

ON MEASURING COUNTRY RISK: A NEW SYSTEM MODELLING APPROACH

1. INTRODUCTION: COUNTRY MATTERS

The history of mankind is the history of equations of risk and return¹. The risk-return trade-off continued to ravage humanity and economic activities throughout generations. During the last two centuries, the advent of financial institutions and markets has allowed us to separate physical from economic risk. Knight (1921) shaped the academic usage of the terms *risk* and *uncertainty* by the assertion that the former entails uncertain outcomes of known probabilities, while the latter entails uncertain outcomes of unknown probabilities. Uncertainty is regarded as an extreme situation (Meldrum, 2000). The word risk has definite negative associations and simply means the quantifiable likelihood of loss or less than expected returns. In defining risk, Holton (2004) argued that there are two ingredients that are needed for the existence of risk. The first is uncertainty about the potential outcomes from an experiment and the other is that the outcomes have to matter in terms of providing utility. Risk provides opportunities while exposing us to outcomes that we may not desire or like. Thus, risk is a combination of danger (crisis) and opportunity, representing the downside (negative outcomes) and the upside (positive outcomes) of risk. Businesses and investors, in real world, try to maximise returns (profits) and minimise risks for their investments by taking the right kind of risks that they are better at exploiting in comparison to their competitors. However, there are various factors and situations in investing overseas (country risk) that are beyond the control of investors and should be understood and measured accurately for a specific country.

¹ In ancient history, physical risk and material reward went hand in hand. The risk-taking caveman ended up with food and the risk-averse one starved to death. The advent of shipping and spice trade created a new forum for risk taking for the adventurous and allowed separation of physical from economic risk as wealthy traders bet their money while the poor risked their lives on the ships.

Country risk is a complex multidimensional phenomenon. As a subject of study, it has recently become a topic of major concern for the international community. Since the inception of financial globalisation, international investments both in developed and emerging markets have increased quite considerably. Apart from market risk, these investments are exposed to various other risks such as political, social, location, transfer, operational, etc. The spectacular examples of these risks in different countries are Third World debt crisis in the early 1980s, the implementation of market-oriented economic and financial reforms in Eastern Europe, the economic-financial crisis in the Southeast Asian economies in 1997, Mexican peso crisis in 1994, recent political crisis in Zimbabwe, political climate is not conducive in the MENA region to attract foreign investors without risks (Sekkat and Veganzones-Varoudakis, 2004), Iceland's banking and economic failure in 2008, recent housing market crisis in USA, Europe and UK, etc. Moreover, the profitability of overseas investments of banks, financial institutions and multinational companies has been very badly affected by the 2008-09 severe global economic meltdown and financial turmoil that happened in decades. Country risk through cross-border transactions affects global trade flows, direct investment or portfolio management that has alerted off-shore investors to have more clear understanding of a country's business environment, economic and social conditions and possible political, financial and operating risks before they put their money in the country under question². Such risks have become more difficult to analyse and predict for decision makers in the economic, financial and political sectors.

Be that as it may, the basic objective of this paper is to make a contribution to the literature on macroeconomic country risk by developing and validating a measurement tool to assess country risk which is a multivariate multidimensional indicator that includes cross-sectional different factors and situations. The methodology of the study includes structural equation modelling, a multivariate technique combining aspects of multiple regression and factor analysis, used to estimate simultaneously a series of interrelated interdependent relationships. It is a powerful statistical approach in that it combines the measurement model and the structural

² Iceland was regarded as one of the top ten countries with least risky countries, as per the results of Euromoney Country Risk, March 2008. However, within few months Iceland was on the brink of bankruptcy.

equation model into a simultaneous statistical analysis. It provides parameters' estimates of the direct and indirect association between observed variables and tests how well a model explains covariance in the data. On the basis of different degrees of risk, the authors classify the countries into less risky, medium risky, high risky and extremely risky. The plan of the paper is as follows: section 2 delineates the conceptualisation of country risk and section 3 critically reviews some selected literature on measures of country risk. Section 4 outlines and develops the Kanji-Chopra Country Risk Model (KCCRM), section 5 lays the methodological foundations of KCCRM, section 6 shows the empirical findings of an illustrative example and section 7 concludes.

