesaran et al. (1996) tabulate the critical bounds of the F-statistics for different numbers of regressors. Two sets of critical values are provided, with an upper bound calculated on the basis that the variables are I(0) and, a lower bound on the basis that they are I(1). The critical values for this bounds test are generated from an extensive set of stochastic simulations under differing assumptions regarding the appropriate inclusion of deterministic variables in the ECM. Cointegration is confirmed irrespective of whether the variables are I(1) or I(0) if the computed F-statistic fall outside the upper bound; and rejected if falls outside the lower bound. Nevertheless, if F-statistic falls within the critical value band, no conclusion can be drawn without knowledge of the time series properties of the variables. However, ARDL methodology developed by Pesaran and Shin (1999) is only valid for the cases where there is only a linear relation between the dependent variable and the independent ones. The study

found that in the short run, in addition to the external component, three domestic factors that include public debt/GDP ratio, primary surplus/GDP ratio and international reserves/GDP. affect the country risk. These same variables, with exception of the primary surplus, are also related with the specific country risk. Furthermore, in the long run, however, the country risk is explained only by the external component, as the domestic determinants are not statistically significant. In the same way, the specific country risk does not have a long run relation with the domestic variables.

In other words, the study findings indicate that the country risk is influenced by the deviations of the domestic economic variables from their long run tendencies in different points of time. However, assuming that the intensity and direction of those deviations depend on external conditions, the study findings established that, in the long run, the external scenario has the greatest influence over the country risk. For instance, in a favourable external scenario the expectative is that a variable like public debt, which empirically affects country risk, shows a declining tendency line over time. This implies that, in the long run there is a direct relation between external scenario and the country risk. On the other hand, in the short run, the expectation was that the deviations from public debt from its long run tendency line will be smaller under these conditions, having therefore a favourable impact over country risk. In this case, in the short run, there is a clear association between the external and domestic scenarios and country risk.

The major limitation for this study is that yield spreads and/ returns on sovereign bonds used as proxy for country risk are determined by sovereign/ credit ratings provided by the famous ratings agencies like Standard and Poor, Moody's, Fitch's IBCA. These ratings are indicators of default risk instead of equity risk but they are determined by macroeconomic fundamentals (e.g., currency stability, inflation, current balance, economic growth rate and political stability) that drive equity risk. Rating agencies often are lag markets as they are slow to respond to changes in the underlying default risk and they put more emphasis on default risk overlooking other risks that drive the equity markets.

Tourani-Rad, Choi and Wilson (2006) estimated the country risk of New Zealand from 1985 to 2000. The country level risk of New Zealand was examined using a time varying country beta market model. New Zealand's country beta was allowed to vary according to a set of open economy macroeconomic variables that encompasses major domestic and international influences on the New Zealand economy, and the factors include those that represent inflation,

exchange rates, interest rates, and monetary policy. The macroeconomic variable set includes New Zealand commodity index, Net trade balance, USD/NZD exchange rate, AUD/NZD exchange rate, M_3 money supply, 90-day bill yield, 10-year government bond yield, food price index, monetary conditions index and trade-weighted index. In order to isolate this unexpected component of variables, autoregressive integrated moving average (ARIMA) models are fitted to each of the macroeconomic variables.

The process of measuring country risk started with a standard unconditional/static country beta market model as represented by:

$$R_{NZ.t} = a + b\ R_{WOR,t} + \varepsilon_t \quad \text{.....[1]}$$

In this model $R_{NZ,t}$ is the return on the New Zealand stock market index, *a* and *b* are constants, $R_{WOR,t}$ is the return on the global stock index, and ε_t is the residual error from the model. The sample period for this study includes the October 1987 stock market crash. Such a significant event required an adjustment to the proposed model. The New Zealand market was hit particularly hard and subsequently recovered very slowly from the crash. According to a study conducted by Roll (1988), for the whole of 1987 the New Zealand market exhibited the poorest returns out of the sample countries. For the month of October 1987, New Zealand exhibited the seventh and sixth worst performance in New Zealand and US currency respectively. It was expected that the crash would have had a significant impact on country beta. Against this background, equation (1) was modified to remove the crash influence. Accordingly, equation (2) was presented as follows:

$$R_{NZ.t} = a + b\ R_{WOR,t} + C\delta\ R_{WOR,t} + \varepsilon_t \quad \text{.....[2]}$$

where *c* is a constant and δ is a dummy variable assuming a value of one in October 1987 and zero, otherwise. The presence and impact of business cycles caused by a variety of macroeconomic influences is a key reason behind the notion of a time varying country beta as opposed to a static beta. The effects of business cycles on the risk/return relationship are highlighted in the literature by Fama and French (1989), Ferson and Harvey (1991), and McQueen and Roley (1993). These ideas can easily be extended to an international setting. It is argued here that a set of macroeconomic factors, thought to represent the influence of business cycles, may induce a time varying country beta in New Zealand. The time varying beta model used in Tourani-Rad, Choi and Wilson's study is expressed as follows:

$$\beta_t = b_0 + b_1 COMM_t + b_2 TRADE_t + b_3 USD_t + b_4 AUD_t + b_5 MONEY_t + b_6 BILLS_t + b_7 BONDS_t + b_8 FPI_t + b_9 MCI_t + b_{10} TWI_t + \mu_t \quad \text{[3]}$$

All variables in equation (3) are defined as their unexpected components. The variables represented by b_k explain the sensitivity of a specific macroeconomic factor to the overall country beta. Since, the time varying model of beta cannot be directly estimated because β_t is unable to be directly observed.

Equation (3) was substituted for β in equation (2) thereby developing equation 4 presented as follows:

$$R_{NZ} = b_0 . R_{WOR} + b_1 COMM . R_{WOR} + b_2 TRADE . R_{WOR} + b_3 USD . R_{WOR} + b_4 AUD . R_{WOR} + b_5 MONEY . R_{WOR} + b_6 BILLS . R_{WOR} + b_7 BONDS . R_{WOR} + b_8 FPI . R_{WOR} + b_9 MCI . R_{WOR} + b_{10} TWI . R_{WOR} + C\delta . R_{WOR,t} + \varepsilon_t \quad \text{[4]}$$

Equation (4) is entirely in terms of observable variables. The estimation of this equation indirectly determined the parameter estimates for equation (3).

Multivariate regression analysis technique was used to estimate country volatility. The findings of the study revealed that the USD/NZD exchange rate and monetary conditions index were the major drivers of country betas. This is in line with Cavalheiro, Vieira and Costa (2015) argues that exchange rate is the most significant driver of country risk. The temporal variation of its country risk was mainly attributed to the crash of the stock market crash in 1987. These findings contrasted with Gangemi, Brooks and Faff (2000) who found that only trade-weighted index (TWI) was the determinant of Australian returns. The study also found that the country beta was far less volatile during the 1990s. However, the study used the difference between local market index return and world market returns as a proxy for measuring country risk. This method is prone to large standard error making the method worthless.

Vij (2005) used seven macroeconomic variables that include gross national income per capita, gross capital formation, net foreign debt/exports ratio, reserves to import ratio, current account balance on gross national income, exports growth rate and political instability indicator to explore the degree to which they can assist in estimation of country risk. The study employed logistic multiple regression analysis technique to develop a country risk model to identify the determinants of country risk rating. The model focuses on country risk rating by Euromoney and Institutional Investor for the year 2001 and the important economic and political variables for the year 2000. The Logistic Multiple Regression Analysis used allowed the V*ij(supra)* to

incorporate multiple independent variables to estimate the dependent variable. The model was expressed as

$$Y_i = \alpha_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} \ldots\ldots\ldots + \beta_n Xni + \varepsilon_i \quad \ldots\ldots\ldots\ldots [1]$$

The notations, Y_i represents the dependent variable, X_{ni} indicates the values of the n^{th} independent variable for case i. The beta terms are unknown parameters and the ε_i terms are independent random variables that are normally distributed with mean zero and constant variance.

Burton & Inou (1985) express country risk as:

$$CR_{it} = f\,[EC_{i(t-1)}, PO_{i(t-1)}] \quad \ldots\ldots\ldots\ldots [2]$$

Country risk in equation 2 is assumed to be composed of economic and political related risk.

$EC_{i(t-1)}$ is economic-related risk and $PO_{i(t-1)}$ is the political-related risk for country *i* in the period t-1. A one-year time lag characterizes the assumption that in their assessment of new financial commitment to specific countries, lenders are influenced principally by the most recent economic and political circumstances. The selection of various independent variables that were used to estimate country risk ratings are as follows:

$$CR_t = f(GNP_{t-1}, GKFORM_{t-1}, FDEXP_{t-1}, RESIMP_{t-1}, CURGNP_{t-1}, EXPGRTH_{t-1}, POLRSK_{t-1}) \quad \ldots\ldots\ldots\ldots [3]$$

Where CR_t = Country risk in period t

GNP_{t-1} = Gross national income per capita, in period t-1

$GKFORM_{t-1}$ = Gross capital formation in period t-1

$FDEXP_{t-1}$ = Net foreign debt/exports ratio in period t-1

$RESIMP_{t-1}$ = Reserves to imports ratio in period t-1

$CURGNP_{t-1}$ = Current account balance on gross national income in period t-1

$EXPGRTH_{t-1}$ = Exports growth rate in period t-1

$POLRSK_{t-1}$ = Political Instability Indicator in period t-1

The above mentioned political and economic risk indicators serve as the independent variables that are used to calculate the predictive power of the dependent variable, CR_t that is the country creditworthiness rating reported by Institutional Investor or Euromoney magazine. Also, only seven independent variables were included in the multiple regression model, as including a large number of independent variable in a regression model is never a good strategy, unless there are strong previous reasons to suggest that they all should be included. Including irrelevant variables increases the standard error of all estimates without improving the prediction. To reduce the skewness in the distribution, as also to make the independent variables comparable, logarithmic transformation is applied to all the variables.

Vij *(supra)* found that political risk is the most significant variable affecting country risk and exerted greatest influence on risk rankings of all the countries combined together. This finding is in line with Asiri and Buhail (2014) who found that political risk determines most the country risk ratings and Erb, Harvey and Viskanta (1996a) who established that economic and financial risk are most common in the developed markets while political risk explains asset returns in emerging equities markets. Vij also established that gross capital formation, gross national product and reserves to import ratio positively affect country risk while foreign debt/exports ratio and the current account were negatively related. The study revealed that in richer nations, foreign exchange reserves/imports ratio was statistically significant while in other countries it was not. These findings converge with Burton and Inoue (1985) who established that this ratio is a key economic variable that influence country risk. Vij *(supra)* used country credit worthiness ratings from two major international rating services (the Institutional Investor and the Euromoney) as proxy for country risk. However, these ratings are highly subjective as they do not always capture the actual situation in a country. Moreover, country risk ratings always measure the defaults risks overlooking the equity risk associated with country's equity market returns and other risks that drive equity markets.

Andrade and Teles (2004) studied the country risk of Brazil from 1991 to 2002. The explanatory variables that were considered include foreign reserves, oil price, nominal interest rate and public sector financial borrowing needs (primary deficit). The beta country risk model employed in the study is defined as follows:

$$R_{bra} = \alpha + \beta R_{ext} + e_t \quad \ldots\ldots [1]$$

where α is the intercept, R_{bra} represents the return of domestic equities, R_{ext} represents the return of the equities of the rest of the world and e_t represents error terms that are normally distributed with mean zero and constant variance.

The parameter β is the basic measure of the Brazilian country risk, when β increases the country risk diminishes, since this indicates that the return of the domestic equities market increases in relation to the rest of the world equities market. The parameter β was treated as a time-varying parameter and this is highly justifiable by the macroeconomic theory where the relationship between return to assets and macroeconomic variables are increasingly recognized by the literature [Fama and French, 1989; McQueen and Roley, 1993; Dumas, 1994; Erb et al., 1994 &1996a; Diamonte, Liew and Stevens,1996]. Generally, in an efficient market, only non-anticipated shocks of the variables are expected to affect the returns. Being that the case, the econometric model considered only the non-anticipated components of the related series. To white the series Box and Jenkins procedure was applied and a univariate ARIMA process for each macroeconomic series was obtained. The nature of the ARIMA process of each series was modelled by the analysis of its degree of integration, through the analysis of auto-correlation and partial auto-correlations. The series obtained after the filtering correspond to white noises. In this sense the series correspond to the unanticipated components, that is the unexpected shocks.

The equation estimated to evaluate the effects of the shocks of the macroeconomic variables on the country risk is as follows:

$$\beta_t = b_0 + b_1 RES_t + b_2 GOV_t + b_3 OIL_t + b_4 JUR_t + \mu_t \quad \text{.....[2]}$$

where β is the basic measure of the Brazilian country risk

RES represents foreign reserves

GOV is the financial borrowing needs of the public sector (primary concept)

OIL represents oil price

JUR represents nominal Interest rate (SELIC)

μ are independent random variables that are normally distributed with mean zero and constant variance.

All the variables are defined by their unanticipated components according to the above analysis. The direct estimation of this model, however, was not possible by the non-existence of time series for β. However, it was possible to substitute the above equation in equation (1), specifying the beta country model with a time varying parameter to be estimated by:

$$R_{bra} = \alpha + b_0 R_{ext} + b_1 RES_t R_{ext}t + b_2 GOV_t R_{ext} + b_3 OIL_t R_{ext} + b_4 JURt R_{ext} \text{.....[3]}$$

The results obtained of the equation (3) permit to compute the parameters of equation (2) and therefore a series for the country risk. In order to overcome the Lucas critique, they assumed that the coefficients of the estimated parameters and its significance, can vary through time. As a consequence, the model was re-estimated using the Kalman Filter to analyse the changes of the coefficients of the macroeconomic variables through time.

The study found that reserves, public debt and nominal interest rate were negatively related to country risk while oil price was positively related. The study findings unravel the importance of the monetary policy, through manipulation of the nominal interest rate, in reducing county risk. This finding on the role of monetary policy in country risk reduction through a rise in interest rate contradicts with Favero and Giavazzi (2004) and Garcia and Brandao (2001), who argue that interest rates increase positively impact on default risk of public debt, causing a rise in country risk, but leading to a spontaneous circle of rises in interest and debt. This makes monetary policy ineffective in reducing inflationary pressures. The underlying idea behind Tele and Andres's findings is that interest rates rise lead to price stability and credibility of the government is enhanced, which in turn lead to decrease in country risk. They also found that a foreign shock stimulated country risk during the period when the country had a managed

exchange rate; however, it was compensated by an effective monetary policy. The findings of the study suggest that the influence of the foreign reserves shocks was offset by the interest rate policy of the period. The study also used the difference between local market index return and world market returns as a proxy for measuring country risk. This method is prone to large standard error making the method worthless.

Wdowinski (2004) used real factors that include income, productivity, trade balance, budget deficit, and monetary actors that include the zloty exchange rate and interest rate to estimate the country risk model for Poland for the period 1996-2002. Country risk was estimated using the market model of beta risk as follows:

$$\Delta \log (Y_{it}) = \alpha_{ij} + \beta ij \, \Delta \log (X_{ijt}) + e_{it} \quad \text{.....[1]}$$

Where:

Y_i represents i^{th} index of Warsaw Stock Exchange (WSE) (points),

X_{ij} represents j^{th} index of foreign stock market for i^{th} index of WSE (points),

β_{ij} represents the model coefficients,

e_{it} is the error term, which is identically and independently normally distributed with a mean of zero and constant variance,

i = [WIG, WIG 20],

j = [DJIA, NASDAQ, DAX, FTSE].

To estimate beta risk, they used daily returns close-to-close on WIG and WIG 20 indexes as well as on foreign indexes in the period January 1, 1996 to December 31, 2002. The sample was divided into 84 monthly sub-periods. For each monthly sub-period they estimated parameters, α_{ij} and β_{ij} of equation (1). In turn, they obtained eight time series of parameters of α and β, that is, four in the case of returns on index WIG and four in the case of returns on index WIG 20. Then they focused on parameters of β only and calculated an average for each monthly sub-period for indexes WIG and WIG 20, respectively. Finally, they obtained two time series of average monthly point estimates of parameters WIG and WIG 20. The beta parameters have been subsequently denoted as risk measures of capital market in Poland.

For the purpose of assessment of forecasts generated by models of beta market risk we have applied a formal test proposed by Fair and Shiller (1990). Hence, they estimated the following equation:

$$Y_t - Y_{t-1} = a_0 + a_1 ({}_{t-1} Y^*_{1t} - Y_{t-1}) + a_2 ({}_{t-1}Y^*_{2t} - Y_{t-1}) + \mu_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots [2]$$

where ${}_{t-1} Y^*_{1t}$ denotes forecasts of Y_t generated by the model 1, that is, the model with monetary factors based on information available up to the moment *t-1* with the use of recursive estimation for each period *t*. The predictor ${}_{t-1}Y^*_{2t}$ denotes forecasts generated accordingly by the model 2, that is, the model with real factors, model (R1) and (R2) respectively, while μ is an error term, $\mu \sim$ IIN $(0, \sigma^2)$. If neither model 1 nor model 2 contains any relevant information in terms of forecasts quality for variable *Y* in period *t*, the estimates of a_1 and a_2 will be statistically insignificant. If both models generate forecasts that contain independent information, the estimates of a_1 and a_2 should both be statistically significant. If both models contain information but information contained in forecasts generated by model 2 is completely contained in forecasts generated by model 1 and furthermore model 1 contains additional relevant information, the estimate of a_1 will be statistically significant while the estimate of a_2 statistically insignificant. If both forecasts contain the same information, they are perfectly correlated and the estimation of parameters of (2) is not possible.

The regression technique with White's heteroscedasticity adjustment was run to evaluate the influence of monetary and real factors. The study concluded that the stock market in Poland has moderately smaller betas than the world markets and this is consistent with Harvey (1995) and, Erb, Harvey and Viskanta (1996) who found that developed markets have higher betas than emerging markets. It was also found that monetary factors influence most the country risk of Poland. This concurs with Erb at al. (1996), Groenewold and Fraser (1997), Bracker and Koch (1999), Gangemi, Brooks and Faff (2000), and Goldberg and Veitch (2002) who found that financial variables such as interest rates and exchange influence most country risk. In the case of beta risk of the 20 biggest companies, both monetary and real factors were found to influence the beta risk but real factors were more influential in market for biggest companies (index WIG20) than for all companies (index WIG) where there is active short-term speculation. The study also used the difference between local market index return and world market returns as a proxy for country risk. Its major weakness is that it produces large standard error when computing country risk and this renders the method worthless.

Goldberg and Veitch (2002) analysed the determinants of country risk for Argentina for the period 1992 to 1999 and variables that include consumer price index, exchange rate (Argentina), exchange rate (Brazil), exchange rate (Chile), exchange rate (Mexico), money supply, reserve money and international reserves were considered. Time-Varying Beta Market Model was employed to analyse country risk for Argentina as follows:

$$\beta_t = b_0 + b_1 CPI + b_2 EXRA + b_3 EXRB + b_4 EXRC + b_5 EXRM + b_6 MS + b_7 MBASE + b_8 IRES + \mu_t \quad \text{.....[1]}$$

where: β_t is a measure of the Argentina country risk

CPI represents the consumer price Index

EXRA is the Argentine peso to US dollar exchange rate

EXRB represents the Exchange Rate for Brazil

EXRC is the exchange rate for Chile

EXRM is the exchange rate for Mexico

MS represents money supply

MBASE is the reserve money

IRES represents International reserves for Argentina

μ_t is the population disturbance

All independent variables take on the values of their unanticipated components, as computed in the ARIMA analysis.

Given that β_t is not observable, they used the following general equation to extract the coefficients to be used in equation (1):

$$R_{arg} = a + \beta_t MSWI + e_t \quad \text{.....[2]}$$

where R_{arg} represents the US dollar monthly returns for the Argentine stock index, which were obtained from the Emerging Markets Database (EMDB) published by the IFC, *MSWI* represents Morgan Stanley World Index monthly returns and e_t is the error

term, which is identically and independently normally distributed with a mean of zero and constant variance.

By substitution of equation (1) in equation (2) they obtained the following equation that can be estimated:

$$R_{arg} = a + b_0 MSWI + b_1 CPI^* MSWI + b_2 EXRA^* MSWI + b_3 EXRB^* MSWI + b_4 EXRC^* MSWI + b_5 EXRM^* MSWI + b_6 MS^* MSWI + b_7 MBASE^* MSWI + b_8 IRES^* MSWI + e_t \quad \ldots\ldots [3]$$

An ARIMA technique was employed to estimate the model. The findings of the study established that only Brazilian and Mexican exchange rate crisis, not Argentinean macroeconomic fundamentals, were the major variables influencing country risk of Argentina. This implies that contagion effect was the main determinant of changes in country risk for Argentina. These findings are in line with Goldberg and Veitch (2010) who established that foreign exchange rates and gold prices were major drivers of South Africa's risk prior to financial integration period. However, they are in contrast with Gangemi, Brooks and Faff (2000) who modelled the country risk of Australia for the period 1974 to 1994 using the same approach. Trade-weighted index was found as the only variable with substantial positive impact on country risk and asset returns. The study also found that a gain in value of the local currency positively impact on Australian country risk and external shocks are essential to the performance of the economy. From the empirical literature presented above, it is clearly revealed that country risk is mostly influenced by economic, financial and political variables (see also Erb, Harvey and Viskanta (1996); Groenewold and Fraser, 1997; Bracker and Koch, 1999; Oetzel, Bettis and Richards, 2011). The study also used the difference between local market index return and world market returns as a proxy for country risk. This method is prone to large standard error making the method worthless.

Despites different proxies, variables and methodologies used to estimate country risk, none were recommended by academics and experts in country risk analysis. The difference between the return on the local market and returns on the world market does not clearly bring out the extent of the impact socio-economic, financial and political factors on country beta. The current study has proposed a better method of computing country risk. This method compute country beta values that are objective and reflective of the risk associated with the economy. From the empirical literature reviewed, it can be concluded that country risk is mostly influenced by

economic, financial and political variables (see also Erb, Harvey and Viskanta, 1996; Groenewold and Fraser, 1997; Bracker and Koch, 1999; Oetzel, Bettis and Richards, 2011).

According to Basu, Deepthi and Reddy (2011) citing Euler Hermes (2009), emerging markets country risk analysis provides a challenge for researchers, since calculation of statistical properties of the various parameters based on historical returns could be misleading. In addition, reliable data is not available for several periods, especially far back into the past. Such data might not even be relevant as, by their very nature, the past in emerging economies rarely reflects the present and to a lesser extent, the future.

2.11 Chapter Summary

This chapter presented main components of country risk, determinant factors of country risk, quantitative methods used to measure country risk, methods used in country risk analysis, the concept of country risk analysis and empirical evidence of case studies done in India, Latin America, Brazil, Australia, Poland, Argentina and New Zealand. Empirical literature clearly revealed that country risk is mostly influenced by economic, political and financial variables but the proxy used by the studies to indicate country risk is prone to large standard error, hence, making the method valueless. There is need for a better method that compute a realistic proxy for measuring country risk. The next chapter introduces the theoretical framework, and presents conceptual framework resultant from the review of the literature.

CHAPTER THREE: THEORETICAL FRAMEWORK AND THE STUDY CONCEPTUAL FRAMEWORK

This chapter presents the theoretical framework of the study. It also establishes the conceptual framework derived from the theoretical and empirical evidence presented in the preceding chapter. It is hinged on the work Erb, Harvey and Viskanta (1985) where on country risk is expressed as a function of economic, financial and political factors. The a priori condition for the relationship between country risk and its drivers are also outlined.

3.1 Theoretical framework

The main theories that underlie this study are Capital Asset Pricing theory (CAPM), International Capital Asset Pricing theory (ICAPM) and the Arbitrage pricing theory (APT)

3.1.1 Capital Assets Pricing Model (CAPM)

The theory of CAPM demonstrates the trade-off between required rate of return on a well-diversified portfolio and its systematic risk (Sharpe, 1964). CAPM theory is attractive and essential because it offers powerful and intuitive predictions about expected returns and risk, as well as management of risk (Acheampong and Swanzy, 2015). The model was proposed by Sharpe in 1964 and became a major aspect in financial management (Watson and Head, 2016). Moreover, the theory based on Markowitz mean-variance-efficiency model in which risk-averse investors with a one-period horizon care only about expected returns and the variance of returns (risk). Portfolios that are efficient, that is those with optimum expected return, given total risk and minimum variance, given expected return, are selected by the investors (Sigman, 2005; Fama and French, 2004). The theory is used to demonstrate the connection between the extent of variability in earnings flow for an investment as well as level of return, and as a result, it describes how pricing of investments is done and how discount rates are determined. This model, further, subdivides the investment' risk into two categories: systematic and unsystematic risks (Mihai and Cristina, 2015 citing Hill, 2010).

Unique or diversifiable risk encompasses risk caused by random events as lawsuits, strikes, successful and unsuccessful marketing campaigns, winning or losing major contract and other events that are unique to a particular firm. Since these events are random in nature, their effects on a portfolio can be eliminated by diversification, that is bad events in one firm can be offset by good events in another (Brigham and Ehrhardt, 2008, 2011; Crowther, 2010). Due to the

uniqueness of the risk to the firm, the unpredictability of investors' returns can be minimized by not placing all the funds in one basket (Mihai and Cristina, 2015). On the other hand, systematic risk refers to risk caused by general economic factors (for instance, inflation, BOP deficits, inflation, wars, unemployment, and recessions to mention a few) that affect all firms and financial securities. Alternatively, non-diversifiable risk measures the magnitude with which equity returns vary when the global market returns change and it is normally indicated by beta parameter (Brigham, Gapenski and Ehrhardt, 1999; Mihai and Cristina, 2015).

CAPM states that $\boldsymbol{R_i = R_f + \beta_i (R_m - R_f)}$

Where: $\mathbf{R_i}$ is expected rate of return on security '*i*';

$\mathbf{R_f}$ is risk free rate of interest;

$\boldsymbol{\beta_i}$ is Beta coefficient or market risk of security '*i*'; that is, a risk measure for the non-diversifiable part of total risk;

$\mathbf{R_m}$ is return on Market Portfolio (Market portfolio is the one that represents all of the assets in the market in their respective proportions);

$\mathbf{R_m - R_f}$ is the excess return for the extra risk.

3.1.2 Assumptions of CAPM

In development the CAPM, the following assumptions (Jensen, 1972 citing Sharpe, 1964; Brigham, Gapenski and Ehrhardt, 2008) were made:

- All investors focus on a single holding period, and they seek to maximizes the expected utility of their terminal wealth by choosing among alternative portfolios on the basis of each portfolio's expected return and standard deviation.
- All investors can borrow or lend an unlimited amount at a given risk-free rate of interest and there are no restrictions on short sales of any asset.
- All investors have identical estimates of the expected returns, variances and covariance among all assets; that is, investors have homogenous expectations.
- All assets are perfectly divisible and perfectly liquid.
- There are no transaction costs.
- There is no taxation.

- All investors are price takers; that is, all investors assume that their own buying and selling activity will not affect stock prices.
- The quantities of all assets are given and fixed.

The implication of Capital Asset Pricing Model is that an investor cannot earn extra premium for bearing unsystematic risk, considering that the risk can diversified away. Having eliminated the unsystematic risk, the risk of an individual's stock is evaluated in terms of its beta and not the standard deviation of return (Brigham, Gapenski and Ehrhardt, 2011; Mihai and Cristina, 2015).

3.1.3 The concept of Beta and its variations

Beta is a major element of CAPM as it measures the sensitivity of individual share's return due to changes in average stock's return. The likelihood of stocks to move up and down with the market is reflected in their beta coefficient, **β (**Brigham, Gapenski and Ehrhardt, 1999, p.180). This implies that beta measures the responsiveness of the asset's returns to changes in market portfolio returns. CAPM theory sates that:

$$\beta_i = \frac{\mathbf{Cov}(\mathbf{R}i,\mathbf{R}m)}{\mathbf{Var}(\mathbf{R}m)}$$

Where:

β_i is the Beta of stock 'i' or non-diversifiable risk;

$\mathbf{R}_i$ is expected rate of return on security '**i**';

Rm is return on Market Portfolio;

Cov($\mathbf{R}_i$,$\mathbf{R}_m$) is the covariance of stock returns and return from the market portfolio;

Var($\mathbf{R}_m$) is the variance of the market portfolio.

In terms of beta variations, stock beta can be equal to one, less than one or greater than one. If the stock beta equals one, then stock's volatility is equivalent to the market portfolio'. This implies that if the market portfolio' return moves up by 1%, the stock return will also move up by 1%, whereas if the market return falls by 1%, the stock return will likewise fall by 1%. Moreover, if the stock beta is greater than one, the stock is aggressive as it is more volatile than the market; that is an increase in the market portfolio by 100%, the stock return increases by

more than 100%. Similarly, if the stock beta is less than one, the stock is a defensive as it is less volatile than the market (Brigham, Gapenski and Ehrhardt, 1999, p.180; Mihai and Cristina, 2015).

However, despite the CAPM's instinctive appeal and valuable contribution to pricing of financial securities, it has its own limitations. Fama and French (2015) argue that there is no tradeoff between a beta of stock and its return. They also established that CAPM does not clearly explain the composition of the market portfolio; hence it does not have empirical and theoretical support. In addition, they added firm's size factor and market/book value factor to the CAPM, using firm-specific factors to better describe stock returns; this risk measure is known as the Fama-French three factor model. The fact that there are other influential variables other than beta that determine average returns renders most CAPM applications useless. Fama and French rejected use of CAPM to estimate the cost of equity capital and to evaluate performance of mutual fund managers. To counteract the weaknesses of CAPM, more general and realistic multi-beta models like International version of Capital Asset Pricing theories (Arbitrage Pricing Theories) based on multiple independent variables, were developed to extend the theory (Brigham, Gapenski and Ehrhardt, 1999, p.190; Fama and French, 2015; Bodie, Kane and Marcus, 2010).

3.1.4 International versions of Capital Asset Pricing Model

The main supposition that led to the development of various forms of international extensions of CAPM is fact that we live in a global village where financial markets are integrated. According to Arouri, Jawardi and Nguyen (2010), some were proposed by Grauer, litzenberger and Stehle (1976a) and Friend and Bicksler (1977) while others by Solnik (1974a), Sercu (1980) and Adler and Dumas (1983). The Arbitrage Pricing Theory (APT) presents sound theoretical base on which movement of macroeconomic variables influences country risk. According to Ross (1976), arbitrage pricing theory states that the return on an asset depends on a number of risk factors common to it. This multi-factor model has fewer assumptions which are more meaningful than the single factor CAPM. The arbitrage pricing theory is based on the assumption that an investor exploits arbitrage opportunities that arises in the entire market; hence this implies that an asset's return depends on alternative investments and other risk factors. In contrast to CAPM, APT recognizes several sources of risk that may affect an asset's expected return, thus it attributes the expected return of a capital asset to multiple risk factors, and the risk premiums associated with each of these risk factors (Sharpe, 1964; Lintner, 1965).

However, the main reasons why the APT model is not used is that, firstly it does not clearly stipulate the risk factors that are supposed to be used or not. Secondly, it does not quantify number of unknown risk factors. Considering these limitations, the researchers can choose their own risk factors. This implies that investors that use the APT model would not know the relevant risks that are being accounted for (Acheampong and Swanzy, 2015). Thus, a better model needs to be designed that captures the type and number of risk factors to be considered.

According to Arouri, Jawardi and Nguyen (2010, p.65) and Acheampong and Swanzy (2015, p.77), the APT model takes the following form:

$$\boldsymbol{R_{it} = \alpha + \beta_1 X_{1t} + \beta_2 X_{2t} + \ldots\ldots\ldots \beta_n X_{nt} + \epsilon_t} \qquad \textbf{(2.3)}$$

Where: R_{it} is the return of an asset;

α is the intercept or constant;

β_i are unknown parameters;

X_{it} are risk factors.

ε_t is an error term~ $ii\ N(0, \delta^2)$

Fama and French (1996) developed a three factor asset pricing model that describes the returns of securities. This multi-factor asset pricing model derived three relevant risk factors, that is, market beta, size and book to market (BTM) ratio, that affect the securities' return. These factors explain better the drivers of securities' return than a single factor model. This model was developed to counteract the weakness of CAPM and it has been widely tested in different markets to assess its rationality and reliability. Despite the criticisms of the model, other research studies have confirmed its findings while others argue that the findings concentrated on US stocks, and new data from other countries must be considered to evaluate the rationality of the model (Acheampong and Swanzy, 2015, p.76 citing Fama and French, 1992). The model opines that the expected return of a portfolio in excess of risk free rate can be determined by the sensitivity of its return to three factors:

- The excess return on a broad market portfolio (R_m - R_f);
- The difference between the returns on a portfolio of small stocks and the return of a portfolio of large stocks (SMB, **Small minus Big**);

- The difference between the returns on a portfolio of high Book to Market (BTM) stocks and the return on a portfolio of low book to market (BTM) stocks (HML, **high minus low**) (Jack and Dongcheol, 2013; Acheampong and Swanzy, 2015, p.76-77).

According to Bundoo (2008) and Acheampong and Swanzy, 2015, p.77, Fama and French proposed the following model:

$$E(R_i) - R_f = b_i[E(R_m - R_f)] + s_i E(SMB) + h_i E(HML)$$

Where: $E(R_i)$ is the expected returns on asset i;

$E(R_m)$ is the expected return on the market;

R_f is the risk free rate of return;

b_i is the factor loading for excess return on market;

s_i is the factor loading for size;

h_i is the factor loading for book to market

Based on the three theories interrogated by the study, CAPM theory and its extensions (multi-index models) guided the study. This is because the country beta, a proxy for country risk, to be used in this study is found by computing the covariance of the local index returns and global market returns all over the variance of global market returns. Country beta with measure the sensitiveness of the local equity market's returns to changes in global market returns. This is the key concept is borrowed from CAPM theory which states that beta of stock i, $\beta_i = \frac{\mathbf{Cov}(Ri,Rm)}{\mathbf{Var}(Rm)}$ where is measure the responsiveness of the asset's returns to changes in market portfolio returns. Moreover, the extension of CAPM theory states that a regressand is dependent on many regressors, which concurs with this current study where country beta is function of seven explanatory variables.

3.2 Country risk model

Feder and Uy (1985), Burton and Inoue (1985), and Brewer and Rivoli (1990) established an econometric model of predicting country risk. This model imitates the country risk ratings (that measures the credit worthiness of sovereign borrowers) normally found in Euromoney and Institutional investor banking magazines. It also establishes the relationship between an indicator that reflects risk exposure or risky behaviour (regressand) and political, economic and financial factors (regressors). The observable indicator of risky behaviour takes the form of a discrete choice variable, country risk (Nath, 2008:74). According to Harvey and Zhou (1993), Erb, Harvey and Viskanta (1996a, 1996b) and Gangemi, Brooks and Faff (2000), country risk is "the difference between the returns of a country's equity market and the world market". This implies that country risk is as a result of the difference between the entire world returns and the specific country returns. Computing the proxy for country risk based on approach is associated with large standard error making the method irrelevant. However, in this study, country beta, a proxy for measuring country risk, is the covariance of the local index returns and global market returns all over the variance of global market returns. This is objective as it incorporates the form of efficiency the local equity market is in and the sensitiveness of the local index returns due to changes in the world market returns. Estimation of country beta in this study is based on CAPM approach to computation of beta of a stock.

According to the capital asset pricing model (CAPM), country beta is quantified with the use of a beta coefficient (β). This is fully justified by macroeconomic theory that states that there is a strong correlation between country risk and/ or returns on assets and macroeconomic variables (Fama and French, 1989; Andrade and Teles, 2004). Country beta also known as a β-coefficient, is a time-varying parameter allowed to vary as function of independent political, economic and financial fundamentals. This time varying parameter is increasingly becoming area of interest in literature (Andre and Teles, 2007). The analysis of country risk through the beta approach endeavours to establish the discrepancies which enhance the probability of not getting an expected return on a cross border investment by assessing the political, economic and financial factors of a host/borrowing country (Basu, Deepthi and Reddy, 2011).

3.3 Determinants of country risk chosen for the econometric model

The determinants of country risk used in this study were derived from previous empirical researches and from the suggestion of theoretical researches on sovereign and international borrowings. Moreover, choice of the variables was subject to data availability. The drivers of country risk are categorized into economic, financial variables and political variables (Hoti, 2005). Political variables are composed of legal factors, political instability; economic factors include per capita GDP, GDP deflator, current account balance, and unemployment rate while financial variables are composed of external debt balance, short term interest rates. The chosen variables are explained in detail.

3.3.1 Per capita GDP

According to Vij (2005), this variable indicates the level of economic development of a country. GDP per capita is also used by multi-lateral institutions to rank nations for analytical purposes and to establish their creditworthiness. This variable is important because it indicates the overall economic conditions in a country and economically measures the productivity of a country. According to Feder and Just (1977), richer countries can easily to reduce consumption expenditure than poorer countries. Countries with low GDP per capita are generally less creditworthy. Thus per capita GDP negatively influence to country risk.

3.3.2 Gross Domestic Product (GDP) Deflator

According to Mohr (2008)**,** GDP deflator is a factor adjustment for the effect of changes in prices on changes in nominal GDP. It is generally considered as the best inclusive indicator of inflation because includes a wide range of products and services in its calculation. Alternatively, GDP Deflator is the proportion of nominal GDP to real GDP. In effect the basket of goods that constitutes this deflator encompasses all the final products/services produced within the geographic boundaries of the country. Thus, GDP Deflator equals Nominal GDP/ Real GDP (Muwando and Gumbo, 2013). The perceived link between interest rates and inflation and the high-risk environment apparent during the latter half of the 1980s is positive, when high interest rates were the result of an ever increasing inflation rate. Therefore, the signs of the interest rate variables should be positive meaning that an unanticipated increase in interest rates will result in an increase in country beta. Furthermore, countries with low GDP deflators are stable and least risky since GDP Deflator is an indicator of inflation. This implies that GDP deflator positively influence country risk.

3.3.3 External Debt Balance

This indicates the accumulated fiscal performance of a country (Muwando and Gumbo, 2013 citing Vij, 2005). According to Black *et al*. (1999), external debt is "the sum of all outstanding external financial liabilities of public sector with legal caveats of principal repayment and debt servicing". As the debt increases significantly, there is a higher probability of debt trap. Moreover, a large debt stock generally enhances the probability of failure of the public sector to honour the servicing of debt, hence it increases default risk (Guardia, 2004). Therefore; emerging countries with large external debt are riskier than those with low debt because they are susceptible to foreign exchange crisis and the probability defaulting would be higher (Muwando and Gumbo, 2013 citing Frank and Cline, 1971 and Cline, 1984). Alternatively, total external public debt can also be defined as "the debt owed to non-residents repayable in foreign currency goods or services" (Vij, 2005). In the minds of the investors, a country's commitment to honour its debts is indicated by lower debt to GDP percentage and over time, country risk is reduced (Montes and Tiberto, 2012). Thus, external debt positively drives country risk.

3.3.4 Current Account Balance

According to Mohr (2008), current account surplus or deficit is "the difference between exports and imports of goods, services and income". Country risk can be managed by raising current account position (surplus), which enhances the liquidity position of a country and thus reduces the country's default risk (Muwando and Gumbo, 2013 citing Montes and Tiberto, 2012). It is among the most essential tools to foresee crisis in a country. The current account balance indicates the willingness and capability of a country to pay external obligations and the level of foreign exchange reserves. Current account surplus is inversely related to the default risk whilst current account deficit mostly equates to the amount of new financing required by a country (Cline, 1984). Current account balance also shows the level of international competitiveness of the country. Countries with large current surplus have very low country betas and are more creditworthy. Hence, current account surplus negatively influences country risk whilst current account deficit positively affects country risk.

3.3.5 Short Term Interest Rates

Favero and Giavazzi (2004) argue that if interest rates rise they increase the public debt default risk, which in turn, leads to a vicious circle of increases in interest and debt, making monetary

control look irrelevant and unsustainable, thereby resulting in failure to manage inflationary pressures in the economy. According to Fischer Effect, currencies of countries with higher interest rate differential should bear higher inflation rate differential and riskier than those with lower rates. However, Blanchard (2004) argues that a rise in country risk and inflation can be determined by rise in interest rates. Blanchard further points that when the debt rises to an unusual level, the increased risk of defaulting on the debt would have a negative impact upon the influx of capital, reducing the capital account balance, triggering exchange rate depreciation, and consequently, inflation. This makes monetary policy ineffective. These findings converge with Andrade and Teles (2007) who opine that using monetary policy (interest rates) during a crisis is infertile in reducing country risk. Favero and Giavazzi, and Blanchard supra's perspectives converges with Andrade and Teles (2005) citing Garcia and Brandao (2001) who found that country risk is one of the most significance factors that determined high interest rates that prevailed during the period when there was managed exchange rate, that is the real plan period. Furthermore, Montes and Tiberto (2012) point that as the real interest rate decreases and become stable, investments increases and hence economic growth. Thus, in turn, reduces country risk as the reputation and credibility of monetary authority would have improved. In line with the above perspective, Andrade and Teles (2005) argue that increase in interest rates reduce country risk.

3.3.6 Unemployment Rate

Emerging countries generally have high unemployment rates and are politically unstable and very volatile as compared to developed countries. High unemployment rates leads to social unrest, mental distress (Dooley, Fielding and Levi, 1996), marital dissolution (Wade and Pevali, 2004). The Arab Spring of Tunisia in January 2011 was as a result of high widespread unemployment, especially among the young and educated. It is rated as risky destination for future investment[1] **(**Stampini and Chouchane, 2011). It helps to explain labour sufficiency, strength and performance of a country. As youth unemployment rate increases country risk increases due to enhanced probability of political instability (Avila, 2010; Azeng and Thierry, 2015).

3.3.7 Political Risk or Instability

The definition of political risk is being continuously debated. Some researchers defined it to be "the probability that political forces will negatively affect a firm's profit or impede the

attainment of other critical business objectives" (Rugman, Hodgetts and Collinson, 2006). This implies that the impact of political risk can either be direct through nationalization and expropriation) or indirect through taxes and monetary policies. Other researchers understood it as "the risk of a strategic, financial, or personnel loss for a firm because of non-market factors such as macroeconomic and social policies or events related to political instability, that is, terrorism, riots, coups, civil war and insurrection" (Chopra, 2015; Muwando and Gumbo (2013) citing Kennedy, 1998; Pongo, Bybee and Burchard, 2012 citing Kennedy,1998)**.**

According to Citron and Nicklesburg (1987), disturbing political events normally occurs before debt rescheduling. Thus, nations with political stability are less likely to default. Furthermore, Brewer and Rivoli (1990) argue that political instability reduces the willingness and capacity of a country to service its debt. They further state 'that political instability may indirectly quicken debt service problems through a decline in long-term capital flows and a consequent unwillingness of lenders to roll over matured loans'. In the long run, political instability may lead to the following: sluggish economic growth, inflationary pressures, domestic bottlenecks and production shortage as a result of disequilibrium between exports and imports balance (Burton and Inoue, 1985). Hileman (2012) concurs with the latter argument as the author argues that political instability is often accompanied by inflationary pressure even if controls are not there. Political risk index indicates how non-business political events such as wars, regime changes and terrorist attacks affect profitability of business[2] (Muwando and Gumbo, 2013). Countries which are political stable are more creditworthy. This implies that political risk positively drives country risk.

3.4 The A priori condition for country risk as a dependent variable and its independent macroeconomic variables

The *a priori* condition for the chosen independent variables vis-a- viz country risk are shown in Table 3.4 overleaf.

1. http://asithappens.spaces.wooster.edu/impact-of-the-arab-spring-on-tunisias-economy/2.3.8Politicalrisk
2. http://infor.worldbank.org/governance/wgi/pdf/c104.pdf

Table 3.4: The relationship between the country risk and independent variables chosen

Independent Variable	Expected sign	Source
Per Capita GDP	Negative	Vij (2005); Feder and Just (1977)
GDP deflator	Positive	Mohr (2008)
External debt balance as percentage of GDP	Positive	Black *et al*. (1999); Guardia (2004); Frank and Cline (1971); Cline (1984)
Current account balance as a percentage of GDP	Surplus- Negative, Deficit - positive	Cline(1984); Mohr(2008)
Weighted short-term interest rates	Either Positive or Negative	Favero and Giavazzi (2004); Blanchard (2004); Garcia and Brandao (2001); Andrade and Teles (2005).
Unemployment rate	Positive	Dooley, Fielding and Levi (1996); Wade and Pevali (2004); Stampini and Chouchane (2011); Avila (2010)

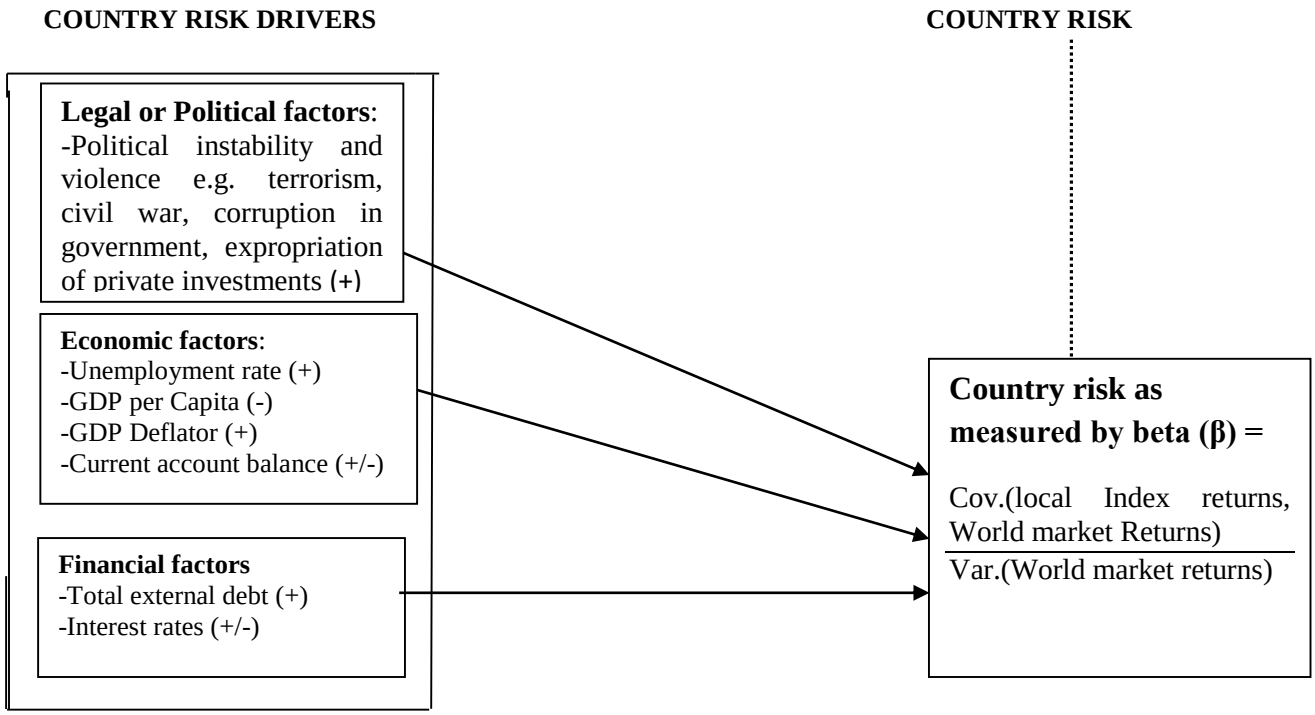
Source: Researcher's own compilation from different sources

Table 3.5 shows that we expect negative relationship between country risk and per capita GDP. GDP Deflator, external debt balance and unemployment rate are expected to positively influence to country risk. Current account balance and weighted short term interest rates are expected to either positively or negatively determine country risk.

3.6 Conceptual framework for the current study

From the previous review of theoretical literature, the conceptual framework for the country risk as a dependent of a set of macroeconomic factors is in Figure 5 overleaf.

.**Figure 5: A depiction of the current study's conceptual framework**



Source: Adopted from Erb, Harvey and Viskanta (1996)

In Figure 5 above, country risk as measured by beta is determined by economic, financial and political variables.

3.7 Country beta and its variation

The ***β***-coefficient that measures the country risk is determined by dividing the covariance of the local index returns and world market returns by the variance of world market returns. Basing on the concept of CAPM, country beta has three variations. In terms of country beta variations, a beta can be equal to one, less than one or greater than one. If the country beta equals one, then the country risk will be equivalent as the international or global risk. This implies that if the global risk moves up by 1 percent, the country risk will also move up by 1 percent, while if the international risk falls by 1 percent, the country risk will likewise fall by 1 percent. Moreover, if the country beta is greater than one, the county is very risk as it is more volatile than the global level; that is an increase in the global risk by 100 percent, the country risk will increase by more than 100 percent. Similarly, if the country beta is less than one, the country is less risk as it is less volatile and responsive to the changes in global risk.

3.8 Chapter Summary

This chapter presented theoretical framework on capital assets pricing model (CAPM) and its versions, and arbitrage pricing theory (APT). Based on the three theories, CAPM and its international versions (multi-index models) guided the study. It also presented the current study's conceptual framework derived from the theoretical literature review and empirical review. The conceptual framework was adopted from Erb, Harvey and Viskanta (1996). A priori conditions for country risk and its macroeconomic drivers were also presented. The next chapter introduces research methodology employed in addressing the research problem.

CHAPTER FOUR: RESEARCH METHODOLOGY

This chapter premise on data collection. It presents the research philosophy and design employed. It also gives a comprehensive description of the sampling techniques that were used to gather the data and the research techniques used. It further explains the reasons for adapting the techniques and their relevance to the research. The research study employed both qualitative and quantitative techniques to collect the data.