2. CONCEPTUALISATION OF COUNTRY RISK

Country risk can be conceptualised as the combination of various interconnected and interwoven risks attached to any investment in a foreign country. It is an aggregate based upon weighted scores of a number of risk variables. It is the exposure that a multinational company or a global investor faces as a consequence of an overall systemic, political, economic, financial and operating performance of the country in question and the effect this performance could have on the value of an investment, a project or cash receipts. Thus, it is composed of different dimensions such as political risk, economic risk, financial risk, systemic risk and operating risk. In turn, each dimension of country risk is comprised of multiple factors that are often a combination of subjective evaluations and more objective macroeconomic or financial statistics. For instance, financial factors such as transfer risk, currency controls, devaluation or regulatory changes, or political factors such as frequent government changes, terrorism, mass riots, civil war, etc. and other significant factors contribute to company's investments in a particular country. However, the number of indicators per variable and the weight assigned to each indicator may vary across various country risk products. A country is growing does not mean that the risk of doing overseas business in the country is stable or declining. Country risk relates to the likelihood that changes in the business environment will occur that reduce the profitability of doing business in a country.

In nutshell, country risk comprises likelihood and frequency of occurrence, severity and strength of impact, vulnerability of change

and degree of interdependency among all dimensions, factors or situations of risks associated with any overseas investment that are likely to reduce the expected return of such investment and that must be taken into consideration whenever investing abroad. It varies from one country to the next and some countries have high enough risk to discourage much foreign investment. The higher the risks may result in decline in operating profits or possible losses and adversely affecting the assets prices/values. There are mainly two types of country risk assessments. First, micro-assessment of country risk in which the risk assessment of a country is made with respect to a multinational corporation type of business. Second is the macro-assessment of country risk where the overall risk assessment of a country is made. Thus, country risk is important and relevant to creditors, equity stakeholders, counterparties, portfolio investors and foreign direct investors.

3. COUNTRY RISK MEASURES: A CRITICAL REVIEW

There is a vast literature available on country risk on internet and from other sources (<http://www.countryrisk.com>). Country Risk Measures (CRM) have been developed primarily by entities concerned with assessing the downside risk associated with international lending to governments (sovereign risk) and to multinational firms operating in foreign countries (trade credit) such as international banks and government-affiliated export-import banks. There are multiple sources for risk evaluation for foreign markets such as financial institutions (e.g., World Bank, International Monetary Fund), business consultants (Standard & Poors, JP Morgan), in-house research provided by foreign subsidiaries and distributors, governmental country reports, and inputs from professional trade associations and chambers of commerce. For simplicity CRMs can be put in two groups. The first group includes CRMs coined by international agencies and the second group incorporates the CRMs coined by the individual researchers.

Various international agencies including Moody's, Standard and Poor's, Political Risk Services, International Country Risk Guide, Fitch Ratings (U.S.), Business Monitor International, Control Risk Information Services, Economist Intelligence Unit and the like are engaged in the work of country risk analysis by taking into account economic risk, political risk, financial risk and social risk. These international agencies can be sub-grouped broadly into three.

First, credit rating agencies such as Fitch Ratings (U.S.)³, Moody's (U.S.)⁴, Standard & Poor's (U.S.)⁵, Business Monitor International⁶, D&B Country Risk Services⁷, Institutional Investor, etc. The risk is judged by credit rating assigned to the bond by investment agencies. The ranking of countries or companies is done on the basis of probability of default. The second group of agencies focus primarily on political risk assessment and include organizations such as Eurasia Group, Political Risk Services Group⁸, Economist Intelligence Unit⁹, Business Monitor International, etc. The third group is the mainly sovereign ratings agencies such as International Country Risk Guide, Euromoney, etc. Political risk analysis providers and credit rating agencies use different methodologies to assess and rate countries' comparative risk exposure. Credit rating agencies tend to use quantitative econometric models and focus on financial analysis, whereas political risk providers tend to use qualitative methods, focusing on political analysis. However, there is no consensus on methodology in assessing credit and political risks. While all these international agencies have become popular sources of study of country (company) risks, their ranking of the same country more often than not remains contradictory, hence making them risky (Oetzel *et al.*, 2001). Also these agencies use different and contradictory determinants of ratings (Cosset and Roy, 1991). By definition, country risk is much broader than credit risk or political risk and involves many more range of factors and indicators.