4.1 Research Philosophy

This study employed both the positivist and constructivist stance. Positivist position was adopted because the researcher wanted to test the macroeconomic theory by Fama and French (2004), which states that there is a trade-off between country risk and or returns on assets and macroeconomic variables, in the context of Botswana and Zambia and then develop an ARDL model necessary to predict country risk of these two states. A more positive stance to research was undertaken using quantitative methods while also accepting a constructivist stance which tends to underpin the qualitative methods. A constructivist stance was also adopted to address the qualitative research questions on determining country risk drivers, their relationship with country risk and policy recommendations necessary to reduce country risk. The two approaches were combined to optimise their strengths and neutralize their weaknesses.

4.2 Research Design

Mixed methods with concurrent research design were employed by the research in order to improve the accuracy of their judgments by collecting different kinds of data on the same phenomenon of drivers of country risk, their relationship with country risk and policy recommendations. This enhanced the belief that the results are valid. The effectiveness of this design is based on the principle that the weaknesses in each single method is offset by counter-balancing strengths of another assuming that the multiple and independent measures do not share the same weaknesses potential for bias. The determinants of country risk used in this study were derived from previous empirical researches and from the suggestion of theoretical researches on sovereign and international borrowings. Moreover, choice of the variables was subject to data availability. The drivers of country risk are categorized into economic, financial variables and political variables (Hoti, 2005). Political variables are composed of legal factors, political instability; economic factors include per capita GDP, GDP deflator, current account balance, and unemployment rate while financial variables are composed of external debt

balance, short term interest rates. To establish the extent to which changes in political, financial and economic variables impact on country risk, autoregressive distributed lag (ARDL) approach was employed on annual data collected from 1994 to 2018. This technique is more advantageous than other previous and traditional techniques in that it does not need all the variables under study to be integrated of the same order, implying that it can be applied when the underlying variables are stationary at level, at the first difference or fractionally integrated; moreover, it very effective and efficient in cases of small and finite sample data sizes. Furthermore, unbiased estimates of the long run model are obtained and analysis of quantitative data is more objective (Harris and Sollis, 2003). This approach also allows the researcher to integrate multiple independent variables in the model to estimate the dependent variable. In other words, an ARDL model was used to assess the explanatory power of macroeconomic factors on Botswana and Zambia's country risk. To give country beta (dependent variable) enhanced explanatory power, the beta is allowed to vary depending on a set of open economy macroeconomic factors.

To complement the quantitative research design, exploratory design through the conducting personal interviews was employed by the researcher to gain deeper comprehension of the main determinants of country risk and to find out the respondents' view on the impact of political risk, economic risk and financial risk on overall country risk profile of Botswana and Zambia.

4.3 The Model Specifications

According to Vij (2005), the country risk model can be expressed as follows:

$$\boldsymbol{Y_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} + \cdots + \beta_n X_{ni} + \varepsilon_i} \qquad \textbf{(4.1)}$$

The notation X_{ni} indicates the values of the nth independent variable for the case *i*. The beta terms($\boldsymbol{\beta_0}$, $\boldsymbol{\beta_1}$, $\boldsymbol{\beta_2}$, $\boldsymbol{\beta_3}$, $\boldsymbol{\beta_n}$) are unknown parameters and the $\boldsymbol{\varepsilon_i}$ terms are independent random variables that are normally distributed with mean zero and constant variance, δ^2.

Erb, Harvey and Viskanta (1985) express country risk as:

$$\boldsymbol{CR_{it} = F(EC_{it}, PO_{it}, FI_{it})} \qquad \textbf{(4.2)}$$

Where*:* EC_{it} is the economic-related risk;

PO_{it} is the political-related risk;

FI_{it} is the financial-related risk for country *i* in the period *t.*

This means that country risk in *equation (4.2)* depends on economic related risk, political related risk and financial related risk.

The country beta model is further takes the following form:

$$\boldsymbol{CR_i = \alpha + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} + \cdots + \beta_n X_{ni} + \varepsilon_i} \qquad \textbf{(4.3)}$$

Where: CR_i is the country risk at time t;

α is the intercept or constant;

β_i to β_n are unknown parameters;

X_{1i} to X_{ni} are country risk drivers;

ε_t terms are independent random variables that are normally distributed with mean zero and constant variance, σ^2.

According to Choong *et al.* (2003) citing Pesaran, Shin and Smith (2001), the ARDL technique is applied by modelling the long-run equation **[4.4]** as a general vector autoregressive [VAR] model of order *p* in z_t. This implies that:

$$z_t = \beta_0 + \alpha_1 t + \sum_{i=1}^{p} \emptyset_i z_{t-i} + \boldsymbol{\varepsilon_i}, \qquad t = 1, 2, 3, 4, \dots, T \qquad [\mathbf{4.4}]$$

Where z_t *represents observation z at time t*

z_{t-i} *represents observation at time t-i*

β_0 *represents [k + 1] – a vector of intercept [drift];*

α represents [k + 1] – a vector of trend coefficients;

$\emptyset_i$ *represents model coefficients.*

Pesaran, Shin & Smith (2001) further proposed the following vector error correction model [VECM] corresponding to **[4.4]**

$$\Delta z_t = \beta_0 + \alpha_1 t + \pi z_{t-1} + \sum_{i=1}^{p-1} \Gamma_i \Delta z_{t-i} + \boldsymbol{\varepsilon_t}; \quad t = 1,2,3,4, \dots, T \qquad [\mathbf{4.5}]$$

Where $\Delta \equiv$ 1- L is the difference operator, $\beta_0 = -\pi\mu + (r + \pi)\Upsilon$, $\alpha_1 = -\pi\Upsilon$ and Γ_i =model coefficients.

In this study, Z_t = (*CA, CAPITA, DEFLATOR, ED, PSAV, UN, WSTIR*). Γ is an *n x n* matrix (short run dynamics coefficients), $\pi = \alpha\beta'$ where α is an *n x 1* column vector (the matrix of loadings) denotes the speed of short run adjustment to disequilibrium and β' is an *1 x n* cointegrating row vector (the matrix of cointegrating vectors) represents the matrix of the coefficients of long run dynamics such that Y_t converge in their long run equilibrium. Finally, ε_t is an *n x 1* vector of white noise error term (Choong *et al*., 2003; Oteng-Abayie and Frimpong, 2006). In other words, Z_t is the vector of variables Y_t and X_t respectively; Y_t is an I(1) dependent variable denoted by CR_t ; X_t (*CA, CAPITA, DEFLATOR, ED, PSAV, UN, WSTIR*) a vector matrix of I(0) and I(1).

The conditional Vector Error Correction Model (VECM) becomes:

$$\Delta y_t = \beta_0 + \alpha_1 t - \alpha(y_{t-1} - \theta x_t) + \sum_{i=1}^{p-1} \lambda_{yi} \Delta y_{t-i} + \sum_{i=0}^{q-1} C_{xi} \Delta x_{t-i} + \boldsymbol{\varepsilon_t} \qquad [\mathbf{4.6}]$$

$with\ the\ speed - of - adjustment\ coeffecient\ \alpha = 1 - \sum_{j=1}^{p} \Phi_i$ and the long − run coefficient $\theta = \frac{\sum_{j=0}^{q} \beta_j}{\alpha}$

Where $\Delta = first\ difference\ operator$;

y_t *represents* observation of *y* at time t

y_{t-1} *represents* observation of y lagged once

x_t *represents* x variable at time t

x_{t-i} *represents* observation of x at time *t-i*

λ_{yi} *represents* coefficients of the lagged y variables

C_{xi} *represents* coefficients of the lagged x variables

Selection of the variables was dependent on availability of data and empirical studies of country risk that dealt exclusively with emerging market equity returns (Basu, Deepthi and Reddy, 2011; Tourani-Rad, Choi and Wilson, 2006; Andrade and Teles, 2004; Gangemi, Brooks and Faff, 2000; Vij, 2005; Wdowinski, 2004; Goldberg and Veitch, 2002). The set of macroeconomic factors (independent variables) chosen and assessed had a major domestic and international influence on the Botswana and Zambian economy. These include political risk,

GDP deflator, per capita GDP, external debt, current account, interest rate, FDI inflows and unemployment rate.

The procedure for the selection of various independent variables used to estimate country risk was as follows:

Pesaran and Pesaran (2009) and Pesaran, Shin and Smith (2001) advocated an ARDL bound testing technique that was employed to test the impact on country risk, as measured by annual country betas, of economic, political and financial variables and also to establish the behaviour country risk drivers in the short and long run. The major merit of an ARDL method over other techniques (for instance VAR, OLS) is that it is used in time-series data notwithstanding of their order of integration of the variables, that is whether I(0), I(1) and/or fractionally integrated (Almahmoud, 2014 citing Pesaran and Pesaran, 2009). Furthermore, the technique can also test for cointegration by the bounds testing approach and then the short-run and long-run dynamics can be estimated (Almahmoud, 2014, p.89; Nkoro and Uko, 2016). It also captures the dynamic effects of both the lagged dependent variables that represent the autoregressive portion and lagged independent variables that constitute the distributed part of the model. Omission of variables and autocorrelation in the error term can be eradicated when appropriate number of lags of regressor and regressand variables are factored in the model (Gujarat, 2012). The technique also works well, robust and efficiency with samples of different sizes, especially those with small sizes. Because of the mentioned advantages over the other traditional methods, the present study adopted it. From equation **[4.6]** above, the conditional VECM is expressed in the following form:

$$\Delta Betas_t = a_1 + b_1 Betas_{t-1} + b_2 CA_{t-1} + b_3 Capita_{t-1} + b_4 Deflator_{t-1} + b_5 ED_{t-1} + b_6 PSAV_{t-1} + b_7 UN_{t-1} + b_8 WSTIR_{t-1} + \sum_{i=1}^{p} a_i \Delta Betas_{t-i} + \sum_{j=1}^{q} a_j \Delta CA_{t-j} + \sum_{l=1}^{q} a_l \Delta Capita_{t-l} + \sum_{m=1}^{q} a_m \Delta Deflator_{t-m} + \sum_{n=1}^{q} a_n \Delta ED_{t-n} + \sum_{r=1}^{q} a_r \Delta PSAV_{t-r} + \sum_{s=1}^{q} a_s \Delta UN_{t-s} + \sum_{v=1}^{q} a_v \Delta WSTIR_{t-v} + e_t \quad \textbf{[4.7]}$$

Where $Betas_t = Country\ risk\ or\ beta\ in\ period\ t;$

$Betas_{t-1} = Country\ risk\ or\ beta\ in\ period\ t\ lagged\ once;$

$a_1 = Annual\ Country\ risk/betas\ \ intercept;$

$b_1, b_2, b_3, b_4, b_5, b_6, b_7, b_8, a_i, a_j, a_l, a_m, a_n, a_r, a_s, a_v = model\ coefficients;$

$\Delta = first\ difference\ operator$;

$CA_{t-1} = Current\ Account\ Balance\ as\ percenatge\ of\ GDP\ \ in\ period\ t\ lagged\ once;$

$CAPITA_{t-1} = PER\ CAPITA\ GDP\ \ in\ period\ t\ lagged\ once;$

$Deflator_{t-1} = GDP\ DEFLATOR\ in\ period\ t\ lagged\ once;$

$ED_{t-1} = External\ Debt\ balances\ as\ a\ percentage\ of\ GDP\ in\ period\ t\ lagged\ once;$

$PSAV_{t-1} = Political\ Stabiliy\ and\ Absence\ of\ Violence\ Index\ t\ lagged\ once;$

$WSTIR_{t-1} = Weighted\ Average\ short\ term\ interest\ rates\ in\ period\ t\ lagged\ once;$

$UN_{t-1} = Unemployment\ rate\ in\ period\ t\ lagged\ once;$

$e_t = Random\ error\ term\ or\ residual.$

4.3.1 ARDL Bounds Testing Procedure

According to Kumar (2010), the ARDL Bounds test procedure fundamentally encompasses three steps. First, equation **[4.7]** is estimated using the Ordinary Least Squares (OLS) method in order to determine the presence of long run dynamics among the selected factors by performing a joint hypothesis F-test for the lagged variables (Oteng-Abayie and Frimpong, 2006; Saungweme and Odhiambo, 2019).

This implies that the following hypothesis is to be tested is as follows:

$H_0 : b_1 = b_2 = b_3 = b_4 = b_5 = b_6 = b_7 = b_8 = 0$

$H_1 : b_1 \neq b_2 \neq b_3 \neq b_4 \neq b_5 \neq b_6 \neq b_7 \neq b_8 \neq 0$

The test which normalizes $\mathbf{CR}_t$ is denoted by

$$F_{CRt}(CR|CA, CAPITA, DEFLATOR, ED, PSAV, UN, WSTIR)$$

According to Kumar (2010) and Pesaran, Shin and Smith (2001, p.290), two asymptotic critical values bounds provide a test for cointegration when the explanatory variables are integrated at level *d*, that is I(*d*) where $0 \leq d \leq 1$. The lower value of *d* assumes that the explanatory variables are stationary at level, I(0) and the upper value of *d* assumes that they are purely stationary at the first difference, I(1). Suppose the F-calculated is larger than the upper F-critical value, we

reject the H_o and conclude that there is a long-run relationship among the series despite of the orders of integration for the time series. On the other hand, if the F-calculated is less than the lower critical value, we fail to reject the null hypothesis and conclude that there is no long-run relationship among the series. Finally, if the F-calculated lies between the lower and the upper critical values, the result cannot be concluded (Nieh and Wang, 2005; Abdul-Mumuni and Quaidoo, 2016, Ben Jebli, 2016). The critical values used in this study were extracted from Pesaran, Shin and Smith (2001) table.

Second, if cointegration exists, the conditional ARDL $(p, q^1, q^2, q^3, q^4, q^5, q^6, q^7)$ long-run model for $\mathbf{CR_t}$ is estimated as follows:

$$Betas_t = \boldsymbol{a_1} + \sum_{i=1}^{P} \boldsymbol{b_1}\, Betas_{t-1} + \sum_{i=0}^{q^1} \boldsymbol{b_2}\, CA_{t-1} + \sum_{i=0}^{q^2} \boldsymbol{b_3}\, Capita_{t-1} + \sum_{i=0}^{q^3} \boldsymbol{b_4}\, Deflator_{t-l} + \sum_{i=0}^{q^4} \boldsymbol{b_5}\, ED_{t-1} + \sum_{i=0}^{q^5} \boldsymbol{b_6}\, PSAV_{t-1} + \sum_{i=0}^{q^6} \boldsymbol{b_7}\, UN_{t-l} + \sum_{i=0}^{q^7} \boldsymbol{b_8}\, WSTIR_{t-1} + e_t \quad \textbf{[4.8]}$$

The orders of the ARDL $(p, q^1, q^2, q^3, q^4, q^5, q^6, q^7)$ model in the seven variables is chosen using three criterions: Akaike Information Criterion (AIC), Schwarz Information Criterion (SIC) and Hannan-Quinn criterion (HQC) criterion (Pesaran and Smith, 1995).

Lastly, the Error Correction Model (ECM) is estimated to capture the short-run coefficients of the model. The ECM has the following specifications:

$$\Delta Betas_{t-1} = a_1 + \sum_{i=1}^{p} a_i \Delta Betas_{t-i} + \sum_{j=1}^{q1} a_j \Delta CA_{t-j} + \sum_{l=1}^{q2} a_l \Delta Capita_{t-l} + \sum_{i=m}^{q3} a_m \Delta Deflator_{t-m} + \sum_{i=n}^{q4} a_n \Delta ED_{t-n} + \sum_{r=1}^{q5} a_r \Delta PSAV_{t-r} + \sum_{i=s}^{q6} a_s \Delta UN_{t-s} + \sum_{i=v}^{q7} a_v \Delta WSTIR_{t-v} + \lambda ECT_{t-1} + e_t \quad \textbf{[4.9]}$$

where $Betas_t = Country\ risk\ or\ beta\ in\ period\ t;$

$Betas_{t-1} = Country\ risk\ or\ beta\ in\ period\ t\ lagged\ once;$

$a_1 = Annual\ Country\ risk/betas\ \ intercept;$

$a_i, a_j, a_l, a_m, a_n, a_r, a_s, a_v, \lambda = model\ coefficients;$ *with* λ *measuring the speed of adjustment towards the long run equilibrium;*

$\Delta = first\ difference\ operator$;

$CA_{t-1} = Current\ Account\ Balance\ as\ percenatge\ of\ GDP\ \ in\ period\ t\ lagged\ once;$

$CAPITA_{t-1} = PER\ CAPITA\ GDP\ \ in\ period\ t\ lagged\ once;$

$Deflator_{t-1} = GDP\ DEFLATOR\ in\ period\ t\ lagged\ once;$

$ED_{t-1} = External\ Debt\ balances\ as\ a\ percentage\ of\ GDP\ in\ period\ t\ lagged\ once;$

$PSAV_{t-1} = Political\ Stabiliy\ and\ Absence\ of\ Violence\ Index\ t\ lagged\ once;$

$WSTIR_{t-1} = Weighted\ Average\ short\ term\ interest\ rates\ in\ period\ t\ lagged\ once;$

$UN_{t-1} = Unemployment\ rate\ in\ period\ t\ lagged\ once;$

$ECT_{t-1} = Error\ correction\ term\ in\ period\ \ t\ lagged\ once;$

$e_t = Random\ error\ term\ or\ residual.$

$\boldsymbol{\beta etas_t}$ is the outcome of the covariance between the local equity index return and World Market equity index return divided by the variance of the world market index return. The local equity index is the locally denominated stock indexes for Botswana (BSE) and Zambia (LSE). There are many proxies for emerging markets. The S&P500 index is the best-known market proxy for the US stock market. It cannot be used in this study because US market is more developed than the markets for the countries under study. Moreover, S&P index is better proxy than Dow Jones Industrial Average for developed markets as it tracks only 30 large, publicly-owned blue chip companies trading on the NYSE and the Nasdaq. The MSCI Emerging Index constitutes 85% of free float-adjusted market capitalization in each industry group in emerging countries. It consists of the following 27 emerging country indexes: Brazil, Greece, Argentina, United Arab Emirates, Kuwait, Pakistan, Qatar, Saudi Arabia, Chile, China, Colombia, Czech Republic, Hungary, India, Egypt, Indonesia, Korea, Malaysia, Mexico, Morocco, Peru, Philippines, Poland, Russia, South Africa, Taiwan, Turkey and Thailand. The proxy for the global market index is the MSCI Emerging Markets Index. MSCI Emerging Markets Index was chosen over Dow Jones Emerging Market Index and Standard& Poor 500 index because it comprises of stocks that broadly represents stock composition in different countries, and has best performing indexes in Africa especially in the SADC region (All Share Index for South Africa) and major trading partners of these two countries within it hence, it is the best benchmark for comparison with stock markets of the emerging economies of Botswana and

Zambia. Most empirical researchers that have studied on country risk and emerging markets have used MSCI Emerging Market Index as a proxy for market portfolio for these economies (Gangemi, Brooke and Faff, 2000; Cohen,2001; Texeira, Klotzle and Ness, 2008; Verma and Verma, 2014; Mallik and Mallik, 2018).

In this study, country beta, which is a time varying parameter, computed through the covariance of the local index returns and world market index returns relative to the variance of the world markets index returns, is proposed and used as an acceptable proxy for county risk. Country beta concept is based on notion of sensitivity of local equity returns due to changes in world market returns; implying that the more responsive the local market returns to the global market returns the higher the country risk. This is a better option because country beta in this context is very objective as it reflects the actual risk inherent in that particular country equity market as opposed to using above-mentioned proxies, whose methodology for computing them is very subjective. In addition, country beta is based on the stock market returns in its computation hence; it takes in account the form of efficiency of the local stock market of that particular country as compared to the political instability and absence of violence index used by the previous researchers which does not consider this. The computation of country beta in this study differs from Harvey and Zhou (1993) whose country risk is computed as "the difference between the returns of a host country's equity market and the world market". Computation of country risk based on Harvey's concept leads to large standard error that making the approach useless.

Stock Index Returns were computed using the formula given below:

$$\boldsymbol{R_t = \frac{S_t - S_{t-1}}{S_{t-1}} X\ 100\%} \qquad \textbf{[4.10]}$$

Where R_t *represents Stock Index Returns at time t;*

S_t *represents Stock index at time t;*

S_{t-1} *represents Stock index at time t lagged once.*

The computed returns in Equation **(4.10)** are log-normalised in order to improve the normality of the β_t parameter and this confirms the significance of normality in all statistical analysis.

The economic, financial and political variables mentioned above serve as the explanatory variables that were used to compute the predictive power of the dependent variable, β_t

(Muwando and Gumbo, 2013). External debt and current account balance portrays the role of the fiscal authorities on the economy while interest rates reflect the monetary policy in Zambia and Botswana. Political risk index from the World Bank economic indicators was used as a proxy for political stability and absence of violence.

4.4 Unit of measurement for the drivers of country risk

The table below shows the unit of measurement for the determinants of country risk.

Table 4.4: Unit of measurement for the drivers of country risk

Variable	Unit of measurement for Botswana	Unit of measurement for Zambia
CA	%	%
CAPITA	USD '000'	USD '000'
Deflator	%	%
ED	%	%
PSAV	Index	Index
WSTIR	%	%
UN	%	%

Source: Researcher's own analysis

4.5 Diagnostic tests

Rationality and consistency of the main assumptions made in the models was tested by performing the residual, stability and coefficient diagnostic tests.

4.5.1 Residual diagnostics

Highly correlated variables were dropped by conducting a multi-collinearity test. If a coefficient in a correlation matrix is more than 0.8, the variable with a higher p-value is dropped.

Jarque Bera test was conducted to establish whether the residuals, hence data is normal distributed. The following hypothesis was tested:

H_0: The data follows normal distribution

H_1: The data is not normally distributed

If the p-value is greater than 0.05, we fail to reject the null hypothesis and conclude that the residuals follows a normal distribution, hence the data is normally distributed.

To test the stationary of all the variables of the model, Augmented Dickey-Fuller (ADF) test was conducted. The following hypothesis was tested:

H_0: The variable is not stationary

H_1: The variable is stationary

If the p-value is less than 0.05, we reject the null hypothesis and conclude that the variable does not have a unit root, that is, it is stationary at level. If the p-value is greater than 0.05, the variable needs to be differenced for it to be stationary.

Breusch-Godfrey Serial correlation LM test was conducted to detect serial correlation among the residuals. The following hypothesis was tested:

H_0: There is no serial autocorrelation among the residuals

H_1: There is serial autocorrelation among the residuals

If the p-value is greater than 0.05, we fail to reject the null hypothesis and conclude that the model does not have serial correlation.

To detect heteroscedasticity among the residuals, Breusch-Pagan-Godfrey test was conducted. The following hypothesis was tested:

H_0: There is homoscedasticity in the model

H_1: There is heteroscedasticity in the model

If the p-value is greater than 0.05, we fail to reject the null hypothesis and conclude that the model is homoscedastic.

4.5.2 Stability diagnostics

Two tests of stability were conducted: Cusum test and Cusum of squares test. In both cases, if the Cusum lies within the 5% boundary, the model is reliable and stable.

4.5.3 Coefficient diagnostics

To determine whether the variables are statistically significant, Wald test was conducted. If the p-value is less than 0.05, we reject the null hypothesis and conclude that the variables jointly determine country risk.

4.5.4 Model Specification Test

Incorrect specification of the ARDL model may yield incorrect results leading to inaccurate inferences for policy recommendations. Specification errors arise due to incorrect specification of the model which leads to over fitting and /or under fitting a model. The study conducted the Ramsey proposed RESET test to check the presence of model specification errors. By conducting the test, the following hypothesis was tested:

H_0: The model is probably correctly specified

H_1: The model is probably mis-specified

If the p-value of the RESET test statistic is greater than 0.05, we do not reject the null hypothesis and conclude that the model is correctly specified.

4.6 Bound test of cointegration among variables

The bounds test approach was applied in order to establish the possible relationship among the regressors that have different order of integration. The asymptotic critical value bound for the country beta model was obtained from Table (C1 (iii)): Unrestricted intercept and no trend (Pesaran, Shin and Smith, 2001, p.300). For K = 6 in the country risk model, lower bound I(0) = 2.45 and upper bound I(1) = 3.61 and at 5% percent level.

4.7 Lag length selection

The three main lag selection criterions namely Akaike Information Criterion (AIC), Schwarz Information Criterion (SIC) and Hannan-Quinn criterion (HQR) were used to establish the optimum lag length. All the three information criterions produce the best results when the sample has more than 25 observations. The AIC and the SIC estimators have very similar small-sample performances when sample size less than or equal to 25). However, SIC provides slightly better estimates than the AIC in small samples in ARDL framework (Pesaran and Smith, 1995; 1999). The AIC criteria also tends to overestimate the number of lags to be included, which is not favourable in small samples as by increasing the lag the number of observations decrease (Acar, 2020). Since the current study has 25 data points, the smallest estimates of SIC indicated the maximum lag length chosen for the ARDL model.

4.8 Study Population

The population of study encompasses bank executives, monetary authorities, fiscal authorities, potential and existing investors especially one that appreciate the concept of country risk and the impact of economic, financial and political fundamentals on country risk.

4.9 Sample Selection

Due to the complexity of the research subject, snowball sampling technique was chosen to select used select the sample of interviewees. The researcher first visited the central banks of these two countries to collect secondary data. As the researcher was collecting the data, he made an appointment with two economists who work at the central bank and interviewed them the subsequent day. These two central bank personal referred the researcher to two economics who work at the local banks. The researcher also visited the Ministry of Finance to collect the secondary data. Concurrent with data collection, the researcher made an appointment with two fiscal authorities and interviewed them the following day. Snowball sampling was effective at reaching the population that was hard-to-ask or hard-to-reach, allowing the interviewees to recruit others on researcher's behalf. Trust was developed as referrals were made by acquaintances or peers rather than other formal methods of identification. Various studies have found this method to be economic, efficient and efficient (Atkinson and Flint, 2001). It also produces in-depth results relatively quickly. Purposive sampling was used to select potential and existing investors to interview when the researcher had visited the local stock exchange (BSE and LSE) to collect the secondary data. Investors that understood the concept of country risk were purposively selected and interviewed.

4.10 Data Collection Instruments

Personal interviews were mainly used as the instruments for collecting primary data while secondary data was collected from secondary sources (Central Bank, CSO, Ministry of Finance, IMF, World Bank, newspapers and journal articles) for the chosen financial, economic and political variables and recorded systematically.

4.10.1 Construction of Personal Interviews

An interview guide was prepared that includes the following questions:

The respondents' view on determinants of country risk.

The respondents' view on the expected trade-off between country risk and its drivers.

The respondents' view on whether country risk is diversifiable.

The respondents' view on the influence of political, economic and financial variables on country risk.

The respondents' view on the policy recommendations effective in reducing country risk.

Interviews enabled clarification of questions that sound ambiguous to the interviewee. This improved the nature of response, as it gives light to the interviewee on what was really being asked by the questions. Personal interviews open discussions for other questions that were not included in the interview guide. This increases the coverage on the data gathered on country risk. However, as an interviewer, I had to limit these questions in order to focus on the subject matter at hand.

Personal interviews provided a better opportunity to estimate validity of answers. They assist not only by hearing what the interviewee says but also by observing emotions and facial expressions of the interviewee. Personal interviews allowed asking of supplementary questions where there was reason to suspect the interviewee was giving inaccurate information.

Although, personal interviews have their own benefits derived from their use in data collection, they had loopholes. They enable both the interviewee and interviewer bias and that somehow distorted the validity of data gathered. The coverage is so limited as compared to questionnaires. Some of the interviewees were emotional and this affected the nature of the response they give. Interviews are not uniform, as the interviewer had to vary the approach slightly from one situation to another. The researcher solves the problems above by rephrasing the questions to make the interviewees feel at ease in answering the questions.

4.10.3 Data collection procedure using personal interviews

The researcher carefully selected interviewees through snowball sampling and scheduled appointments with the key informants. Snowball sampling assumes relevant respondents are connected so that those connections can be used to construct a sample from a small initial sample. In other words, it involves building a sample through referrals, as each respondent recommends others (Bacon-Shone, 2013). Snowball sampling was used to explore the interviewees' perception of the main determinants of country risk, ways of managing country

risk and on which country is risker than the other between Botswana and Zambia? It enabled the researcher to collect data from or access hidden experts who are hesitant to contribute their ideas in more formalised studies using traditional research methods (Neuman, 2011). Trust was established as referrals were made by colleagues or peers rather than other more formal ways of identification. It was also economical, efficient and effective in primary data collection.

4.11 Sources of Data

The data was collected from the two major sources: primary and secondary sources.

4.11.1 Primary data

Primary data was obtained through personal interviews. Personal interviews were directed to bank executives, Investors and, fiscal and monetary authorities selected through snowball sampling. This is meant to get diversified ideas on the determinants of country risk, the extent to which those determinants impact on country risk, policy recommendations to reduce country risk

4.11.2 Secondary data

The annual data for the respective stock exchanges, the MSCI emerging market index and the chosen variables was collected from 1994 to 2018. To get annual country beta (β) for Botswana and Zambia, their respective local index returns, that is, BSE and LSE. The secondary data for the proxy of World market returns was obtained from the MSCI emerging market index. The secondary data for the proxy of political risk was obtained from World Bank governance indicators. Secondary data for the economic variables was collected from the Central Statistical Offices, Central Bank, Ministry of Finance, World Bank and IMF while that for the financial variables was collected from the Ministry of Finance and Central Bank, World Bank and IMF.

4.12 Research Ethics

To enter the research site, the researcher used a letter of permission which states the study objectives and research objects clearly; this helps respondents understand the research aims and goals. It was signed by all respondents in the different institutions and used to negotiate entry into the financial and non-financial institutions' sites. The researcher observed the duty of confidentiality, in case, where the data collected was not supposed to be divulged to the third

party. The researcher drew examples from Howe and Moses (1999) who observed that a research study needs ethical issues such as respect for democracy, truth, persons, knowledge and quality for research.

4.13 Data Analysis and Presentation plan

MS Excel data analysis tool pak was used to calculate the annual country betas for the two countries and this addresses the first objective of the study. The results of the calculated annual country beta were presented on figure 9. EViews 10 statistical software package was employed to identify the possible determinants of country risk and, to estimate the short-run and long-run country risk models or equations for Botswana and Zambia thereby addressing second and last objective of the study respectively. The regression parameters of the models except intercept indicated the impact of the selected political, economic and financial variables on country risk; this addressed the third objective of the study. The sign associated with regression parameter (or independent variable) indicates the nature of the relationship between that variable and country risk. For an explanatory variable to be a major driver or possible determinant of country risk, it has to statistically significant. This implies that the p-value should be less 5%, hence we reject H_o at the 5% level, vice versa. Eviews 10 software was selected because it yields vigorous results and is customer friendly as compared to other available packages such as Statistical Package for Social Sciences (SPSS) and Minitab. Thematic content analysis was employed to analyse primary data from personal interviews as it is flexible method used in deductive studies where the researcher knows what he is interested in. The data obtained from the personal interviews was analysed under themes written in the interview guide. All the primary data and secondary data collected were presented in the form of tables and figures.

4.14 Chapter Summary

This study adopted more positive stance to research using a quantitative method while also accepting a constructivist stance which tends to underpin the qualitative methods by using an interview as an instrument for complementing the secondary data used. The instrument for collecting primary data was also explained. This chapter also outlines the diagnostics tests that were conducted and how the ARDL model was designed. The next chapter presents the findings, analysis and discussion of the results.

CHAPTER FIVE: DATA ANALYSIS, FINDINGS AND DISCUSSION OF RESULTS

This chapter presents the data analysis, findings and discussion of the results. It encompasses presentation of results of annual country betas computed, diagnostic tests and Autoregressive Distributed Lag (ARDL) model in the short run and long run. The presentation and analysis of data in this chapter were done using EViews 10 statistical software. The primary data gathered by means of personal interviews was also was analysed.

5.1 Personal Interviews Response rate

The personal interviews response rate is shown below:

Table 5.1: Interview response rate

	Botswana	**Zambia**
Scheduled Interviews	**15**	**15**
Actual Interviews conducted	**9**	**8**
Response rate	**60%**	**53%**

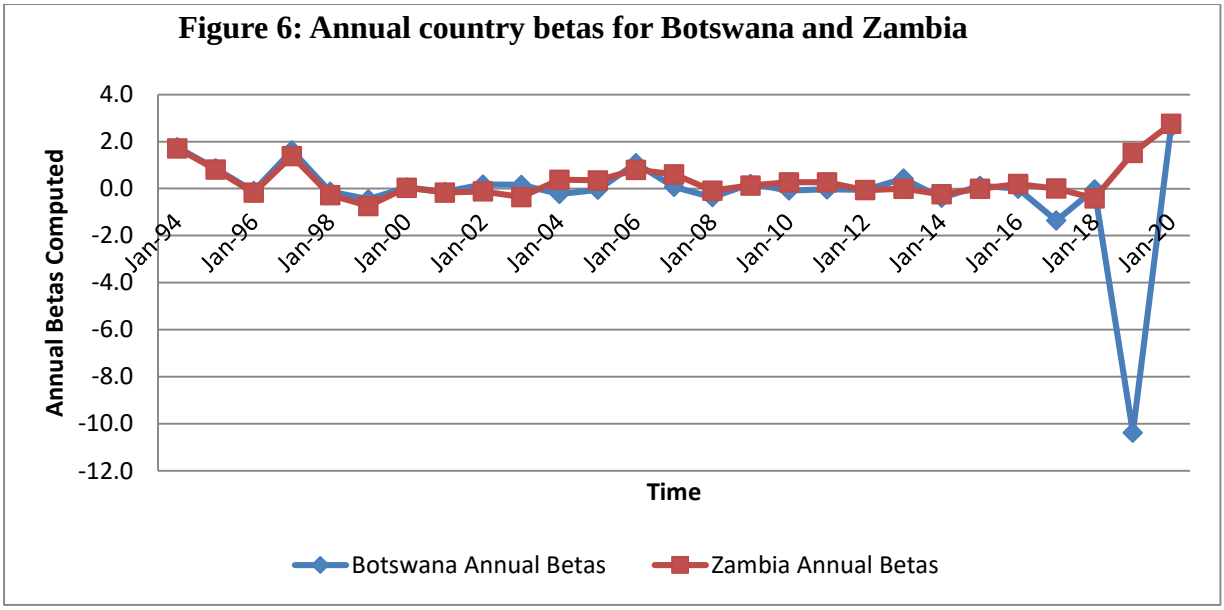
Source: Researcher's own analysis using Ms Excel

Out of fifteen interviews planned to be conducted in each country, nine and eight interviews were conducted in Botswana and Zambia, respectively. This implies sixty and fifty-three percent response rate, respectively. As a result of using snowball sampling, the researcher was referred nine and eight interviews out of planned fifteen in each country. This probable might be as a result of few people who appreciate and comprehend the complexity of the research area.

5.2 The estimated annual country betas for the economy of Botswana and Zambia

The annual country betas ($\boldsymbol{\beta}$-coefficients) were computed by dividing the covariance of the local index returns and world market returns by the variance of world market returns. This gives the numerical value of country risk which is objectives and reflects the risk inherent in a particular country. The results of the estimated annual betas are shown Figure 6 overleaf:

Figure 6: Annual country betas for Botswana and Zambia



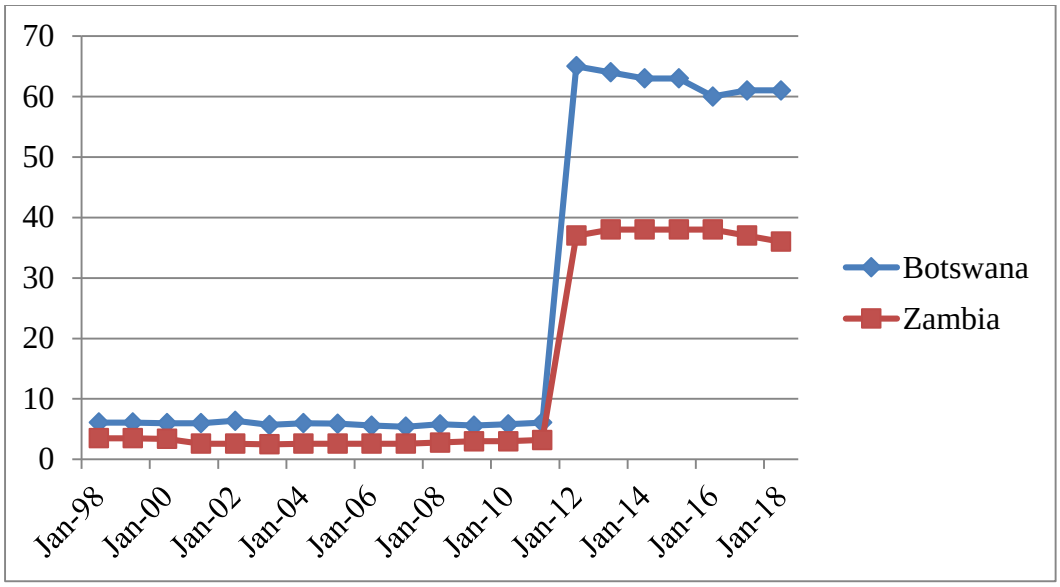
Source: Researcher's own compilation from Eviews 10

NB: December 2019 and December 2020 betas are forecasts using the model

The results in Figure 6 indicate that Zambia is riskier than Botswana because most of the annual betas of Zambia are slightly bigger than that of Botswana (See the table with full results on appendix A). This concurs with the interviewees' response as they perceived that Botswana's economy is more stable compared to Zambia's, hence it is less risky comparatively. Generally the annual country beta values are smaller and this converges with empirical literature that emerging markets have lower beta than developed markets (Wdowinski citing Harvey, 1995 and Erb, Harvey and Viskanta, 1996). In conclusion, estimating country risk based on this approach yield better results than any other method, thus this closes the research gap and add new knowledge. The sharp fall in forecasted beta in Botswana may be attributed to economic, financial and political stability. The results also indicate that the country of Botswana is a better investment destination for portfolio diversification as most of its betas are negative unlike Zambia which is risky.

The fact that the country risk is higher in Zambia than in Botswana is also affirmed by the results of corruption perception index shown in Figure 7 overleaf:

Figure 7: Corruption Perception Index



Source: www.transparency.org

NB: From 1995-2011, the CPI score ranges between 0(highly corrupt) and 10(highly clean) while 2012 to date, the score ranges between 0(highly corrupt) and 100(very clean)

The results in Figure 7 above indicate that Botswana is less corrupt than Zambia as it has higher index compared to Zambia. This is attributed to good governance, political maturity and proper economic management.

5.3 Residual Diagnostic Tests and Correction

Residual diagnostic tests performed include multicollinearity tests, normality tests, stationarity tests, serial correlation tests and heteroscedasticity tests.

5.3.1 Multicollinearity tests

In the case of Botswana, the three pairs of variables that were highly correlated include per capita GDP and GDP deflator; per capita GDP and foreign exchange rate, and foreign exchange rate and GDP deflator. As a result, per capita GDP and foreign exchange rate were dropped by the model as they had high p-values. The results of multicollinearity tests of Botswana are shown overleaf:

Table 5.2: Correlation matrix for Botswana

	CA	DEFLATOR	ED	PSAV	WSTIR	UN
CA	1.000000	-0.016853	-0.352906	0.246443	0.364083	-0.155228
DEFLATOR	-0.016853	1.000000	0.385307	0.584751	-0.439466	-0.408279
ED	-0.352906	0.385307	1.000000	-0.011057	-0.563158	-0.334663
PSAV	0.246443	0.584751	-0.011057	1.000000	-0.146439	-0.279055
WSTIR	0.364083	-0.439466	-0.563158	-0.146439	1.000000	-0.056170
UN	-0.155228	-0.408279	-0.334663	-0.279055	-0.056170	1.000000

Source: Researcher's own analysis using EViews 10

From the table above, there is no multicollinearity problem as all the coefficients are less than 0.8.

In the case of Zambia, per capita GDP and GDP deflator were highly correlated. In designing the model, GDP deflator was excluded. The outcome of multicollinearity tests of Zambia are shown below:

Table 5.3: Correlation matrix for Zambia

	CA	CAPITA	PSAV	ED	UN	WSTIR
CA	1.000000	0.656600	0.626400	-0.665896	-0.205368	0.276803
CAPITA	0.656600	1.000000	0.725999	-0.909195	-0.752508	0.553528
PSAV	0.626400	0.725999	1.000000	-0.749934	-0.513872	0.153651
ED	-0.665896	-0.909195	-0.749934	1.000000	0.798350	-0.336502
UN	-0.205368	-0.752508	-0.513872	0.798350	1.000000	-0.354907
WSTIR	0.276803	0.553528	0.153651	-0.336502	-0.354907	1.000000

Source: Researcher's own analysis using EViews 10

From the table above, there is no multicollinearity problem because all the correlation coefficients are less than 0.8

5.3.2 Normality Tests

The following hypothesis was tested:

H_0: The data follows normal distribution

H_1: The data is not normally distributed

The results of Jarque Bera test for normality for Botswana and Zambia are shown in Table 5.4 and Table 5.5 respectively overleaf:

Table 5.4: Normality Test for Botswana

	BETAS	CA	DEFLATOR	ED	PSAV	WSTIR	UN
Mean	0.124080	7.880800	83.71924	0.117732	1.015504	5.115200	19.56640
Median	-0.031400	8.930000	78.47600	0.136400	1.020000	5.010000	18.54000
Maximum	1.756300	19.25000	173.3450	0.180000	1.110000	9.400000	26.20000
Minimum	-1.356400	-6.280000	27.09300	0.039000	0.850000	1.650000	15.88000
Std. Dev.	0.644894	6.232261	43.04154	0.046782	0.071278	1.990155	2.486180
Skewness	0.825972	-0.369832	0.485807	-0.390793	-0.675987	0.424284	0.768776
Kurtosis	4.607149	2.683840	2.149132	1.721436	2.720696	2.415558	3.195794
Jarque-Bera	5.533177	0.674021	1.737512	2.339168	1.985256	1.105874	2.502503
Probability	0.062876	0.713901	0.419473	0.310496	0.370601	0.575258	0.286146
Sum	3.102000	197.0200	2092.981	2.943300	25.38760	127.8800	489.1600
Sum Sq. Dev.	9.981307	932.1858	44461.78	0.052526	0.121933	95.05722	148.3462
Observations	25	25	25	25	25	25	25

Source: Researcher's own analysis using EViews 10

From the table above, the Jargue-Bera p-values are more than 0.05 implying that we reject Ho and conclude that all the residuals are normally distributed. Hence, it follows suit that the data for Botswana is normally distributed.

Table 5.5: Normality Test for Zambia

	BETAS	CA	CAPITA	DEFLATOR	PSAV	ED	UN	WSTIR
Mean	0.165632	-3.429200	943.9525	76.63896	0.224800	0.953671	11.00000	2.353600
Median	0.120000	-3.300000	1030.282	66.51300	0.200000	0.534000	10.61000	1.650000
Maximum	1.712100	7.500000	1839.537	201.3040	0.660000	2.081900	18.50000	6.260000
Minimum	-0.735000	-16.50000	330.2830	6.346000	-0.280000	0.186500	7.750000	0.660000
Std. Dev.	0.571677	6.708557	547.4558	59.29485	0.238574	0.747204	3.049057	1.789408
Skewness	0.966783	-0.311951	0.193542	0.539574	-0.230161	0.320238	0.780679	0.998420
Kurtosis	3.936484	2.376537	1.425575	2.133782	2.611433	1.347535	2.970018	2.795727
Jarque-Bera	4.807998	0.810374	2.738176	1.994679	0.378001	3.271716	2.540352	4.196975
Probability	0.090356	0.666852	0.254339	0.368859	0.827786	0.194785	0.280782	0.122642
Sum	4.140800	-85.73000	23598.81	1915.974	5.620000	23.84177	275.0000	58.84000
Sum Sq. Dev.	7.843551	1080.114	7192989.	84381.11	1.366024	13.39954	223.1220	76.84758
Observations	25	25	25	25	25	25	25	25

Source: Researcher's own analysis using EViews 10

Since Jargue-Bera p-values in Table 5.5 are more than 0.05, we fail to reject H_o and conclude that all the residuals are normally distributed. Hence, the statistical data for Zambia follows a normal distribution.

5.3.3 Stationarity tests

In time series analysis, variables must be tested for stationarity in order to assess whether the assumptions of ARDL bound test are met. The ARDL bounds testing approach assumes that the variables are I(0), I(1) or fractional integrated. The order of integration of all variables is established using the unit roots tests. The main goal is to ensure that the variables are not stationary at the second difference, I(2), which violates the ARDL cointegration approach assumptions, hence we avoid spurious regression results. The following hypotheses were tested:

H_0: The variable is not stationary

H_1: The variable is stationary

The results of stationarity tests for Botswana and Zambia are shown in Table 5.6 to Table 5.9 overleaf:

Table 5.6: Augmented Dickey-Fuller (ADF) Unit roots test for stationarity at level for the country of Botswana

Variable	Model type	Significance Level	Test statistic	Critical values	P-value
Annual Country Betas	Intercept without trend	1% level 5% level 10% level	-5.203373	-3.737853 -2.991878 -2.635542	0.0003
GDP Deflator	Intercept without trend	1% level 5% level 10% level	3.072535	-3.737853 -2.991878 -2.635542	1.0000
Current account as % of GDP	Intercept without trend	1% level 5% level 10% level	-2.906549	-3.737853 -2.991878 -2.635542	0.0593
External debt as % of GDP	Intercept without trend	1% level 5% level 10% level	-1.832419	-3.737853 -2.991878 -2.635542	0.3567
Political Stability and Absence of Violence Index	Intercept without trend	1% level 5% level 10% level	-4.792856	-3.737853 -2.991878 -2.635542	0.0009
Weighted Short Term Interest rates	Intercept without trend	1% level 5% level 10% level	-1.007334	-3.769597 -3.004861 -2.642242	0.7320
Unemployment Rate	Intercept without trend	1% level 5% level 10% level	-3.891542	-3.737853 -2.991878 -2.635542	0.0070

Source: Researcher's own compilation from EViews 10

In table 5.6, the following variables are stationary at level**[I(0)]:** annual country betas, political stability and absence of violence and unemployment while the other variables, such as GDP deflator, current account, external debt and weighted short term interest rates were differenced once**[I(1)]** for them to be stationarity. Their results after first differenced the variable are shown in Table 5.7 overleaf.

Table 5.7: Augmented Dickey-Fuller (ADF) Unit roots test for stationarity at the first difference for the country of Botswana

Variable	Model Type	Significance Level	Test statistic	Critical values	P-value
GDP Deflator	Intercept without trend	1% level 5% level 10% level	-3.859235	-3.752946 -2.998064 -2.638752	0.0079
Current Account as % of GDP	Intercept without trend	1% level 5% level 10% level	-5.214756	-3.752946 -2.998064 -2.638752	0.0003
External Debt as % of GDP	Intercept without trend	1% level 5% level 10% level	-5.214325	-3.752946 -2.998064 -2.638752	0.0003
Weighted Short Term Interest rates	Intercept without trend	1% level 5% level 10% level	-6.535659	-3.769597 -3.004861 -2.642242	0.0000

Source: Researcher's own compilation from EViews 10

In table 5.7 above, GDP deflator, current account, external debt and weighted short term interest rates do not have a unit root at the first difference, that is, they are stationary at the first difference

.

Table 5.8: Augmented Dickey-Fuller (ADF) Unit roots test for stationarity at level for the country of Zambia

Variable	Model type	Significance Level	Test statistic	Critical values	P-value
Annual Country Betas	Intercept without trend	1% level 5% level 10% level	-4.946124	-3.737853 -2.991878 -2.635542	0.0006
Current account as % of GDP	Intercept without trend	1% level 5% level 10% level	-1.888869	-3.737853 -2.991878 -2.635542	0.3315
Per Capita GDP	Intercept without trend	1% level 5% level 10% level	-0.734529	-3.737853 -2.991878 -2.635542	0.8193
Political Stability and Absence of Violence Index	Intercept without trend	1% level 5% level 10% level	-1.943071	-3.737853 -2.991878 -2.635542	0.3083
External debt as % of GDP	Intercept without trend	1% level 5% level 10% level	-1.325785	-3.752946 -2.998064 -2.638752	0.5996
Unemployment Rate	Intercept without trend	1% level 5% level 10% level	-2.012106	-3.769597 -3.004861 -2.642242	0.2798
Weighted Short Term Interest rates	Intercept without trend	1% level 5% level 10% level	-0.462092	-3.752946 -2.998064 -2.638752	0.8819

Source: Researcher's own compilation from EViews 10

In the 5.8 table above, only annual country betas are stationary at level **[I(0)].** Other variables were differenced once **[I(1)]** for them to be stationary. The results of the variables first differenced are shown in Table 5.9 overleaf:

Table 5.9: Augmented Dickey-Fuller (ADF) Unit roots test for stationarity at the first difference: Zambia

Variable	Model Type	Significance Level	Test statistic	Critical values	P-value
Current Account as % of GDP	Intercept without trend	1% level 5% level 10% level	-5.870762	-3.752946 -2.998064 -2.638752	0.0001
Per Capita GDP	Intercept without trend	1% level 5% level 10% level	-4.182987	-3.752946 -2.998064 -2.638752	0.0038
Political Stability and Absence of Violence Index	Intercept without trend	1% level 5% level 10% level	-5.370175	-3.752946 -2.998064 -2.638752	0.0002
External Debt as % of GDP	Intercept without trend	1% level 5% level 10% level	-4.643281	-3.752946 -2.998064 -2.638752	0.0013
Unemployment Rate	Intercept without trend	1% level 5% level 10% level	-4.910348	-3.769597 -3.004861 -2.642242	0.0008
Weighted Short Term Interest rates	Intercept without trend	1% level 5% level 10% level	-8.766614	-3.752946 -2.998064 -2.638752	0.0000

Source: Researcher's own compilation from EViews 10

The results of Table 5.9 indicate that current account, per capita GDP, political stability and absence of violence index, external debt, unemployment rate and weighted short term interest rates are stationary at the first difference.