A critical assessment of country risk is essential since it reflects the ability and willingness of a country to service its financial obligations. Clearly the traditional methods for assessing country risk range from the comparative techniques of rating and mapping systems to the analytical techniques of special reports, dynamic segmentation, expert systems, and probability determination to the econometric techniques of model building and discriminant and logit analysis. These techniques, approaches and systems, such as Sovereign ratings, Checklist approach, Delphi technique, Bribe Payer's index, Corruption perceptions index, Opacity index, etc., although useful

³ <http://www.fitchratings.com>.

⁴ <http://www.moody.com>.

⁵ <http://standardpoors.com>.

⁶ <http://businessmonitor.com>.

⁷ <http://www.dnbcountryrisk.com>.

⁸ <http://prsgroup.com>.

⁹ <http://store.eiu.com>.

and extremely popular, might be out-dated, *ad hoc* and do not provide a comprehensive and fuller picture of the national or regional business environment to investors and companies¹⁰. However, these techniques and methods are narrow in approach and suffer from various drawbacks. Unfortunately, little theoretical guidance exists to help quantify political risk, so many 'systems' prove difficult to replicate over time as various socio-political events ascend or decline in importance in the view of the individual analyst.

Different sources for country risk assessment use different determinants and methodologies of the ratings of countries in terms of different risks. Despite some differences, the various country products display remarkably similar processes or steps to arrive at country risk ratings, and the ratings of different agencies are often highly correlated (Erb *et al.*, 1996). For example, Euromoney's country risk is composed of political risk 25%, economic risk 25%, and credit risk 50%. With ICRG, the aggregate score breakdown is political risk 50%, economic risk 25% and financial risk 25%. Euromoney's bi-annual country risk index "Country Risk Survey" monitors the political and economic stability of 185 sovereign countries. Results focus foremost on economics, specifically sovereign default risk and/or payment default risk for exporters, i.e., trade credit risk.

There is a plethora of individual researchers' studies on theoretical and empirical aspects of country risk. Hoti and McAleer (2003) recently reviewed the country risk literature in which 50 empirical papers published in the last two decades were evaluated according to established statistical and econometric criteria used in estimation, evaluation and forecasting. Such an evaluation permitted a critical assessment of the relevance and practicality of the economic, financial and political theories pertaining to country risk in general. Researchers have also developed some alternative models such as the Autoregressive Conditional Heteroscedasticity (ARCH) model¹¹

¹⁰ Bi-annual survey monitors the political and economic stability of 185 sovereign countries, according to ratings agencies and market experts. The information is compiled from risk analysts; poll of economic projections; on GNI; World Bank's Global Development Finance data; Moody's Investors Service, Standard & Poor's and Fitch IBCA; OECD consensus groups (source: ECGD); the U.S. Exim Bank and Atradius UK; heads of debt syndicate and loan syndications; Atradius, London Forfaiting, Mezra Forfaiting and West LB.

¹¹ This model is related to the volatility of the logarithmic difference in country risk ratings, that is, risk returns.

proposed by Engle (1982) and subsequently theoretical advances in both the univariate and multivariate frameworks by Bollerslev (1986), Bollerslev *et al.* (1992a, 1992b), Bollerslev *et al.* (1994), Li *et al.* (2002) and Ling and McAleer (2002a, 2002b, 2003); skewed student APARCH model applied by Maghyreh and Al-Zoubi (2006) analyses the relative performance of the most popular value at risk (VAR) estimates with an emphasis on the extreme value theory (EVT) methodology; global vector auto regression model (GVARM) prepared by Pesaran *et al.* (2003) by taking six core macroeconomic variables for forecasting country risk for several countries at the same time (Dennis and Lopaz, 2004); a univariate multidimensional risk indicator that includes different factors obtained from a time series and a methodology that includes endogenous detection of multiple structural breaks and the determination of persistence of different types of shocks (Carrera *et al.*, 2001); world beta market model mainly deals with stock market risk (Harvey and Zhou, 1993; Erb *et al.*, 1996; Gangemi *et al.*, 2000; Tourani-Red *et al.*, 2006); and a composite index of country risk developed simply by taking into consideration corruption perception index, ease of doing business index, global competitiveness index and human development index (Hessel, 2009). Clark (2002) measured country risk as implied volatility. Ghosh and Li (2009) used impulse response analysis to assess a country's investment risk by studying its vulnerability to shocks in macroeconomic variables. This is, of course, quite a narrow approach since it takes into consideration only economic variables. More recently, Nath (2009) has surveyed the quantitative methods of country risk analysis. To conclude, the above adumbrated models are not holistic in approach and do not reflect country risk in its totality. However, country risk can be measured accurately by taking into consideration all the factors simultaneously that affect country's overall risk environment.

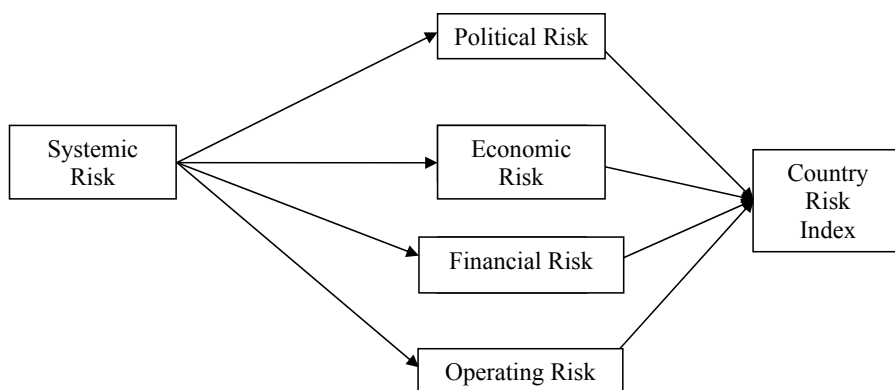
4. KANJI-CHOPRA COUNTRY RISK MODEL (KCCRM)

Throughout the literature, it is generally agreed that country risk is the result of political, economic, and financial factors. However, the previous attempts have not taken into account many important risk factors. Moreover, it has been very difficult to determine their causation and the fact is that these factors are highly correlated in real life. The KCCRM provides a mechanism by which risks can be communicated through the system. It is a vehicle for communication,

bringing out factors such as operating risks that might not be otherwise considered. It provides a means for identification, classification and analysis and then a response to risk. A highly complex phenomenon like country risk, one of the key challenges facing global companies, i.e., how to deal with the risk associated with operating in another sovereign jurisdiction, requires a multidisciplinary approach for its conceptualisation, measurement and analysis.

The present section, therefore, introduces a new country risk measure based on (Kanji and Chopra, 2007) a holistic and system modelling approach. We construct a latent variable structural equation model using systems component (see Figure 1) to measure country risk within certain boundaries of the socio-economic political-financial and operating system. The model decomposes country risk index into political risk index, economic risk index, financial risk index and operating risk index.

FIGURE 1 - *Kanji-Chopra Country Risk Model (KCCRM)*



Causes of country risk are systemic where inter-linkages and interdependencies in different components can lead to the collapse of the entire system. Systemic risk is a risk that is posed not only to the banking and financial system of the economy but extends to the entire country. For instance, political risk can disturb economic and financial stability of the country and can make business operating conditions very bad. On the other hand, if there is an economic downturn in a country, market sinks and creates financial, operating and political instability. An overseas investor faces systemic risk in a country that is common to all businesses and investment opportunities,

and inherent in all dealings in a market. When overseas firms in an economy are growing in both leverage and volatility, then systemic risk is rising. KCCRM is a holistic approach, which makes it possible to look at the overall activities. It integrates various processes and sub-systems, including financial and political sub-systems, to create overall system and their continuous interaction. It is an open system therefore, it is necessary to understand the relation between its elements and between the system and their environment. This is because the proper performance of the system depends more on how its components interact than on how they work independently.

4.1 Latent Variables of Kanji-Chopra Country Risk Model

There are various factors that contribute to the overall risk environment of a country (Chopra and Kanji, 2009). The main factors affecting country risk can be expressed in terms of the various indicators and grouped under six distinct main headings¹²: systemic risk, political risk, economic risk, financial risk, operating risk, country risk.