Augmented Dickey-Fuller (ADF) Unit roots test for stationarity indicates that some of the variables of these two countries were stationary at level, I(0), while others at the first difference, I(1), making Autoregressive Distributed Lag (ARDL) model relevant for this study.

5.4 Determination of the optimum lags length

To perform a cointegration test among the variables in the ARDL bound testing, it is a prerequisite to establish the optimal lag to avoid the hypothesis of serially correlated residuals in the cointegrated equation. Akaike Information Criterion (AIC), Schwarz Information Criterion (SIC) and Hannan-Quinn criterion (HQC) were used for selecting the optimum lag. The researcher limits the estimation to two lags since the possibility of serially uncorrelated residuals will occur when the number of lags is increased. However, it has to be done

parsimoniously to avoid over-parameterization problem (Pesaran, Shin and Smith, 2001). The results of optimum lag selection are shown in Tables 5.10 and 5.11 below.

Table 5.10: Optimum lag selection: Botswana

Lags	AIC	SIC	HQC
1	2.00000	2.39503	2.0994
2	1.40027**	2.14416**	1.57550**

Source: Researcher's own compilation from EViews 10

NB: ** denotes optimal lag chosen.

In Table 5.10 above, lag 2 was chosen as the optimum lag for an ARDL model of Botswana as it has the lowest value for the entire three criterions.

Table 5.11: Optimum lag selection: Zambia

Lags	AIC	SIC	HQC
1	2.08004	2.47532	2.17970
2	0.94054**	1.68444**	1.11578**

Source: Researcher's own compilation from Eviews 10

NB: ** denotes optimal lag chosen.

Therefore, lag 2 has the lowest value of AIC, SIC and HQC so an ARDL model for Zambia having lag 2 is the best model.

5.5 Co-integration Testing using ARDL Bound Test

The following hypotheses were tested:

$H_0 : b_1 = b_2 = b_3 = b_4 = b_5 = b_6 = b_7 = b_8 = 0$

$H_1 : b_2 \neq b_2 \neq b_3 \neq b_4 \neq b_5 \neq b_6 \neq b_7 \neq b_8 \neq 0$

The results of the ARDL Bound test for co-integration for Botswana and Zambia are shown in Table 5.12 below and Table 5.13 overleaf respectively:

Table 5.12: ARDL Bound test for Cointegration for the country of Botswana

Unrestricted intercept and no trend

Dependent variable	F-statistic	lower Bound	Upper Bound	Remark	What is next??
$Betas_t$	$F_{betas} = 9.90$	2.45	3.61	Cointegration exist	Estimate ECM (Error Correction Model)

Source: Researcher's own compilation from EViews 10

From the table 5.12, the F-Statistic (9.90) is greater than I(1) the critical value(3.61) hence, we reject the null hypothesis at the 5% level and conclude that cointegration exists among the variables; there is a long run relationship between country risk and a set of chosen macroeconomic variables (current account, GDP Deflator, external debt, political stability and absence of violence index, unemployment and weighted short term interest rates). This concurs with the responses that the researcher obtains from the personal interviews that the chosen macroeconomic fundamentals have a strong relationship with country risk measured by annual betas.

Table 5.13: ARDL Bound test for Cointegration for the country of Zambia

Unrestricted intercept and no trend

Dependent variable	F-statistic	Lower Bound	Upper Bound	Remark	What is next??
$Betas_t$	$F_{betas} = 20.18$	2.45	3.61	Cointegration exist	Estimate ECM(Error Correction Model)

Source: Researcher's own compilation from EViews 10

From the table above, the F-Statistic (20.18) is greater than I(1) the critical values (3.61) and so we reject the null hypothesis at the 5% level and conclude that there is cointegration among the variables; there is a long run relationship between country risk and a set of selected economic, political and financial variables (current account balance, per capita GDP, external debt, political stability and absence of violence index, unemployment rate and weighted short term interest rates). This is affirmed by the interviewees as they perceived current account, per capita GDP, external debt, political stability and absence of violence index, unemployment rate and weighted short term interest rates to be major drivers of country risk of Zambia. Thus, a long run ARDL can be estimated with 2 lags for both countries.

5.6 Long run ARDL model

The results of the long run ARDL model estimated are shown in Table 5.14 overleaf and Table 5.15.

Table 5.14: Estimated long run ARDL model coefficients for the country of Botswana

Variable	Coefficient	Std. Error	t-Statistic	P-value
C	12.19445	6.87150	1.77464	0.1139
Betas(-1)	-1.06065	0.33709	-3.14649	0.0137 *
Betas(-2)	-0.26751	0.24423	-1.09533	0.3053
CA(-1)	0.07667	0.02839	2.70075	0.0270 *
CA(-2)	-0.03993	0.02759	-1.42183	0.1929
Deflator(-1)	-0.10106	0.03944	-2.56233	0.0335 *
Deflator(-2)	0.09944	0.04288	2.31912	0.0490 *
ED(-1)	-12.56024	9.70676	-1.29397	0.2318
ED(-2)	2.11934	6.46623	0.32776	0.7515
PSAV(-1)	-7.59846	4.04159	-1.88007	0.0969
PSAV(-2)	-0.70322	2.30900	-0.30456	0.7685
WSTIR(-1)	-0.19137	0.08031	-2.38292	0.0443 *
WSTIR(-2)	-0.28711	0.13676	-2.05436	0.0740
UN(-1)	0.01223	0.06031	0.20275	0.8444
UN(-2)	0.01396	0.05889	0.23704	0.8186

Source: Research estimation results from EViews 10

NB: * denotes significance at 0.05

From Table 5.14, it can be observed that beta in one year lag [**Betas(-1)]** has a significant long run relationship with country risk because its p-value is less than 5% level. In conclusion, country risk decreases by 1.06% when beta increases by 1%, ceteris paribus. One year lagged current account **[CA(-1)]** has a long run influence on country risk. Current account balance in one-year lag is statistically significant at the 5% level of significance since its p-value is smaller than 0.05. The coefficient of current account variable 0.07667 is positive as expected. This suggests that in the long run, an increase (appreciation) in current account balance by 10% leads to an increase (deterioration) in country risk by 0.7667% in Botswana, ceteris paribus. This may also suggest that country risk is less responsive to changes in current account balance. The results contrast with Vij (2005) who established that current account balance negatively influences to country risk. The long run p-values suggest that one year lagged GDP Deflator **[Deflator(-1)]** and two year lagged GDP deflator **[Deflator(-2)]** have a significant long run effect on country risk because their p-values are less than 5% level. In conclusion, country risk has a 10% (0.10106) negative change when GDP deflator in one-year lag increases by 1%, ceteris paribus. Furthermore, country risk has a 10% (0.0994) positive change when GDP

deflator in two-year lag increases by 1%, ceteris paribus. It can also be observed that weighted short term interest rates in one year lag **[WSTIR(-1)]** has a significant long run relationship with country risk. Weighted short term interest rates in one-year lag are statistically significant since its p-value is less than 5%. In conclusion, country risk decreases by 19% (0.19137) when weighted short term interest rates rises by 1%, ceteris paribus. This concurs with Andrade and Teles (2004) who argues that short term interest rate negatively affects country risk.

Based on Table 5.14, the estimated ARDL model for Botswana in the long run is:

BETAS = 12.19445 - 1.06065*BETAS(-1) + 0.07667*CA(-1) - 0.10106*DEFLATOR(-1) + 0.09944*DEFLATOR(-2) - 0.19137*WSTIR(-1)

Table 5.15: Estimated long run ARDL model coefficients for the country of Zambia

C	Coefficient	Std. Error	t-Statistic	P-value
C	4.58858	1.09541	4.18892	0.0030
Betas(-1)	-1.15884	0.21500	-5.38988	0.0007 *
Betas(-2)	-0.02909	0.15192	-0.19150	0.8529
CA(-1)	0.10487	0.01920	5.46355	0.0006 *
CA(-2)	0.08479	0.024482	3.41651	0.0091 *
Capita(-1)	0.000083	0.00068	0.12092	0.9067
Capita(-2)	-0.00111	0.00060	-1.86808	0.0987
ED(-1)	-0.37506	0.50720	-0.73948	0.4807
ED(-2)	0.56065	0.46501	1.20567	0.2624
PSAV(-1)	-1.96895	0.51397	-3.83086	0.0050 *
PSAV(-2)	-1.63500	0.56232	-2.90761	0.0197 *
WSTIR(-1)	-0.15719	0.08390	-1.87378	0.0978
WSTIR(-2)	0.10437	0.06442	1.62027	0.1438
UN(-1)	0.07300	0.06649	1.09794	0.3042
UN(-2)	-0.25581	0.08427	-3.03556	0.0162 *

Source: Research estimation results from EViews 10

NB * denotes significance at 0.05

From Table 5.15, it can be observed that Betas in one year lag **[Betas(-1)]** has a significant long run relationship with country risk. One year lagged beta is statistically significant at 5% level of significance because its p-value is less than 5%. With a coefficient of -1.15884, country risk decreases by 1.16% when annual beta increases by 1%, ceteris paribus. The long run p-

values suggest that current account balance in one year lag **[CA(-1)]** and two year lag **[CA(-2)]** have a significant long run relationship with country risk because their p-values are less than 5%. If current account lagged once increases by 1%, country risk increases by 10% (0.10487), ceteris paribus. Furthermore, country risk increases by 8% (0.0849) when current account lagged twice increases by 1%, ceteris paribus. These findings concur with Ferreira (2010) who found that current account significantly influences the country risk of Brazil. It can also be observed that political stability and absence of violence index in one year lag **[PSAV(-1)]** and two year lag **[PSAV(-2)]** have a significant negative long run relationship with country risk. Political stability and absence of violence index in one-year lag and two-year lag are statistically significant at 5% level of significance since their p-values are less than 0.05. In conclusion, country risk decreases by 1.97% (-1.96785) when political stability and absence of violence index in one-year lag increases by 1%, ceteris paribus. In addition, when one year lagged political stability and absence of violence index increases by 1% country risk decreases by 1.64% (-1.635), ceteris paribus. This is in line with Vij (2005), Basu, Deepthi and Reddy (2011) and Muwando and Gumbo (2013) who established that political risk and absence of violence is the main driver of country risk. The long run p-values indicate that unemployment rate lagged twice **[UN(-2)]** has a significant influence on country risk. Unemployment rate lagged twice is statistically significant at 5% level of significance since its p-value is less than 5%. In conclusion, country risk decreases by 25% (-0.25581) when unemployment rate increases by 1%, ceteris paribus. This contradicts the apriori conditions that an increase in unemployment increases country risk.

Based on Table 5.15, the estimated Zambian ARDL model in the long run is given by:

BETAS = 4.5858 - 1.15884*BETAS(-1) + 0.10487*CA(-1) + 0.08479*CA(-2)- 1.96895*PSAV(-1) - 1.635*PSAV(-2) - 0.25581*UN(-2).

5.7 Error Correction Model (ECM)

According to McMorrow (1998) and Okwuchukwu and Ikenna (2014), the error correction model (ECM) provides a framework for establishing links between the short-run and long-run approaches to econometric modelling. The results of error correction model for Botswana and Zambia are presented in the Tables 5.16 and 5.19, respectively.

5.7.1 Estimated Error Correction Results for the ARDL Model for Botswana

The results of country risk error correction model for Botswana are shown in Table 5.16 below:

Table 5.16: Estimated Error Correction Results for the ARDL Model for Botswana

Variable	Coefficient	Std. Error	t-Statistic	P-value
C	0.33624	0.30688	1.09568	0.3152
D(Betas(-1))	-1.21757	0.21918	-5.55522	0.0014 *
D(Betas(-2))	-0.35964	0.21671	-1.65951	0.1481
D(CA(-1))	0.08728	0.02430	3.59133	0.0115 *
D(CA(-2))	0.00782	0.02896	0.26996	0.7962
D(Deflator(-1))	-0.11746	0.03809	-3.08364	0.0216 *
D(Deflator(-2))	0.05103	0.04285	1.19085	0.2787
D(ED(-1))	-7.53426	9.62402	-0.78286	0.4635
D(ED(-2))	4.55975	4.98173	0.91529	0.3953
D(PSAV(-1))	-7.45375	2.80052	-2.66156	0.0374 *
D(PSAV(-2))	-1.58561	1.70678	-0.92901	0.3887
D(WSTIR(-1))	-0.22350	0.08696	-2.57020	0.0423 *
D(WSTIR(-2))	-0.34432	0.09648	-3.56899	0.0118 *
D(UN(-1))	-0.00185	0.04389	-0.04224	0.9677
D(UN(-2))	-0.00520	0.06469	-0.08037	0.9386
ECT(-1)	-0.81064	0.58675	-1.38159	0.0216 *

Source: Research estimation results from EViews 10

NB * denotes significance at 0.05 level.

Based on Table 5.16, the **estimated error correction model (ECM) for Botswana [Short run model]** is**:**

D(BETAS) = 0.33624 - 1.21757*D(BETAS(-1)) + 0.08728*D(CA(-1)) - 0.11746*D(DEFLATOR(-1)) - 7.45375*D(PSAV(-1)) - 0.22350*D(WSTIR(-1)) - 0.34432*D(WSTIR(-2)) - 0.81064 ECT(-1).

ECT (-1) = -0.8106 is statistically significant at 5% level of significance. The numerical value of one year lagged ECT implies that the speed of adjustment towards long run equilibrium is 81.06%. In other words, the whole system gets back to long run equilibrium at a speed of 81.06% if there is a shock in any of the short run variables.

Table 5.16 also indicates that differenced one year lagged beta **[D(Betas(-1))]** has a significant short run relationship with country risk. Beta in one-year lag is statistically significant at 5% level of significance since its p-value is less than 5%. A coefficient of -1.21757 implies that when beta increases by 1% country risk decreases by 1.22%, ceteris paribus. It can be observed that differenced one year lagged current account balance **[D(CA(-1))]** has significant short run relationship with country risk. Current account balance in one-year lag is statistically significant at the 5% level of significance.in conclusion, country risk increases by 8.73% [0.08728] when current account balance increases by 1%, ceteris paribus. The short run p-values indicate that differenced one year lagged GDP deflator **[D(Deflator(-1))]** has a significant short run effect on country risk. GDP Deflator in one-year lag is statistically significant at 5% level significance since its p-value is less than 5%. In conclusion, country risk has a 11.75% [-0.11746] negative change when GDP Deflator increases. It can also be observed that differenced one year lagged political stability and absence of violence index **[D(PSAV(-1))]** has a significant short-run with country risk. One year lagged political stability and absence of violence index is statistically significant at the 5% level of significance since its p-value is less than 5%. A coefficient of -7.45375 implies that county risk decreases by 7.45% when political stability and absence of violence index increases by 1% in the short-run, ceteris paribus. This contradicts the apriori condition. The short run p-values also suggest that differenced one year lagged weighted short term interest rates **[D(WSTIR(-1))]** and differenced two year lagged weighted short term interest rates **[D(WSTIR(-2))]** have a significant relationship with country risk. Weighted short term interest rates in one-year lag and in two-year lag are statistically significant at the 5% significance level because their p-value is lower than the than 5%. In conclusion, country risk decreases by 0.22% [-0.2235] when one year lagged weighted short term interest rates increases by 1%, ceteris paribus. Furthermore, when two year lagged weighted short term interest rates increases by 1%, country risk decreases by 0.34% [-0.34432], ceteris paribus. These finding is in line with Andrade and Teles (2007) who argue that using monetary policy (interest rates) during a crisis is infertile in reducing country risk. Other variables are statistically insignificant at the 5% level of significance since their p-values are more than 5%.

5.8 Diagnostic Tests of the Error Correction Model of Botswana

Residual, stability and coefficient diagnostics were conducted to make the error correction model valid and reliable.

5.8.1 Residual Diagnostics

The Error Correction Model (ECM) was tested for serial autocorrelation and heteroscedasticity by conducting the Breusch-Godfrey Serial correlation LM test and Breusch-Pagan-Godfrey test, respectively. The following hypotheses for serial autocorrelation and heteroscedasticity, respectively, were tested:

H_0: There is no serial autocorrelation among the residuals

H_1: There is serial autocorrelation among the residuals

H_0: There is homoscedasticity in the model

H_1: There is heteroscedasticity in the model

The results are shown in Table 5.17 below:

Table 5.17: Summary of Serial Correlation and Heteroscedasticity test

Residual diagnostics	**Type of test**	**F-statistic**	**P-value**
Serial Autocorrelation	Breusch-Godfrey Serial correlation LM test	3.39178	0.1376
Heteroscedasticity	Breusch-Pagan-Godfrey test	0.83276	0.6418

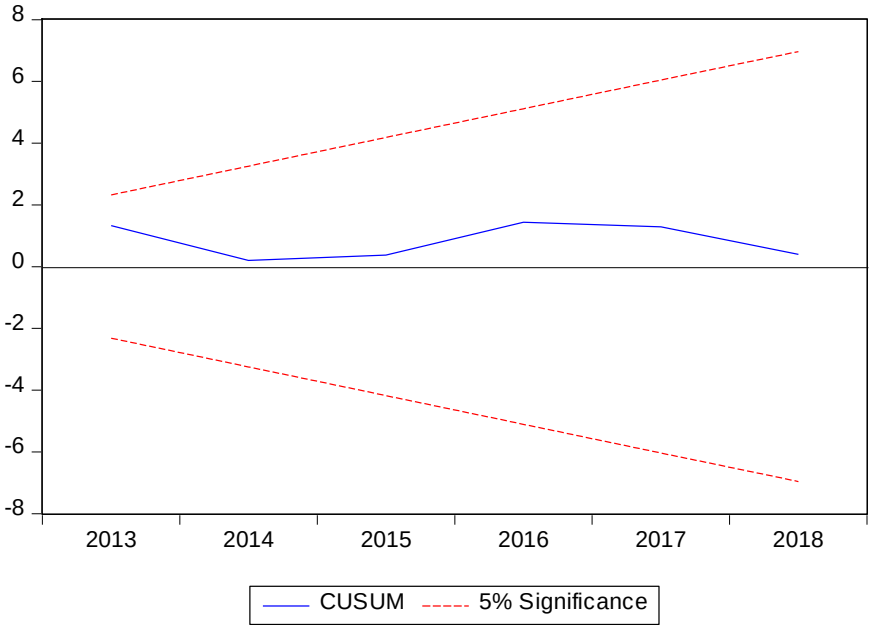
Source: Researcher's own compilation from EViews 10

Since p-value is greater than 0.05 for the serial autocorrelation tests, we fail to reject the null hypothesis and conclude that the model does not have serial correlation. For the heteroscedasticity test, p-value is greater than 0.05, we fail to reject the null hypothesis and conclude that the model is homoscedastic.

5.8.2 Stability diagnostic Tests

The results of CUSUM test are shown in Figure 8 overleaf:

Figure 8: Plot of CUSUM for the country of Botswana

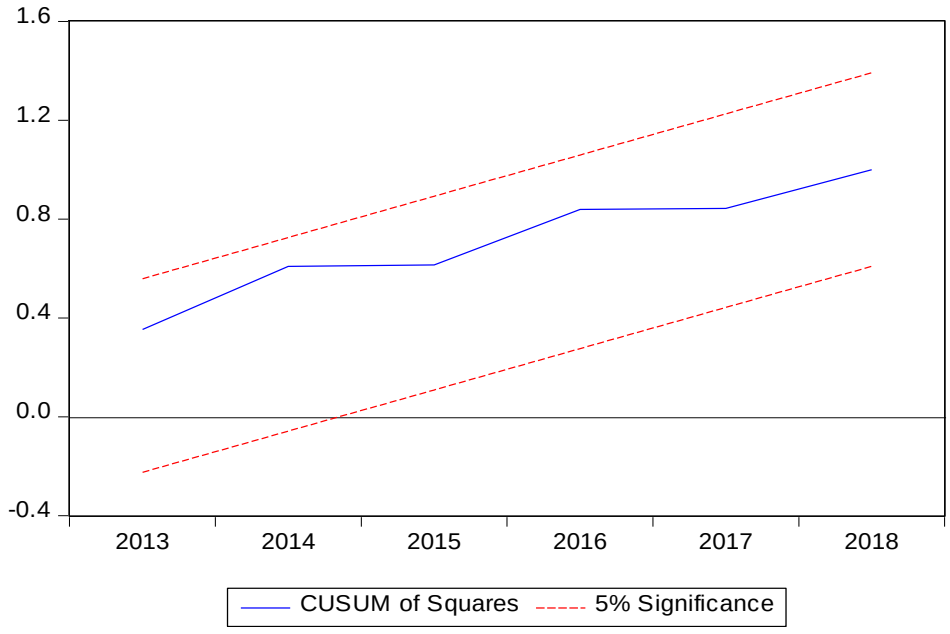


Source: *Research estimation results from E-views 10*

In Figure 8 above, CUSUM lies within the 5% boundary, implying that the error correction model is stable and reliable.

The results of CUSUM of squares test are shown in Figure 9 below:

Figure 9: Plot of Cusum of squares test for the country of Botswana



*Source**:** Research estimation results from E-views 10*

In figure 9, the model is stable as CUSUM of squares lies within the 5% boundary. Figures 8 and 9 imply that the error correction model is reliable to determine country risk for Botswana.

5.8.3 Model Specification Test

The study conducted the Ramsey RESET test to check specification errors. A correctly specified model will generate an adequate picture of the relationship between country risk and its drivers. The following hypotheses were tested:

H_0: The model is probably correctly specified

H_1: The model is probably mis-specified

The Ramsey test results for the country of Botswana are shown in Table 5.18 below:

Table 5.18: Ramsey RESET Test for Botswana

Ramsey RESET Test
Equation: UNTITLED
Specification: D(BETAS) C D(BETAS(-1)) D(BETAS(-2)) D(CA(-1)) D(CA(-2)) D(DEFLATOR(-1)) D(DEFLATOR(-2)) D(ED(-1)) D(ED(-2)) D(PSAV(-1)) D(PSAV(-2)) D(WSTIR(-1)) D(WSTIR(-2)) D(UN(-1)) D(UN(-2)) ECT(-1)
Omitted Variables: Squares of fitted values

	Value	Df	Probability
t-statistic	0.375581	5	0.7226
F-statistic	0.141061	(1, 5)	0.7226
Likelihood ratio	0.612076	1	0.4340

Source: Researcher's own compilation from EViews 10

Since the p-value of the Ramsey RESET test statistic is greater than 0.05 we do not reject the null hypothesis and conclude that the model is correctly specified.

5.8.4 Coefficient Diagnostic tests

The results of testing the reliability of the estimated short run ARDL model coefficients of Botswana are shown in Table 5.19 overleaf.

Table 5.19: Coefficient diagnostic tests

Variables	Coefficients H_o	Test statistic	P-value
$Betas_{t-1}$ and $Betas_{t-2}$	C(2)=C(3)=0	15.46934	0.0043*
CA_{t-1} and CA_{t-2}	C(4)=C(5)=0	6.45341	0.0320*
$Deflator_{t-1}$ and $Deflator_{t-2}$	C(6)=C(7)=0	5.68061	0.0413*
ED_{t-1} and ED_{t-2}	C(8)=C(9)=0	0.541600	0.6078
$PSAV_{t-1}$ and $PSAV_{t-2}$	C(10)=C(11)=0	3.93557	0.0809
$WSTIR_{t-1}$ and $WSTIR_{t-2}$	C(12)=C(13)=0	6.710784	0.0295*
UN_{t-1} and UN_{t-2}	C(14)=C(15)=0	0.00393	0.9961

Source: Researcher's own compilation from EViews 10

NB * denotes significance at 5% level

From table 5.19, we reject the null hypothesis and conclude that Beta in one-year lag [$Betas_{t-1}$] and two year lag [$Betas_{t-2}$] jointly determine country risk in the short run since the p-value is less than 0.05. Since the p-value is less than 0.05, one year and two year lagged current account [CA_{t-1} and CA_{t-2}] jointly drive country risk. It can also be observed that deflator in one-year lag and two-year lag [$Deflator_{t-1}$ and $Deflator_{t-2}$] jointly influences country risk in the short run. We also observe that weighted short term interest rates in one-year lag and two-year lag are statistically significant at the 5% significance level since p-value is less than 5%. This implies that they have a short run joint effect on country risk. The other pair of variables do not have a short run joint effect on country risk because they are statistically insignificant at the 5% level [p-value < 5%].

5.9 Estimated Error Correction Results for the ARDL Model for Zambia

Table 5.20 below presents the estimated error correction results of the model for Zambia.

Table 5.20: Estimated Error Correction Results for the ARDL Model for Zambia

Variable	Coefficient	Std. Error	t-Statistic	P-value
C	-0.01292	0.06718	-0.19236	0.8538
D(Betas(-1))	-1.08437	0.15893	-6.82301	0.0005 *
D(Betas(-2))	-0.06602	0.13338	-0.49501	0.6382
D(CA(-1))	0.10076	0.01691	5.95905	0.0010 *
D(CA(-2))	0.08088	0.01806	4.47877	0.0042 *
D(Deflator(-1))	0.00031	0.00051	0.61540	0.5609
D(Deflator(-2))	0.00085	0.00047	-1.80920	0.1204
D(ED(-1))	-0.17030	0.45398	-0.37512	0.7205
D(ED(-2))	0.48840	0.40122	1.21729	0.2692
D(PSAV(-1))	-2.15318	0.42085	-5.11630	0.0022 *
D(PSAV(-2))	-1.82465	0.40413	-4.51504	0.0040 *
D(UN(-1))	0.11060	0.05573	1.98460	0.0944
D(UN(-2))	-0.30197	0.06812	-4.43275	0.0044 *
D(WSTIR(-1))	-0.18847	0.06601	-2.85524	0.0290 *
D(WSTIR(-2))	0.07199	0.06846	1.05163	0.3335
ECT(-1)	-1.40825	0.48287	-2.91643	0.0268 *

Source: *Research estimation results from EViews 10*

NB **** denotes significance at 0.05 level***

The estimated error correction model (ECM) for Zambia [Short run model] is given by:

D(BETAS) = -0.01292 - 1.08437*D(BETAS(-1)) + 0.10076*D(CA(-1)) + 0.08088*D(CA(-2)) + 0.00031*D(CAPITA(-1)) - 2.15318*D(PSAV(-1)) - 1.82465*D(PSAV(-2)) - 0.30197*D(UN(-2)) - 0.18847*D(WSTIR(-1)) - 1.40825*ECT(-1)

ECT(-1) = -1.4082 is statistically significant at the 5% significance level, implying that the speed of adjustment towards long run equilibrium is 140.82%. If there is shock in any of the short term variables, the whole system gets back to long run equilibrium at a speed of 140.82%. Since the model is correctly specified, a high coefficient of ECT(-1) (above 1 with negative sign and significant) may imply that the system is convergent, yet, has an oscillatory adjustment

process and the error correction process fluctuates around the long-run value in a dampening manner. However, once this process is complete, convergence to the equilibrium path is rapid.

Table 5.20 also indicates that differenced one year lagged beta **[D(Betas(-1))]** has a significant short run relationship with country risk. Beta in one-year lag is statistically significant at 5% level of significance since its p-value is less than 5%. In conclusion, country risk has 1.08% negative change when beta increases by 1%, ceteris paribus. The short run p-values also suggest that differenced one year lagged current account balance **D(CA(-1))]** and differenced two year lagged current account balance **[D(CA(-2))** have a significant relationship with country risk. Current account balance in one-year lag and in two-year lag are statistically significant at the 5% significance level because their p-value is lower than the than 5%. In conclusion, country risk increases by 10% [0.10076] when one year lagged current account balance increases by 100%, ceteris paribus. Furthermore, when two year lagged current account balance increases by 100%, country risk increases by 8% [0.08088]. This finding is in line with apriori conditions and Cline 1984 who argues that current account surplus is inversely related to the default risk whilst current account deficit is positively related to country risk and mostly equates to the amount of new financing required by a country.

It can also be observed that differenced one year lagged political stability and absence of violence index **[D(PSAV(-1))]** and two year lagged political stability and absence of violence index **[D(PSAV(-2))]** have a significant negative short run relationship with country risk. Political stability and absence of violence index in one-year lag and two-year lag are statistically significant at 5% level of significance since their p-values are less than 0.05. In conclusion, country risk decreases by 2.15% (-2.15318) when political stability and absence of violence index lagged in one-year lag increases by 1%, ceteris paribus. In addition, when political stability and absence of violence index in two-year lag increases by 1% country risk decreases by 1.82% (-1.82465), ceteris paribus. The short run p-values indicate that unemployment rate in two year lag **[D(UN(-2))]** has a significant influence on country risk. Two year lagged unemployment rate is statistically significant at 5% level of significance since its p-value is less than 5%. In conclusion, country risk decreases by 30% (-0.30197) when unemployment rate increases by 100%, ceteris paribus. This finding contrasts the apriori conditions. It can also be observed that weighted short term interest rates in one year lag **[D(WSTIR(-1))]** has a significant short run relationship with country risk. Weighted short term interest rates in one-year lag are statistically significant since its p-value is less than 5%. In conclusion, country risk decreases by 18.84% (0.18847) when weighted short term interest

rates rises by 100%, ceteris paribus. This is in line with Andrade and Teles (2004) who argues that short term interest rates are inversely related to country risk.

5.10 Diagnostics Tests of the Error Correction Model of Zambia

Residual, stability and coefficient diagnostics were also conducted and the results are shown in Table 5.21 to Table 5.23.

5.10.1 Residual diagnostics

The following hypotheses for serial autocorrelation and heteroscedasticity, respectively, were tested:

H_0: There is no serial autocorrelation among the residuals

H_1: There is serial autocorrelation among the residuals

H_0: There is homoscedasticity in the model

H_1: There is heteroscedasticity in the model

The results for Breusch-Godfrey Serial correlation LM test and Breusch-Pagan-Godfrey test for serial correlation and heteroscedasticity, respectively, are shown in Table 5.21 below.

Table 5.21: Summary of Serial Correlation and Heteroscedasticity test

Residual diagnostics	**Type of test**	**F-statistic**	**P-value**
Serial Auto-Correlation	Breusch-Godfrey Serial correlation LM test	0.47779	0.6514
Heteroscedasticity	Breusch-Pagan-Godfrey test	0.20546	0.9940

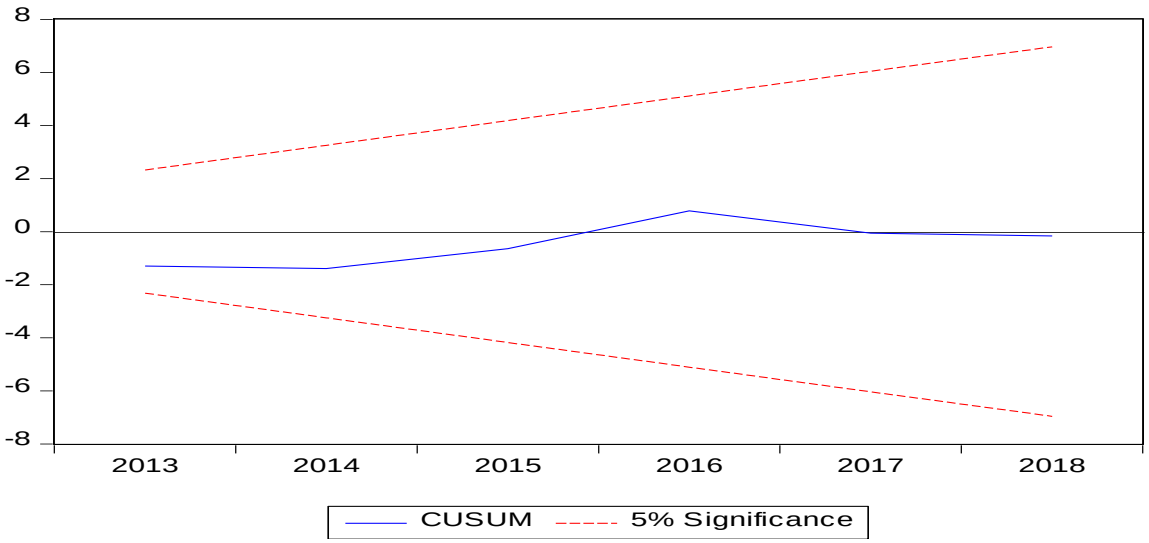
Source: Researcher's own compilation from EViews 10

Since the p-value is greater than 0.05, we fail to reject the null hypothesis and conclude that the model does not have serial autocorrelation. For the heteroscedasticity test, the p-value is greater than 0.05, we fail to reject the null hypothesis and conclude that the model is homoscedastic.

5.11.2 Stability diagnostic tests

The results of CUSUM test are shown in Figure 10 below:

Figure 10: Plot of CUSUM for Zambia

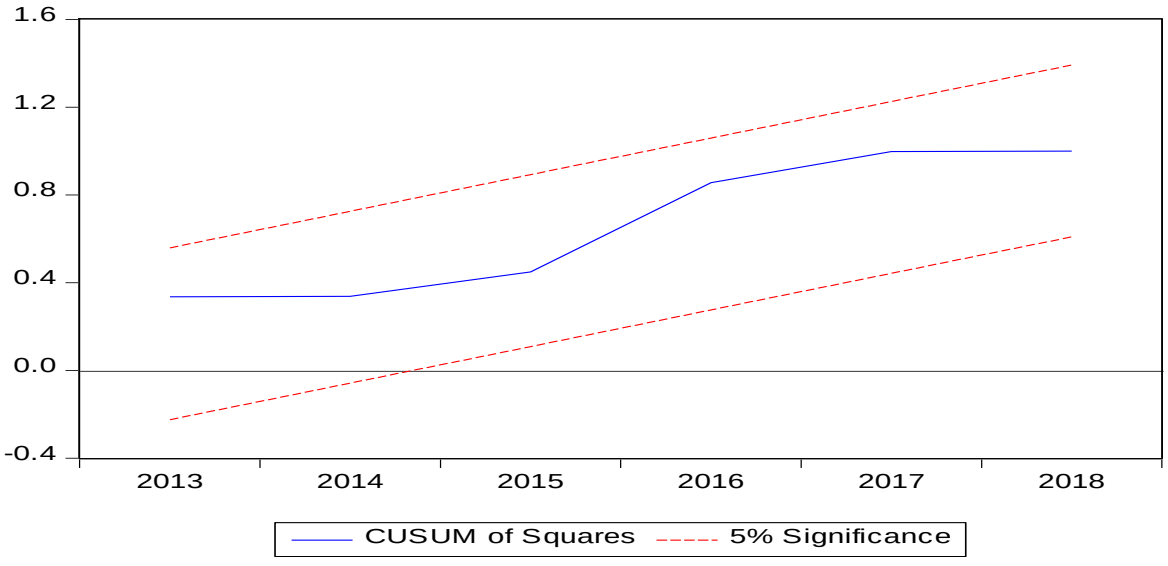


Source: *Research estimation results from EViews 10*

In Figure 10 above, CUSUM lies within the 5% boundary, meaning that the error correction model is stable and reliable.

The results of CUSUM of squares test are shown in Figure 11 below:

Figure 11: Plot of CUSUM of squares test for Zambia



Source: *Research estimation results from EViews 10*

In Figure 11, the model is stable as CUSUM of squares lies within the 5% boundary. Figures 10 and 11 imply that the error correction model is reliable to determine country risk for Zambia.

5.10.3 Model Specification Test

The following hypotheses were tested:

H_0: The model is probably correctly specified

H_1: The model is probably mis-specified

The results of the Ramsey RESET test for country of Zambia are shown in Table 5.22:

Table 5.22: Ramsey RESET test for Zambia

Ramsey RESET Test
Equation: UNTITLED
Specification: D(BETAS) C D(BETAS(-1)) D(BETAS(-2)) D(CA(-1)) D(CA(-2)) D(CAPITA(-1)) D(CAPITA(-2)) D(PSAV(-1)) D(PSAV(-2)) D(ED(-1)) D(ED(-2)) D(UN(-1)) D(UN(-2))D(WSTIR(-1)) D(WSTIR(-2)) ECT(-1)
Omitted Variables: Squares of fitted values

	Value	Df	Probability
t-statistic	0.130502	5	0.9013
F-statistic	0.017031	(1, 5)	0.9013
Likelihood ratio	0.074808	1	0.7845

Source: Source: Researcher's own compilation from EViews 10

From Table 5.22 above, p-value of the t-statistic is greater than 0.05, implying that we should reject the null hypothesis and concludes that the ARDL model for the country of Zambia does not have specifications errors.

5.10.4 Coefficient diagnostic tests

The results of testing the reliability of the short run ARDL model coefficients for Zambia are shown in Table 5.23 overleaf.

Table 5.23: Coefficient diagnostic test

Variables	Coefficients H_o	Test statistic	P-value
$Betas_{t-1}$ and $Betas_{t-2}$	C(2)=C(3)=0	27.0475	0.0010*
CA_{t-1} and CA_{t-2}	C(4)=C(5)=0	19.25071	0.0025*
$CAPITA_{t-1}$ and $CAPITA_{t-2}$	C(6)=C(7)=0	2.09922	0.2036
ED_{t-1} and ED_{t-2}	C(8)=C(9)=0	0.99204	0.4244
$PSAV_{t-1}$ and $PSAV_{t-2}$	C(10)=C(11)=0	16.76038	0.0035*
UN_{t-1} and UN_{t-2}	C(12)=C(13)=0	10.22223	0.0117*
$WSTIR_{t-1}$ and $WSTIR_{t-2}$	C(14)=C(15)=0	7.57706	0.0228*

Source: Researcher's own compilation from EViews 10

NB * denotes significance at 0.05 level

In Table 5.23, we reject the null hypothesis since the p-value is less than 0.05, and conclude that beta in one-year lag [$Betas_{t-1}$] and two-year lag [$Betas_{t-2}$] jointly determine country risk in the short run. One year lagged current account balance and two year lagged current account balance are jointly statistically significant at the 5% significance level since p-value is less than 5%. Therefore, we conclude that one year lagged current account balance and two year lagged current account balance jointly influence country risk in the short run. However, per capita GDP in one-year lag[$CAPITA_{t-1}$] and two-year lag[$CAPITA_{t-2}$] do not jointly influence country risk since the p-value is greater than 0.05. Since the p-value is greater than 0.05, we cannot reject the null hypothesis and conclude that one year lagged external debt [ED_{t-1}] and two year lagged external debt [ED_{t-2}] do not jointly affect country risk. We also conclude that political stability and absence of violence in one-year lag and political stability and absence of violence in two-year lag are statistically significant (p-value< 0.05), implying that they jointly drive country risk. One year lagged unemployment rate and two year lagged unemployment rate are jointly statistically significant at the 5% significance level since p-value is smaller than 0,05. Thus we reject the null hypothesis and conclude that unemployment rate in one lag and unemployment rate in two-year lag jointly determine country risk in the short run. Weighted short term interest rates in one-year lag and weighted short term interest rates one-year lag jointly have short run relationship with country risk. They are statistically significant at the 5% significance since the p-value is less than 0.05.

5.11 Interviewees' views on determinants of country risk

From the personal interviews conducted in Botswana, all the interviewees argue that per capita GDP, GDP deflator, external debt balance, current account balance, weighted short term

interest rates, unemployment rate, exchange rate and political risk influence country risk. On the most significant variable that affects country risk, some argue that unemployment rate is the key followed by current account and external debt balance while others point that current account balance. For those who perceived that unemployment is the key variable opines that many people are unemployed as the resources are concentrated among the few influential individuals. They further state that current account deficits are affecting the country. This is because the country depends on diamond export as their major source of foreign currency (Makoni, 2015 citing Mahembe and Odhiambo, 2013); fluctuation in the price of diamonds in the world market hit the country hard through worsening the balance of trade position. They also mentioned that there are very few cases of political violence and instability as there is good governance in the country.

In the context of Zambia, the interviewees perceived that GDP per capita, GDP deflator, external debt balance, current account balance, weighted short term interest rates, unemployment rate and political risk influence country risk. All of the interviewees point that external debt followed by current account balance, political risk are the major divers of country risk in Zambia. They further point the heavy dependence of external loans is negatively affecting the performance of the economy as its signals increase in default risk, thus country risk increase. This is in line with Ofstad and Tjønneland (2019) who argue that Zambia heavily borrowed China since 2012 and now in high risk of distress. The authors further state that Zambia once benefited from the HIPC debt relief in 2005.They also point that persistent current deficits are negatively affecting the economy as the economy depend most of copper production so fluctuation in the copper price on the international market worsens the terms of trade by negatively affecting the export receipts. Overally, this leads to increase in country risk of Zambia. They also mentioned that unemployment rate in extremely high and that there is an increase in cases of political instability and violence in the country.

5.12 Interviewees' views on expected relationship country risk and its drivers

The results of the views of interviewees on expected relationship between country risk and independent economic, financial and political variables are shown in Table 5.24 overleaf.

Table 5.24: Interviewees' views on expected relationship between country risk and its drivers

Independent Variable	Expected sign	Agree	Disagree
Per Capita GDP	Negative	**Agree**	
GDP deflator	Positive	**Agree**	
External debt balance as percentage of GDP	Positive	**Agree**	
Current account balance as a percentage of GDP	Surplus- Negative, Deficit – positive	**Agree** **Agree**	
Weighted short-term interest rates	Either Positive or Negative	**Agree**	
Political risk	Positive	**Agree**	
Unemployment rate	Positive	**Agree**	

Source: Researcher's own compilation from the primary data using MS Excel

Table 5.24 indicates that interviewees' responses were in line with a priori conditions as they perceive that all the above-mentioned explanatory factors have the expected sign.

5.13 Interviewees' views on whether country risk is diversifiable or not?

All of the interviewees perceived that country risk is form systematic risk (non-diversifiable) as it is beyond the control of the private investor. They further point that, even if they diversify their portfolios in different countries the contagion effect associated with this risk may adversely affect the return on their investments. This coincides with empirical literature that country risk is of systematic in nature and cannot be diversified in the country's financial portfolio (Erb, Harvey and Viskanta, 1997; Naumoski, 2011; Gangemi, Brooks and Faff, 2000; Damodaran, 2003; Esch, Keiffer and Lopez, 2005). Interviewees also point that fiscal and monetary policy makers should implement effective and efficient policies to manage financial, economic and political variables that drive country risk.

5.14: Interviewees' views on ways of managing country risk

Some interviewees in Botswana perceived that country can be managed by reducing unemployment. They further point that unemployment increase chances of social unrest, hence the government should Government of Botswana (GoB) should continue implement measures that encourage diversification in its economy by offering incentives to attract private sector investment and international capital flows rather than relying on diamond industry which does employ much. Others were of the opinion that the GoB should manage its external debt to acceptable levels like three percent of the GDP. They further opine that increase in external accumulation by the country lead debt trap.

All the interviewees in Zambia stated that external debt needs to be managed as it is the main driver of country risk. They reiterate that the government of Zambia (GoZ) should live within their means. Some interviewees perceived that government should put in place contractionary fiscal and monetary policies to manage persistent current deficits bedeviling the economy. To reduce unemployment, all the interviewees advocated expansionary fiscal and monetary policies. In terms of the political risk, they point that conducive environment has to be promoted by the government; cases of violence should be dealt with despite of the affiliation of the perpetrators.

On whether country risk negatively impacts on FDI inflows, all the interviews shared the same view as they stated that FDIs are negatively affected by country risk. They further opine that high country risk scares away investors, that is why Botswana has more foreign direct investment inflows compared Zambia.

5.15 Chapter Summary

This chapter presented the results of annual country beta computed, diagnostic tests, Autoregressive Distributed Lag (ARDL) model in the long run and Error Correction Model. The data was analysed using Eviews 10 statistical software. The primary data collected gathered by means of personal interviews was presented in form of tables, analysed and discussed. The next chapter presents summary of findings, conclusions and recommendations.

CHAPTER SIX: SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

This chapter present summary of major findings, conclusions and recommendation on drivers of country risk of Botswana and Zambia. It draws conclusions from research findings and puts forward policy recommendations necessary to manage country risk.

6.1 Summary of Major findings

Having conducted the entire diagnostic tests, the study findings revealed that some of the variables of these two countries were stationary at level while others were stationary at the first difference necessitating the use ARDL technique for estimation.

Based on the proposed method, the study findings revealed Zambia is riskier than Botswana because most of the annual betas are slightly bigger than that of Botswana even though the estimated annual betas of these two countries are smaller (See the table with full results on appendix A).

The findings of the study revealed that the main drivers for country risk of Botswana in the short run are one year lagged beta **[D(Betas(-1))**], current account balance in one year lag **[D(CA(-1))]** and GDP deflator in one year lag **[Deflator(-1)],** one year lagged political stability and absence of violence index **[D(PSAV(-1))]** and weighted short term interest rates **[D(WSTIR(-1))]** and **[D(WSTIR(-2))]** whereas those of the country of Zambia are one year lagged beta **[D(Betas(-1))]**, current account balance **[CA(-1)]** and **[CA(-2)]**, political stability and absence of violence index **[D(PSAV(-1))]** and **[D(PSAV(-2))]**, unemployment rate in two year lag **[D(UN(-2))]** and weighted short term interest rates in one year lag **[D(WSTIR(-1))]**.

The study findings established that the long run determinants of country risk of Botswana are one year lag [**Betas(-1)]**, current account balance, GDP Deflator and weighted short term interest rates whereas those of the country of Zambia are current account balance **[CA(-1)]** and **[CA(-2)]**, Betas in one year lag **[Betas(-1)]**, political stability and absence of violence index **[PSAV(-1)]** and **[PSAV(-2)]** and unemployment rate **[UN(-2)]**.

In the context of Botswana the findings of the study also established that betas in one year lag [**Betas(-1)]** has a significant long run relationship with country risk, an increase (appreciation) in current account balance leads to an increase (deterioration) in country risk, country risk has a negative change when GDP deflator in one year lag increases, country risk has a positive

change when GDP deflator in two year lag increases, country risk decreases when weighted short term interest rates rises.

In context of Zambia the findings revealed that current account balance in one year lag **[CA(-1)]** and two year lag **[CA(-2)]** have a significant long run relationship with country risk, Betas in one year lagged beta **[Betas(-1)]** has a significant long run relationship with country risk, political stability and absence of violence index in one year lag **[PSAV(-1)]** and two year lag **[PSAV(-2)]** have a significant negative long run relationship with country risk and when country risk decreases unemployment rate **[UN(-2)]** increases.

In the context of Botswana, the study findings established that one year lagged beta **[D(Betas(-1))]** has significant short run relationship with country risk, that is, when beta increases country risk decrease; differenced one year lagged current account balance **[D(CA(-1))]** has significant short run relationship with country risk, that is, country risk increases when current account balance increases; differenced one year lagged GDP deflator **[D(Deflator(-1))]** has a significant short run effect on country risk, that is when GDP Deflator increases country risk decreases; differenced one year lagged political stability and absence of violence index **[D(PSAV(-1))]** has a significant short-run with country risk, that is, county risk decreases when political stability and absence of violence index increases; differenced one year lagged weighted short term interest rates **[D(WSTIR(-1))]** and differenced two year lagged weighted short term interest rates **[D(WSTIR(-2))]** have a significant relationship with country risk, that is, country risk decreases when weighted short term interest rates increase.

In context of Zambia, the findings revealed that differenced one year lagged beta **[D(Betas(-1))]** has a significant short run relationship with country risk, that is, when beta increases country risk decreases; differenced one year lagged current account balance **D(CA(-1))]** and differenced two year lagged current account balance **[D(CA(-2))** have a significant relationship with country risk, that is, country risk increases when current account balance increases; differenced one year lagged political stability and absence of violence index **[D(PSAV(-1))]** and two year lagged political stability and absence of violence index **[D(PSAV(-2))]** have a significant short run relationship with country risk; unemployment rate in two year lag **[D(UN(-2))]** has a significant influence on country risk; weighted short term interest rates in one year lag **[D(WSTIR(-1))]** has a significant short run relationship with country risk, that is, country risk decreases when weighted short term interest rates rises.

The study findings also revealed that the whole system of the Zambian economy adjust to long run equilibrium faster than that of Botswana if there is shock in any of the short term variables because its error correction term (140.83%) is greater than that of Botswana (81.06%).

6.2 Conclusion

The following conclusions were made.

6.2.1 To establish annual country betas for Botswana and Zambia

Based on the proposed method, the study concluded that Zambia is riskier than Botswana because most of the annual betas are slightly bigger than that of Botswana even though the estimated annual betas of these two countries are smaller. This is in line with empirical literature that emerging markets have lower beta than developed markets (Wdowinski citing Harvey, 1995 and Erb, Harvey and Viskanta, 1996).

6.2.2 To identify possible determinants of country risk for Botswana and Zambia

The study also concluded that short run drivers for the country risk of Botswana are current account balance, beta, political stability and absence of violence index and weighted short term interest rates whilst that of Zambia are beta, unemployment rate, political stability and absence of violence index and weighted short term interest rates, current account balance, even though it is not one-to-one responsive to country risk. These findings converge with Ferreira (2010) who found the evidence that current account as percentage of GDP largely influence country risk. Furthermore, these findings are in line with Georgescu (2007) who argue that large current account deficit leads imbalance in the external position of a country, thus leading to high country risk.

The study concluded that long run determinants for the country risk of Botswana are annual betas, current account, weighted short term interest rates and GDP deflator whilst those of Zambia are annual betas, political stability and absence of violence, unemployment and current account balance. The finding that interest rates have a significant effect on country risk of Botswana diverges with Bilson, Brailsford and Hooper (2001) who argued that many emerging markets have inactive secondary market for bond issues and government paper making interest rates as an insignificant factor driving financial markets. In case of Zambia, the finding that interest rates are not statistically significant concurs with Gangemi, Brooks and Faff (2000)

and Verma and Soydemir (2006) who established that interest rates had a trivial influence on country risk of Australian and Latin American.

6.2.3 To determine the impact of GDP per capita, inflation, unemployment, current account position, short term interest rates, external debt balances, political stability and absence of violence on country risk for Botswana and Zambia.

(a)Botswana in the short run:

The study concluded that when beta increases by 1% country risk decreases by 1.22%, ceteris paribus; country risk increases by 8.73% [0.08728] when current account balance increases by 1%, ceteris paribus; country risk has a 11.75% [-0.11746] negative change when GDP Deflator increases; county risk decreases by 7.45% when political stability and absence of violence index increases by 1%, ceteris paribus; country risk decreases by 0.22% [-0.2235] when one year lagged weighted short term interest rates increases by 1%, ceteris paribus; when two year lagged weighted short term interest rates increases by 1%, country risk decreases by 0.34% [-0.34432], ceteris paribus. These findings converge with Andrade and Teles (2007) who argue that using monetary policy (interest rates) during a crisis is in effective country risk.

(b) Zambia in the short run

The study concluded that country risk has 1.08% negative change when beta increases by 1%, ceteris paribus; country risk increases by 10% [0.10076] when one year lagged current account balance increases by 100%, ceteris paribus; when two year lagged current account balance increases by 100%, country risk increases by 8% [0.08088]. This finding converges with Cline (1984) who argues that current account surplus is inversely related to the default risk, vice versa; country risk decreases by 2.15% (-2.15318) when political stability and absence of violence index lagged in one year lag increases by 1%, ceteris paribus; when political stability and absence of violence index in two year lag increases by 1% country risk decreases by 1.82% (-1.82465), ceteris paribus; country risk decreases by 30% (-0.30197) when unemployment rate increases by 100%, ceteris paribus; country risk decreases by 18.84% (0.18847) when weighted short term interest rates rises by 100%, ceteris paribus. This is in line with Andrade and Teles (2004) who argues that short term interest rates are inversely related to country risk

(b) Botswana in the long run:

The study concluded that country risk decreases by 1.06% when beta increases by 1%, ceteris paribus; an increase (appreciation) in current account balance by 10% leads to an increase (deterioration) in country risk by 0.7667%, ceteris paribus. This finding diverges with Vij (2005) who established that current account balance negatively influences to country risk. The study also concluded that country risk has a 10% (0.10106) negative change when GDP deflator in one-year lag increases by 1%, ceteris paribus; country risk has a 10% (0.0994) positive change when GDP deflator in two-year lag increases by 1%, ceteris paribus; country risk decreases by 19% (0.19137) when weighted short term interest rates rises by 1%, ceteris paribus. This concurs with Andrade and Teles (2004) who argues that short term interest rate negatively affects country risk

(d) Zambia in the long run

It was concluded that country risk decreases by 1.16% when annual beta increases by 1%, ceteris paribus; if current account lagged once increases by 1%, country risk increases by 10% (0.10487), ceteris paribus; country risk increases by 8% (0.0849) when current account lagged twice increases by 1%, ceteris paribus. This finding converges with Ferreira (2010) who found that current account significantly influences the country risk of Brazil. The study also concluded that country risk decreases by 25% (-0.25581) when unemployment rate increases by 1%, ceteris paribus; country risk decreases by 1.97% (-1.96785) when political stability and absence of violence index in one-year lag increases by 1%, ceteris paribus; when one year lagged political stability and absence of violence index increases by 1% country risk decreases by 1.64% (-1.635), ceteris paribus. This concurs with Vij (2005) and Basu, Deepthi and Reddy (2011) who established that political risk and absence of violence is the main driver of country risk. Therefore, it can be concluded that the major determinant of country risk of Botswana and Zambia in the short run and long run is current account balance

The estimated Error Correction Model (ECM) for Botswana [Short run model] is**:**

D(BETAS) = 0.33624 - 1.21757*D(BETAS(-1)) + 0.08728*D(CA(-1)) - 0.11746*D(DEFLATOR(-1)) - 7.45375*D(PSAV(-1)) - 0.22350*D(WSTIR(-1)) - 0.34432*D(WSTIR(-2)) - 0.81064 ECT(-1)

Estimated Error Correction Model (ECM) for of Zambia [Short run model] is given by:

D(BETAS) = -0.01292 - 1.08437*D(BETAS(-1)) + 0.10076*D(CA(-1)) + 0.08088*D(CA(-2)) + 0.00031*D(CAPITA(-1)) - 2.15318*D(PSAV(-1)) - 1.82465*D(PSAV(-2)) - 0.30197*D(UN(-2)) - 0.18847*D(WSTIR(-1)) - 1.40825*ECT(-1).

The long run country risk model for Botswana is given by:

BETAS = 12.19445 - 1.06065*BETAS(-1) + 0.07667*CA(-1) - 0.10106*DEFLATOR(-1) + 0.09944*DEFLATOR(-2) - 0.19137*WSTIR(-1)

whilst the long run country risk model for of Zambia is given by:

BETAS = 4.5858 - 1.15884*BETAS(-1) + 0.10487*CA(-1) + 0.08479*CA(-2) - 1.96895*PSAV(-1) - 1.635*PSAV(-2) - 0.25581*UN(-2).

The study concluded that if there is a shock in the short term variables, the whole economy of Zambia (140.83%) adjust more rapidly than that of Botswana (81.06%) to reach its equilibrium in the long run. The error correction process of the country of Zambia fluctuates around the long-run value in a dampening manner (oscillatory adjustment process). However, once this process is complete, convergence to the equilibrium path is rapid.

6.3 Recommendations

The key to country risk management is to critically assess its drivers and then the government implement the policies necessary to manage these determinants. The following recommendations were derived from the summary of study findings:

6.3.1 Policies necessary to reduce persistent current account deficits

There is need government for these two countries to effect import substitution policies by implementing barriers to import, for example increasing tariff and non-tariff barriers and encouraging domestic production with subsidies if government funds are available.

The government of the two countries should support local industries which specifically produce for export through export incentives. Export-oriented policies are important and they make domestic goods competitive on the global markets and export earnings generated finance the process of development.

The need for the respective governments to devalue their local currency as this reduces imports and enhances exports. In the short run it worsen the economic situation due to price effect but in the long run the volume effect will exceed the price effect thus improving the net export revenue of the countries.

Due to persistent current account deficits occurs when there is excess demand for imports, there is need for monetary and fiscal policies contraction to contain excessive domestic demand through spending cuts, increasing taxes and interest rate.

6.3.2 Managing political risk

The Government of Zambia should provide conducing political environment when conducting election. Cases of political violence should be handled fairly despite of the perpetrators' political affiliations. Institutional investors should diversify their portfolios by investing part of their funds in other countries.

6.3.3 Policies necessary to reduce unemployment rate

There is need for the government of Zambia to offer incentives to local producers so that they produce more and thus create jobs for those who are active seeking for it.

The government has to create conducive political environment for foreign direct investment, that will create more jobs as multinational corporation (MNCs) invest.
Government should reduce bureaucracy that is involved when investors want to set up investment by creating a stop shop for investment. This fastens the process of investment and creates employment for the locals.

The government of Botswana should abolish the diamond cum public sector-led development model as it has performed badly when there is sluggish growth in the economy and thus leads to poor job creation.

Likewise, Zambian economy should not heavily rely on copper production as fluctuations in price on world market results in a rise in unemployment rate in the country.

Strategies should be implemented to manage drought and climate- related risks in Zambia and these include provision of financial, technical assistance and input schemes to the agricultural sector to increase its resilience.

6.3.4 Investors

Investors have to engage the services of both private and public political risk insurers like International Finance Corporation (IFC) and Multilateral Investment Guarantee Agency (MIGA), which provide them with cover for against expropriation, currency blockage, breach of contract, sequestration, confiscation, etc. They have a legal base to pursue recovery against the host government. In order to mitigate country risk, private investors should engage the services of multilateral development banks such as Inter-American Development Bank and the Andean Development Corporation which have comprehensive information about the risks and opportunities of investing in emerging market countries.

Market based approaches can be used to mitigate country risk. This is done through swapping assets with other creditors or consolidating the claims in the hands of a new intermediary. This implies that ownership of the claims would have changed via the secondary market of debt. This improves the cash flow of the investor while transferring the risk to the new owner.

To all those investors who would have invested on the host county stock exchange, they should hedge against this risk through being long in financial derivatives like future contracts, forward contracts and options contracts.

Others strategies that can employed includes the following:

Public investors should diversify their portfolios by investing different and various sectors of the economy while private investors have to invest in different countries so that political instability in one country will not affect all of their investment.

The government of Botswana should privatize and rationalize state-owned enterprises (SOEs) to improve their efficiency in operations.

Restrictions on visas and work permits should be relaxed in order to enhance investors' confidence into the country.

There is need for the respective governments to remove distortions (which increase the cost of doing business) caused by monopolies and regulations as they scare away investors.

The authorities of these two countries should be committed to improve the business environment by lowering cost of doing business.

6.3.5 Creditors/Lenders

Creditors (especially exporters) should rely on export cover and insurance guarantees, for example, most OECD countries have established official export credit agencies (ECAs) to enhance exports and foreign investment while managing country risk. Furthermore, political risk insurers, which provide a broad range of coverage to lenders that include a cover against currency blockage, breach of contract, sequestration, confiscation, *etc*., can also be engaged.

Another way of managing country risk is co-financing by creditors, especially in infrastructure industry. Co-financing refers to any arrangement under which Bank funds or guarantees are associated with funds provided by third parties for a particular project or program. Creditors participating benefit in that International Financial Institutions (IFIs) analyse the projects, supervise their implementation, administration of loans until they are fully repaid, and the IFIs' preferred creditor status (Bouchet, Clark and Groslambert, 2003).

Country risk can also be managed by employing market-based instruments. These include changing the financial profile of the claims through rescheduling, retiming and indexed loans, debt restricting and changing the legal nature of the bank claims by transferring the loans into some other kind of assets with securitization and debt conversion instruments. This shift away the risk to the holder of the instrument while enhancing the cash inflow of the lender

6.3.6 Diversifying the source of revenue

Instead of the Botswana and Zambia relying on diamond and copper exports respectively, they should put in policies that encourage economic diversification. Incentives should be offered to all segments of the economy other only the mining sector.

The authorities of these two countries should improve revenue mobilization in all sectors of the economy and also get rid of tax exemptions and expenditures.

6.3.7 Improving market liquidity

There is need for proper marketing of government backed securities (for example bonds) to enhance their demand and the liquidity of the economies. The fees charged on handling of government securities should be reduced. All these strategies reduce country risks by increasing the market liquidity.

Effective and efficient monetary policy complemented by effective fiscal policy should be implemented in Zambia to ensure economic stability.

6.4 Suggestion for future research

Since there is no standard method for assessing country risk there is need to consider other research methodologies (econometric models) to evaluate the effect of macroeconomic variables on country betas of Botswana and Zambia to evaluate whether there will be consistency in findings. Given time and financial resources there is need to explore the potential influence of country risk on international investment portfolios and strategies in emerging markets where limited risk information is the most common phenomenon. There is need to consider a longer scope of the research study with observation which are at least fifty, moreover, a member of SADC states, for example, South Africa risk act as standard against which the other countries in SADC gauges their risk with. This is because South Africa is considered as the only developed state in the SADC region.

References

Abassi, B. and Taffler, R.J. (1982). Country Risk: A Model of Economic Performance Related to Debt Servicing Capacity. *City University Business School (London), Working Paper No.36.*

Abdul-Mumuni, A. and Quaidoo, C. (2016). Effect of International Remittances on Inflation in Ghana Using the Bounds Testing Approach. *Business and Economic Research, 6(1),* 192-209.

Acheampong, P and Swanzy, S.K (2015). Empirical Test of Single Factor and Multi-Factor Asset Pricing Models: Evidence from Non-Financial Firms on the Ghana Stock Exchange (GSE). *International Journal of Economics and Finance,* 8(1), 99-110.

Acar, R. (2020). Monetary model of exchange rate for Argentina: ARDL approach, *A dissertation/thesis submitted in partial fulfilment of the requirements for the degree in Masters of Applied Economics*, Washington State University

Adler, M., and Dumas, B. (1983). International Portfolio Choice and Corporation Finance: A synthesis. *Journal of Finance*, 38(3), 925-984.

AfDB, OECD and UNDP. (2015). Africa economic outlook: Botswana

African Economic Outlook (AEO) (2019). Zambia Economic Outlook, African Development Bank Group.

African Economic Outlook (AEO) (2018). Botswana Economic Outlook, African Development Bank Group.

Almahmoud, A.I. (2014). Country Risk Ratings and Stock Market Movements: Evidence from emerging economy. *International Journal of Economics and Finance,* 6(10), 88-96.

Andrade, J. P and Teles, V. K. (2004). An Empirical Model of the Brazilian county risk - An extension of the Beta Country Risk Model. *Applied Economics*, 38(11), 1271-1278.

Andrade, J. P and Teles, V. K. (2007). Monetary Policy and Country Risk. *Journal of Applied economic,* forthcoming (2007).

Arouri, M.E., Jawadi, F. and Nguyen, D. (2010). The dynamics of emerging stock markets: Empirical assessments and implications. *Springer Heidelberg Dordrecht*, London.

Arora, V. and Cerisola, M. (2001). How does US monetary policy influence sovereign spreads in emerging markets? *IMF Staff Papers*, Washington, 474–98.

Asiri B. K. and Buhail, R. A. (2014). An empirical analysis of country risk ratings. *Journal of Business Studies Quarterly*, 5(4), 52-67.

Atkinson, R and Flint, I. (2001). *Accessing hidden and hard-to-reach populations: Snowball research strategies,* Social Research Update. University of Surrey

Avila, J.C. (2010). A Country-Risk Approach to the Business Cycle: With an application to Argentina, *Universidad del CEMA,* Argentina.

Azeng, T.F. and Thierry, U.G. (2015). *Youth unemployment, education and political instability: evidence from selected developing countries 1991-2009*. Households in Conflict Network (HiCN) Working Paper 200. Brighton: The Institute of Development Studies.

Banda, A. (2013). The effect of foreign direct investment on the host country economic growth: Zambia's economic outlook after trade liberalization, *Analytical paper submitted to TRAPCA in partial fulfilment of the requirement for the award of certificate in international trade and development*.

Bank of Botswana (2019), retrieved from www.bankofbotswana.bw .

Bank of Zambia (2013) retrieved from www.boz.co.zm.

Bank of Zambia (2019), retrieved from www.boz.co.zm .

Bacon-Shone, J. H. (2013). *Introduction to Quantitative Research Methods*. Hong Kong: Graduate School, The University of Hong Kong.

Ben Jebli, M. (2016). On the causal links between health indicator, output, combustible renewables and waste consumption, rail transport, and CO2 emissions: the case of Tunisia. *Environmental Science and Pollution Research, 23(16),* 16699-16715.

Bundoo, S. K. (2008). An augmented Fama and French three-factor model: new evidence from an emerging stock market. *Applied Economics Letters, 15(15),* 1213-1218.

Basu, S., Deepthi, D. and Reddy, J. (2011). *Country Risk Analysis in Emerging Markets: The Indian Example*, Working Paper No. 326, Indian Institute of Management Bangalore.

Batool, K.A., and Rehab, A.H. (2014). An Empirical Analysis of Country Risk Ratings. *Journal of Business Studies Quarterly, 5*(4), 1-17.

Bekaert, G., and Harvey, C.R. (1995). Time-varying world market integration. *Journal of Finance*, 50, 430-44.

Bilson, C. M., Brailsford, T. J., and Hooper, V. J. (2001). Selecting Macroeconomic Variables as Explanatory Factors of Emerging Stock Market Returns. *Pacific-Basin Finance Journal*, 9(4), 401–426.

Black, Philip A, Calitz, Estian, Steenekamp, Tjaart J and associates. (1999). *Public Economics for South African Students*, Cape Town: Oxford University Press.

Blanchard, O. (2004). *Fiscal dominance and inflation targeting: lessons from Brazil*, NBER Working Paper, No 10389.

Blommestein, H. J., Guzzo,V and Holland, A. (2010). Debt Markets in the Post-Crisis Landscape, *OECD Journal: Financial Market Trends*, 1, 1 -27.

Blommestein, H. J. and Turner, P. (2012). The Debate over sovereign risk, safe assets, and the risk-free rate: What are the implications for sovereign issuers? *Ekonomi-tek Volume / Cilt*, 1(3), 55-70.

Bracker, K. and Koch, P. D. (1999). Economic determinants of the correlation structure across international equity markets. *Journal of Economics and Business*, 51, 443– 471.

Brewer, T., and Rivoli, P. (1990). Politics and perceived country creditworthiness in international banking. *Journal of Money, Credit and Banking*, 22, 357-369.

Brewer, T. L., and Rivoli, P. (1997). Political instability and country risk. *Global Finance Journal, 8(2), 309-321*.

Brigham, E. F and Ehrhardt, M.C. (2008). *Financial Management: Theory and Practice*, 12th ed., Thomson Higher Education USA.

Brigham, E. F and Ehrhardt, M.C. (2011). *Financial Management: Theory and Practice*, 13th ed., Thomson Higher Education USA.

Brigham, E.F., Gapenski, L.C.and Ehrhardt, M.C. (1999). *Financial Management: Theory and Practice*, 9th ed., Harcourt Brace College, San Diego, CA.

Bodie, Z., Kane, A. and Marcus, A. J. (2010). *Essentials of Investment* (8th ed.). New York: McGraw Hill/Irwin.

Bouchet, M.H., Clark, E. and Groslambert, L. (2003). *Country Risk Assessment: A Guide to Global Investment Strategy*. Chichester: John Wiley and Sons.

Bouchet, M.H., Fishkin,C.A and Goguel, A. (2018). *Managing Country Risk in an Age of Globalization: A practical guide to overcoming challenges in complex world*, Palgrave Macmillan.

Burton, F. N. and Inoue, H. (1985). An Appraisal of the Early-Warning Indicators of Sovereign Loan Default in Country Risk Evaluation Systems. *Management International Review*, 25 (1), 45-56.

Calvo, G. A., Leiderman, L. and Reinhart, C. M. (1993). Capital flows and real exchange rate appreciation in Latin America: The role of external factors. Staff Papers 40, International Monetary Fund, Washington, DC.

Calvo, G. A. (2002). Globalization Hazard and Delayed Reform in Emerging Markets. *Economia*, 2 (2), 1-29.

Calvo, G. A. (2005). Crises in emerging market economies: A global perspective. *National Bureau of Economic Research*.

Cavalheiro. E.A., Vieira, K.M., and Costa.C. (2015), Brazilian Sovereign risk determinants: An analysis on the post-real plan period, Corporate Ownership & Control, 13(1), 583-595.

Central Statistical Office (CSO) Botswana (2014). Statistical Data

Central Statistical Office (CSO) Zambia (2012). Statistical Data

Central Statistical Office (CSO) Zambia (2018). Statistical Data

Chen, N.F., R. Roll, and S.A. Ross. (1986). Economic forces and the stock market. *Journal of Business* 59, 383-403.

Chopra, P.K.(2010). Country matters. Country risk measurement by causal pathways. *This paper was delivered on the 26th of November 2010 at the conference organised by the Institute for International Economics/ Chamber of Commerce and Economia Internazionale, at Genova Italy.*

Chopra, P.K. (2015). Country Risk: A Theoretical and Empirical Analysis with Special Reference to Northern African Economies - Il rischio paese: un'analisi teorica e empirica con particolare riferimento ai paesi del Nord, *Economia Internazionale / International Economics, Camera di Commercio Industria Artigianato Agricoltura di Genova*, 68(1), 81-137.

Choong, C., Yusop, Z., Law, S., and Liew, V. K. (2005). Financial development and economic growth in Malaysia: The perspective of stock market. *Journal of Investment Management and Financial Innovations*, 4, 105-115.

Citron, J. T and Nicklesburg, G. (1987), Country risk and political instability. *Journal of Developmental Economics*, 25, 385-392.

Clark, E and Marois, B. (1996), *Managing risk in international business: Techniques and applications. London*: International Thomson Business Press.

Cline, W. (1984). *International Debt: Systemic Risk and Policy Response*. Institute of International Economics: Washington, DC.

Coccia, M. (2007). A new taxonomy of country performance and risk based on economic and technological indicators. *Journal of Applied Economics,* 10(1), 29-42.

Cohen, S.I. (2001).Stock performance of emerging markets. *The developing economies, XXXIX-2*, 168-188

Comptroller's Handbook (2016). *Country Risk Management Version 1.0*, Office of the Comptroller of the Currency, Washington, D.C 20219

Crain, A. (2010). The resource case: A case of Botswana and Zambia. *A Thesis presented to the Faculty of the University of Denver and the Josef Korbel School of International Studies in partial fulfillment of the requirements for the Degree Master of Arts International Studies.*

Crowther, D. and Sefi, S., 2010. *Corporate Governance & Risk Management*. Shahla Seifi & Ventus Publishing Aps.

Damodaran, A. (2003). Country risk and company exposure: theory and practice. *Journal of Applied Finance*, 64-76.

Damodaran, A. (2011). *Equity Risk Premium (ERM). Determinants, Estimation and Implications- The 2011 Edition.*

Damodaran, A. (2012). *Equity Risk Premiums (ERP): Determinants, Estimation and Implications*. Stern School of Business.

Davidson, R. and Mackinnon, J. G. (2004). *Econometric theory and methods*, Oxford University press, New York.

Development Policy Research Unit (2000). What are the major trends and determinants of foreign direct investment in SADC countries? *DPRU Policy Brief No. 00/P2 July 2000. Industrial Project Strategy. Regional Integration Economic Cooperation in Southern Africa*, University of Cape Town.

Diamonte, R., Liew, J., Stevens, R. (1996). Political risk in emerging and developed markets. *Financial Analysts Journal* May-June:71-76.

Dooley, D., Fielding, J. and Levi, L. (1996), Health and unemployment. *Annual Review of Public Health*, 17, 449-465.

Dumas, B. (1994). A test of the international CAPM using business cycle indicators as instrumental variables. *In The Internationalization of Equity Markets* (J. Frankel, ed.). Chicago: University of Chicago Press, pp. 23–50.

Ely, D.P., and K.J. Robinson, 1997, Are stocks a hedge against inflation? International evidence using a long-run approach. *Journal of International Money and Finance* 16, 141-167.

Erb C., Harvey, C., Viskanta, T. (1994). Forecasting international equity correlations. *Financial Analysts Journal* November- December:32-45.

Erb, C. B., Harvey, C and Viskanta, T. (1996a), Political risk, economic risk and financial risk. *Financial Analysts Journal*, 52, 28-46.

Erb, C. B., Harvey, C and Viskanta, T. E. (1996b), Expected returns and volatility in 135 countries. *Journal of Portfolio Management Spring*, 46-58.

Erramilli, M.K. and Rao, C.P. (1993). Service firms' international entry-mode choice: A modified transaction-cost analysis approach. *Journal of Marketing*, 57(3), 19-38.

Esch, L. Keiffer, R and Lopez, T. (2005). *Asset and Risk Management: Risk Oriented Finance. John Wiley & Sons Ltd, United Kingdom.*

Fair, R.C. and Shiller, R.J. (1990). Comparing information in forecasts from econometric models, The American Economic Review, 80 (3), 375-89.

Fama, E. F. and French, K. R. (2015). A five-factor asset pricing model. *Journal of Financial Economics*, 116(1), 1-22.

Fama, E. F. and French, K. R. (2004). The Capital Asset Pricing Model: Theory and Evidence. *Journal of Economic Perspectives*, 18(3), 25-46.

Fama, E. (1970). Efficient capital markets: a review of theory and empirical work. *Journal of Finance,* 25, 383-417.

Fama, E. and French, K. (1996). Multifactor Explanations of Asset Pricing Anomalies. *Journal of Finance, 51*(1), 55-84.

Fama, E. F. and French, K. R. (1989). Business conditions and expected returns on stocks and bonds. *Journal of Financial Economics*, 25(1), 23- 48.

Favero, C and Giavazzi, F.(2003) Targeting inflation when debt and risk premia are high: lessons from Brazil, *mimeo*, MIT.

Feder G and Uy V.U. (1985). The determinants of international standards creditworthiness and their policy implications. *Journal of policy modelling,* 7 (1), 133-156.

Feder**,** G and Just**,** R E**. (**1977). An analysis of credit terms in the Eurodollar market. *European Economic Review, Elsevier*, 9(2), 221-243.

Fernández,V.C and Fernández, J.T.(2018). The long run impact of foreign direct investment, exports, imports and GDP: evidence for Spain from an ARDL approach. *EHES Working Paper in Economic History No*. 128.

Ferreira, A. L. (2010). The determinants of default risk in Brazil. *Applied Economics Letters* 17(17), 1703-1708.

Ferri, G., Lui, G. and Stiglitz, J.E. (1999). The Procyclical Role of Rating Agencies: Evidence from the East Asian Crisis. *Economic Notes by Banca Monte dei Paschi di Siena Spa*, 28(3), 335--55.

Ferson, W., and C.R Harvey. (1991). The variation of economic risk premiums. *Journal of Political Economy*, 99, 385-415.

Fiess, N. (2003). Capital Flows, Country Risk and Contagion. Policy Research. *Working Paper 2943*, The World Bank.

Frank, C. R. and Cline,W.R. (1971). Measurement of debt servicing capacity: An application of discriminant analysis. *Journal of International Economics,* 1(3), 327-344.

Fraser, A. (2007). Zambia: Back to future? Global Economic Governance Working Paper 2007/30. University of Oxford.

Friend, I. and Bicksler, J. L. (1977). *Risk and return in Finance.* Ballinger Publishing Company, Cambridge.

GAN Business Anti-corruption report for Botswana, 2016.

GAN Business Anti-corruption report for Zambia, 2017.

Gangemi, M.A.M., Brooks, R.D & Faff, R.W. (2000), Modeling Australia's country risk: A country beta approach. *Journal of Economics and Business,* 52, 259-276.

Garcia, M.; Brand˜ao, T. (2001) Taxas de juros, risco cambial e risco Brasil. *XXIX ENCONTRO NACIONAL DE ECONOMIA*, Salvador. Anais. ANPEC.

Garcia- Herrero, A., and Ortiz, A. (2005). The role of global risk aversion in explaining Latin American sovereign spreads. *Banco de Espana Documento de Trabajo No. 0505*.

Georgescu, G. (2007). Current account deficits and implications on country risk of Romania. *Romanian Journal of Economic Forecasting*, 4(6), 88-96.

Goldberg, C.S. and Veitch, J.M. (2002). Country Risk and the Country Contagion Effect. *Journal of Management Research*, 2(1), 13-21.

Goldberg, C.S. and Veitch, J.M. (2010). Country risk and financial integration - A case study of South Africa. *Research in International Business and Finance*, *Elsevier*, 24(2), 138-145.

Groenewold, N. and Fraser, P. (1997). Share prices and macroeconomic factors. *Journal of Business Finance and Accounting*, 24, 1367-1383.

Grauer, F., Litzenberger, R and Stehle, R. (1976a).Sharing rule and equilibrium in international markets and uncertainty. *Journal of Financial Economics,* 3(3), 233-256.

Guardia, E.R. (2004). As razoes do ajuste fiscal. In Giambiagi, F, Reis, J.G., and Urani, A.,editors, Reformas No Brasil: Balanco e Agenda, pages 106-126. Nova Fronteira,Rio de Janeiro.

Gujarat,D.(2012). *Econometrics by Example*. Palgrave Macmillan, UK

Haendel D., West G.T and Meadow R. G. 1975. *Overseas Investment and Political Risk*. Philadelphia: Foreign Policy Research Institute Monograph Series, No. 21.

Harberger, A. (1976). *Project Evaluation: Collected papers*. Chicago: UCP Midway Reprint

Harvey, C.R. (1995a). The risk exposure of emerging equity markets. *The World Bank Economic Review*, 9, 19-50.

Harvey, C.R. (1995b). Predictable risk and return in emerging markets. *Review of Financial Studies*, 8, 773-816.

Harvey, C. R. and G. Zhou. (1993). International asset pricing with alternative distributional specifications. *Journal of Empirical Finance*, 1, 107-131.

Harvey, C and Lewis, S. (1990). *Policy Choice and Development Performance in Botswana*, MacMillan Press Ltd,. Basingstock, Hampshire.

Harvey, C.R.(2004). *Country risk components, the cost of capital and returns in emerging markets*.

Hill, A.R. (2010). *Portfolio Theory & Financial Analyses*. Robert Alan Hill & Ventus Publishing ApS.

Hileman, G. (2012), The seven mechanisms for achieving sovereign debt sustainability, *Working Papers No. 162/12*, London School of Economics, London.

Honde, G.j. (2018). African Economic Outlook Country Note of Botswana, *Africa Development Bank Group*.

Hope, K.R. (1989). Private Direct Investment and Development Policy in the Caribbean: Nationalism and Nationalization Scared Away Foreign Investors but Reagan Initiative's Luring Them. *The American Journal of Economics and Sociology*, Vol. 48, No. 1 pp. 69-78

Hoti,S.(2005). Modelling country spillover effects in country risk ratings. *Elsevier Emerging Markets Review, 6, 324-345*.

Howe, K. and Moses, M. (1999). Ethics in educational research. *Review of Research in Education*, 24, 21-60.

International Monetary Fund (1993), *Balance of Payments Manual 5th Edition*, Washington DC.

International Monetary Fund. (2012), Staff Report for the 2012 Article IV Consultation-Debt Sustainability Analysis Zambia, Supplement of IMF Country Report No. 12/200; May 24, 2012.

International Monetary Fund (2015).Sixth edition of the Balance of Payments and International Investment Position Manual (BPM6), paragraph 6.54)

International Monetary Fund (2018), Article IV Consultation-Press release; Staff report; and Statement by the Executive Director for Botswana, *IMF Country Report* No. 18/268.

International Monetary Fund. (2019), Article IV Consultation-Press release; Staff report; and Statement by the Executive Director for Zambia, *IMF Country Report* No. 19/263.

Jack, C.F. and Dongcheol, K. (2013). *Modern portfolio theory: Foundations, Analysis, and New Developments +websites*, John Wiley& sons, Inc., Hoboken, New Jersey.

Jeon, B.M. (2001). Macroeconomic influences on country risk. *Working paper*, Rice University.

Jorian, P. (1991). The pricing of exchange rate risk in the stock market. *Journal of Financial and Quantitative Analysis* 26, 363-376.

Jubilee-Zambia and ACTSA. (2001). On the front line: Zambia indebted for her anti-apartheid stance. London: ACTSA.

Kamin, S., and Von Kleist, K. (1999). The evolution and determinants of emerging markets credit spreads in the 1990s.

Kamin, S.B. (2002). Identifying the role of moral hazard in international financial markets, *International Financial Discussion paper no. 736* (Washington:Federal Reserve Board).

Kapuya,T., Kalaba, M.W and Mapila, M.A.T.J. (2012). Country Analysis - Zambia. The Joint Agribusiness Department of Agriculture Forum for Africa (JADAFA) and the Agriculture Business Chamber (ABC).

Kariuki, P., Abraha. F and Obuseng, S. (2014). 2014 African Economic Outlook: Botswana, African Development Bank, Organization for Economic Cooperation and Development & UN Development Programme.

Kennedy, C. (1988): Political Risk Management: A Portfolio Planning Model. *Business Horizons*, 31, 26-33.

Kim, Y. (2000). Causes of Capital Flows in Developing Countries. *Journal of International Money and Finance*, 19(2), 235–253.

Krayenbuehl, T. E. (1985). *Country Risk: Assessment and Monitoring*. Cambridge: Woodhead-Faulkner.

Kumar, S. (2010). Determinants of Real Exchange Rate in India: An ARDL Approach. *Reserve Bank of India Occasional Papers*, 30(1), 33-64.

Kwon, C.S., and T.S. Shin. (1999). Cointegration causality between macroeconomic variables and stock market returns. *Global Finance Journal*, 10, 71-81.

Lee, C. C., Chiu, Y. B., and Chang, C. H. (2013). Insurance demand and country risks: A nonlinear panel data analysis. *Journal of International Money and Finance, 36*, 68-85.

Lee, C.-C., and Lee, C.-C. (2016). The Impact of Country Risk on Income Inequality: A Multilevel Analysis. *Social Indicators Research, 136(1),* 139-162.

Leith, J.C. (1997). *Growth and Structural Transformation in Botswana*, in Salkin, J.S. et al. (eds). Aspects of the Botswana Economy: Selected Papers, Curry, Oxford.

Lintner, J. (1965). The valuation of risky assets and the selection of risky investments in stock portfolios and capital budgets. *Review of Economics and Statistics*, 47, 13-37.

Mallik, G and Mallik, A. (2018). *Searching for alpha consistence in emerging market equities*. State Street Global Advisers Worldwide Entities.

Mahembe, E and Odhiambo, N. M. (2013). The dynamics of foreign direct investment in SADC countries: Experiences from five middle-income economies. *Problems and Perspectives in Management*, 11(4), 35-45.

Maipose, G. S. (2008). *Institutional Dynamics of Sustained Rapid Economic Growth with Limited Impact on Poverty Reduction*, Draft, United Nations Research Institute for Social Development.

Makoni, L. R. (2015). Foreign Direct Investment - the case of Botswana. *ACTA UNIVERSITATIS DANUBIUS*, 11(4), 160-173.

Management of Bank's International Lending (March 1982). *Country Risk Analysis and Country Exposure Measurement and Control.*

Maravi (2007). Political stability and economic growth in Zambia accessed on 13/08/15 on http://maravi.blogspot.com/2007/03/political-stability-and-economic-growth.html.

Mbao, M. L. M. (2011). Prevention and combating of corruption in Zambia. *The Comparative and International Law Journal of Southern Africa*, 44(2), 255-274.

McMorrow, K. 1998. *Is there a stable money demand equation at the Community level? Evidence using a cointegration analysis approach, for the Euro-zone countries and for the Community as a whole 131 European Commission* - Economic Papers

Mcqueen, G., and V. Roley. (1993). Stock prices, news and business conditions. Review of Financial Studies 6, 683-707

Meldrum, D. H. (2000). Country Risk and Foreign Direct Investment. *Business Economics*, 35, 33-40.

Mihai, N., and Cristina, S. M. (2015). Theoretical Aspects of Risk in CAPM Theory. *Romanian Economic and Business Review, Romanian-American University*, *10*(2), 60-70.

Mohr, P and Louis, F. (2000). *Economics for South African students*, 2nd ed., Van Schaik Publishers, Pretoria, South Africa.

Montes, G.C. and Tiberto, B. P. (2012). Macroeconomic environment, country risk and stock market performance: Evidence for Brazil. *Journal of Economic Modeling*, 29(5), 1666-1678.

Muhammad, A., Sri. M, Fitri. I and and Rudi, P. (2015). Country Risk Modeling in Indonesia: An Empirical study. *Asian Journal of Finance & Accounting, 7(1),*155-171.

Muyambiri, B and Odhiambo, N. M. (2017). The impact of Financial Development on Investments in Botswana: An ARDL Bounds Testing Approach. *Economia Internazionale / International Economics, 70(2),* 193-216

Muwando. S. and Gumbo,V. (2013). A Country Beta Model for Zimbabwe: *The Pioneer Journal of Theoretical and Applied Statistics*, 6 (1), 25-41.

Nath, H. K. (2008). Country Risk Analysis: A Survey of the Quantitative Methods. *SHSU Economics and International Business Working Paper No. SHSU_ECO_WP08-04.*

Naumoski, A (2012). Estimating country risk premium in emerging markets: The case of Republic of Macedonia. *Financial Theory and Practice*, 36 (4), 413-434.

Narayan, P.K. (2005), The saving and investment nexus for China: Evidence from cointegration tests. *Applied Economics*, 37(17), 1979-1990.

Neuman, L.W. (2011). *Social Research Methods: Qualitative and Quantitative approaches, 7th Ed*, Pearson Education, Inc.

Nieh, C.C. and Wang, Y.S. (2005). ARDL Approach to the Exchange Rate Overshooting in Taiwan. *Review of Quantitative Finance and Accounting, 25(1)*, 55–71.

Nkoro, E. and Uko, A.K. (2016). Autoregressive Distributed Lag (ARDL) cointegration technique: application and interpretation, *Journal of Statistical and Econometric Methods, 5(4)*, 63-91.

Nigh, D. (1985). The effects of political events on United States direct foreign investment. *Journal of International Business Studies*, 16(1), 1-17.

Ofstad, A and Tjønneland, E. (2019). Zambia's looming debt crisis- is China to blame? Chr. Michelsen Institute Insight number 1.

Oetzel. J, Bettis,M and Richards A. (2001). Country risk measures: How risky are they? *Journal of World Business*, 36, 128-145.

Oks, D. & Padilla, G. G. (2000). Determinants del riesgo pa´ıs en Argentina, durante 1994-99. El rol de la liquidez sist´emica, factores de contagio e incertidumbre pol´ıtica. Asociac´ıon Argentina de Econom´ıa Pol´ıtica (AAEP), nota 1517.

Okwuchukwu, O and Ikenna, J. E (2014). Econometric Analysis on the Impact of Capital Market Performance on the Nigerian Economy. *International Journal of Financial Economics, Research Academy of Social Sciences,* 2(4), 181-190.

Oteng-Abayie E. F and Frimpong J.M. (2006). Bounds Testing Approach to Cointegration: An Examination of Foreign Direct Investment Trade and Growth Relationships. *American Journal of Applied Sciences, 3 (11):* 2079-2085.

Organisation for Economic Cooperation and Development (OECD), (1996). Benchmark Definition of Foreign Direct Investment, 3rd Edition, Paris.

Page,S and Velde, D.W. (2004). Foreign Direct Investment by African Countries, *Draft, Papers prepared for InWent / UNCTAD meeting on FDI in Africa 22-24 November 2004*, UNECA, Addis Ababa.

Pesaran, M. H., and Pesaran, B. (2009). *Time Series Econometrics Using Microfit 5.0*. New York: Oxford University Press.

Pesaran, M. H., Shin, Y. and Smith, R. J. (2001). Bounds Testing Approaches to the Analysis of Level Relationships. *Journal of Applied Econometrics*, 16(3), 289–326.

Pesaran, M. H., and Smith, R. J. (1995). Estimating long run relationship from dynamic heterogeneous panels. *Journal of Econometrics*, 68, 79-113.

Pongo,.S. A., Bybee,A. N., and Burchard,S. M. (2012). *Commercial Perspectives on Political Risk in Sub-Saharan Africa. INSTITUTE FOR DEFENSE ANALYSES (IDA)* Document D-4841.

Roll, R. (1988), ‘‘The international crash of October 1987’’, Financial Analysts Journal, September/ October, pp. 19-35.

Rodrigues, N.D (2016). Country risk in foreign direct investment: Similarities and differences with country risks in exports. *Mediterranean Perspectives*.49

Ross, S. A (1976). The Arbitrage Theory of Capital Asset Pricing. *Journal of Economic Theory*, (1)3, 341–360.

Rousseau, C., Rufagari, M.-C., Bagilishya, D., & Measham, T. (2004). Remaking family life: strategies for re-establishing continuity among Congolese refugees during the family reunification process. *Social Sciences & Medicine, 59*, 1095-1108.

Rozada, G.M. and Yeyati E. L.(2008). Global Factors and Emerging Market Spreads. *The Economic Journal*, 118(533), 1917-1936.

Rugman, A. M., Hodgetts, R.M (deceased) & Collinson, S. (2006), *International business, 4th Edition*. New York: Prentice Hall, McGraw-Hill, Inc.

Saadi, R. (2011). *How does political instability affect market risk and the risk premium in Israel? Master's Thesis*, UMEA Universitet.

SADC Statistics (2014). Zambian Data. Retrieved from https://www.sadc.int/information-services/sadc-statistics.

SADC Statistics (2014). Botswana Data. Retrieved from https://www.sadc.int/information-services/sadc-statistics.

Saini, G. K. and Bates, P. S. (1984). A Survey of the Quantitative Approaches to Country Risk Analysis. *Journal of Banking and Finance*, 341-356.

San-Martín-Albizuri, N. and Rodríguez-Castellanos, A. (2018). *Measuring Country Risk: A Topic of interest*, Chapter 5, 81-98.

San-Martín-Albizuri, N. and Rodríguez-Castellanos, A. (2015). Country risk index and sovereign ratings: do they foresee financial crises? Journal of Risk Model Validation, 9(1), 33-55

Sassa, O and Jerker, C. (2002). *Aid and Poverty Reduction in Zambia: Mission Unaccomplished*. Uppsala: The Nordic African Institute.

Saungweme,T and Odhiambo, N.M. (2019). Government debt, government debt service and economic growth nexus in Zambia: a multivariate analysis. *Cogent Economics and Finance , (7)1*, 1-17.

Sercu, P. (1980). A generalization on the international asset pricing model. *Journal of finance, 1(1)*, 91-135.

Serra, A.P. (2000). Country and industry factors in returns: evidence from emerging markets' stocks. *Emerging Markets Review*, 1, 127-151.

Sharpe, W.F. (1964). Capital asset prices: A theory of market equilibrium under conditions of risk. *Journal of Finance*, 19(3), 725-742.

Shapiro, A. (1999). *Multinational Financial Management*, 6th edition, Prentice Hall: London, UK.

Stampini, M and Chouchane, A.V. (2011). Labour Market Dynamics in Tunisia: The Issue of Youth Unemployment, *African Development Bank Group, Working Paper No. 123*.

Solnik, B. H. (1974). An equilibrium model of the international capital market. *Journal of Economic Theory*, 8(4), 500-524.

Sigman, K.(2005). *Capital Asset Pricing Model (CAPM).* http://www.columbia.edu/~ks20/FE-Notes/4700-07-Notes-CAPM.pdf accessed on 20 October 2016.

Teixeira, M. F., Klotzle, M.C., and Ness, W.L. (2008). Determinant Factor of Brazilian Country Risk: An Empirical Analysis of Specific Country Risk. *Revista Brasileira de Financas*, 6(1), 49-67.

Timurlenk, O and Kaptan, K. (2012). Country Risk. Procedia - Social and Behavioural Sciences, 62, 1089-1094.

Toma, S.V., Chirita, M. and Sapre, D.A. (2010), Country risk analysis: political and economic factors, *University "Dunarea de Jos" of Galati*, Romania.

Tourani-Rad, A., Choi, D.F.S and Wilson, B.J. (2006). A time-varying beta approach to measuring New Zealand's country risk. *Journal of managerial finance*, 32 (3), 257-269.

Transparency International (2011). *Corruption Perceptions Index 2011*.

Transparency International (2019). International ranking of Botswana and Zambia in terms of corruption.

UNCTAD (2006). Investment Policy Review Zambia. United Nations Conference on Trade and Development, *UNCTAD/ITE/IPC/2006/14*.

UNCTAD (2013a). World Investment Report- Global value chains: Investment and trade for development, *United Nations*, New York and Geneva.

United Nations Development Programme (UNDP). (2013). The Rise of the South**:** Human Progress in a Diverse World. Explanatory note on *2013, Human Development Report* composite indices Zambia.

United Nations Development Programme (UNDP) (2015b). *Human development Report 2015: Technical note.*

United Nations Development Programme (UNDP). (2014). *Human development Report for Zambia, 2015*.

Verbenik, M., Horvath. J. and Gazda, V. (2011). Country risk in the New EU member states: A Country Beta Approach. *International Research Journal of Finance and Economics*, *10(80*), 148-157.

Verma. R and .Soydemir, G. (2006). Modelling country risk in Latin America: A country beta approach. *Global Finance Journal,* 17, 192-213.

Verma, R and Verma P. (2014). Country Risk and Macroeconomic Factors: Evidence from Asian Markets. *Journal of Applied Business and Economics*, 16(5), 51-62.

Vij, M. (2005). The determinants of country risk analysis: An empirical approach. *University of Delhi, 5 (1),* 20-31.

Vijayakumar. J., Rasheed. A. A and Tondkar. R. (2009). Foreign direct investment and evaluation of country risk: An empirical investigation. *Multinational Business Review*, Vol 17(3).

Wade T. J. and Pevalin D. J. (2004). Marital transitions and mental health. *Journal of Health and Social Behavior,* 45 (2), 155-170.

Watson, D. and Head, A. (2016). *Corporate Finance: Principles and Practice*, 7th edition, Pearson Education Limited, Harlow, 258-259.

Wdowinski, P. (2004). Determinants of Country Beta Risk in Poland, University of Lodz: *CESifo (Center for Economic Studies and Ifo Institute for Economic Research). CESifo Working Paper Series No. 1120*.

World Bank (2019). The World Bank in Zambia. Last Updated: Oct 13, 2019.

World Bank (2019). The World Bank in Botswana. Last Updated: Oct 13, 2019.

World Bank. (2019). World Development indicators. Washington, DC – USA: World Bank Databank

World Bank (2013). Zambia at a Glance.

World Bank (2011). Zambian FDI inflows from 2001 to 2009.

World Organization against Torture (OCMT), Geneva (2001). Zambia: Violations of Economic, Social and Cultural Rights, Violence and the Protection against Torture. *Report on the Implementation of the Convention Against Torture by Zambia*.

http://www.eulerhermes.com/en/press/press_20090112_00100060.html

Wyk, J.V. and Lal, A.K. (2008). Risk and FDI inflows to developing countries. *South African Journal of Economic and Management Science*, 11(4), 511-529.

Yang. L., Tapon, F. and Yiguo, S. (2006). International correlation across stock markets and industries: Trends and patterns 1988- 2002. *Applied Financial Economics*, 16(16), 1171-1183.

Yezi consulting and associates (2013). *Political governance study in Zambia*. A study commissioned by Diakonia, Zambia.

Yim,J. and Mitchell, H. (2005). Comparison of country risk models: Hybrid Neural Networks, Logit models, Discriminant analysis, and Cluster Techniques, *Expert Systems with applications*, 28(1), 137-148.

Zimmerman, D. W. (1998). Invalidation of parametric and nonparametric statistical tests by concurrent violation of two assumptions. *Journal of Experimental Education*, 67, 55-68.

APPENDIX A: ESTIMATED ANNUAL COUNTRY BETAS

Year	Botswana	Zambia
1994	1.7563	1.7121
1995	0.8578	0.8122
1996	-0.1074	-0.1710
1997	1.6233	1.3823
1998	-0.1258	-0.2774
1999	-0.4527	-0.7350
2000	0.0513	0.03500
2001	-0.1425	-0.1641
2002	0.1707	-0.1185
2003	0.1598	-0.3588
2004	-0.2252	0.3790
2005	-0.0509	0.3472
2006	1.0809	0.8010
2007	0.0707	0.6121
2008	-0.3618	-0.0830
2009	0.2014	0.1313
2010	-0.0766	0.2675
2011	-0.0321	0.2663
2012	-0.0595	-0.6530
2013	0.4283	0.1200
2014	-0.3925	-0.2383
2015	0.1180	0.0610
2016	-0.0017	0.1960
2017	-1.3564	0.2300
2018	-0.0314	-0.4131

APPENDIX B: INTERVIEW GUIDE

Topic: Country risk modelling: A comparative study of Botswana and Zambia Economies (1994-2018).

[The interviewee/Interviewer ticks in the appropriate box/ writes in the space provided]

SECTION A: DEMOGRAPHIC INFORMATION

1. Name of the company ……..……
2. Position ……..……..……
3. What qualification/s do you hold?.....
4. Years of experience…….…….

SECTION B

1. What do you think are the determinants of country risk in your country?

☐ Per capita GDP	☐ GDP Deflator
☐ External debt balance	☐ Current account balance
☐ Weighted short term interest rates	☐ Unemployment rate
☐ Political risk	☐ Other (please specify) _____

2. Which one is the most significant variable in (1) above?.....
.....

3. Justify why the answer chosen above is the most significant determinant of country risk?.....
.....
.....
.....
.....

4. What is the expected relationship between country risk and its independent socio-economic, financial and political factors given below?

Independent Variable	**Expected relationship between country risk and the given independent variable**	**Agree**	**Disagree**
Per Capita GDP	Negative		
GDP deflator	Positive		
External debt balance	Positive		
Current account balance	Surplus–Negative, deficit-positive		
Weighted short-term interest rates	Either Positive or Negative		
Unemployment rate	Positive		
Political risk	Positive		

5. Do you think country risk is diversifiable?
.....
.....
.....
.....

6. Do you agree to the assertion that country risk negatively impacts on foreign direct investment (FDI) inflows?

☐ Strongly agree ☐ Agree

☐ Disagree ☐ Strongly disagree

7. Do you agree with the assertion that overally the country of Zambia is riskier than that of Botswana**?**

☐ Strongly agree	☐ Agree
☐ Disagree	☐ Strongly disagree

8. What strategies do you think are necessary to manage country risk?.....
.....
.....
.....
.....
.....
.....
.....