Various important risks have been subsumed in the above six headings since they constitute and form a part of the broader collection of risks. For example, exchange rate risk and transfer risk are part of financial risk; similarly inflation or unemployment risk can be subsumed in economic risk and human resource development risk can be considered under the headings of operating risk.

4.1.1 Systemic Risk

In KCCRM systemic risk refers to the entire interlinked and interconnected system of factors in a country. Economists and other scholars historically have tended to think of systemic risk primarily in terms of banking and financial institutions. However, this paper defines systemic risk as the risk involved in the overall performance of system and sub-systems of a country. It is an integrated perspective that incorporates institutional risks, market

¹² The latent variables and manifest variables of the Kanji-Chopra Country Risk Model have been discussed in detail in Chopra and Kanji (2009).

risks, banking and non-banking systems risks and operating risks, including human development risks in a country (Reeb *et al.*, 1998). Thus the working definition of systemic risk includes: (i) economic shocks and events triggered through panic or otherwise such as economic downturn (recession), fear of losing jobs, hike in consumer prices and significant fall in consumer demand, etc.; (ii) risks or failures in the entire banking systems; (iii) market failures and associated externalities; (iv) a chain of failures of non-banking or critical financial intermediaries such as hedge funds resulting in increases in the cost of capital or decreases in its availability, often evidenced by substantial financial-market price volatility; (v) increase in the examination of systemic risk in capital market, and (vi) public sector (government) system failure.

4.1.2 Political Risk

Political risk can be viewed as a risk associated with the political performance of a country. It includes governmental or societal actions and policies, originating either within or outside the host country, and negatively affecting either selected groups of, or the majority of foreign business operations and investments (Robock, 1971). Political risk concerns risk of a change in political institutions stemming from a change in government control, social fabric, or other non-economic factor. Political risk assessment requires simultaneous analysis of many factors that includes the risks due to the potential for frequent government changes, political unrest and ethnic conflicts, lack of democratic accountability and decision-making process in the government, expropriation risk, corruption in public offices and among politicians (Wei, 2000), level of war damage, terrorist activities, sea piracy, kidnapping or arm insurrections, level of bureaucratic hurdles in various policy implementations, and legal and regulatory controls in conducting business activities.

4.1.3 Economic Risk

An economic risk is a risk associated with an economic performance; an important and significant change in the economic structure, economic environment or economic policy of a country produces a major change in the expected return of an investment or a significant risk to an overseas investment. Thus, economic risk

is a risk related to the macroeconomic strength of a country. It is the macroeconomic vulnerability of a country. The more vulnerable a country is in macroeconomic terms, the more risky it is for making an investment. Growth in *per capita* GDP shows the overall economic performance of the country in question. Economic stability is an indicator of sound and suitable economic policy goals (fiscal, monetary, international, or wealth distribution or creation). There is a danger in economic risk often overlapping with political risk in some measurement systems. In order to overcome this problem, every effort has been made to keep the indicators of economic risk separate from the political risk indicators. The indicators of economic risks included in KCCRM are: obstacles in achieving desired and sustainable *per capita* GDP growth rate, level of government budget deficits and monetary instability, extent of annual inflation rate, extent of tax rates for overseas investors, extent of annual unemployment rate, deficit in current account balance and labour force participation rate.

4.1.4 Financial Risk

Financial risk is a risk related to the financial performance of a country. It is associated with the financial system of a country and is an indicator of a country's credit worthiness. It is often associated with the sovereignty of a government of a country and its ability to make timely repayment of its debt obligations. It is measured by the degree of gross external indebtedness and the probability of government's default in repayment of its debt. Thus the financial risk is the ability of the national economy to generate enough foreign exchange to meet payments of interest and principal on its foreign debt. A high level of financial risk or low sovereign credit rating of a country means that its credit worthiness is not very good and vice-versa.

Financial risk of a country is quite different from the economic risk and their respective indicators are kept separate in KCCRM. The model includes seven main financial indicators which are: degree of gross foreign external indebtedness, irregular and untimely repayment of interest and principal on foreign debt, inadequate level of foreign reserves to defend the currency or financial maturity (are they being spent to adjust for a reserve balance of payments deficit or make up for a loss of capital account), liquidity risk, restrictions on currency convertibility, currency or exchange rate

stability or currency crashing in value, and restrictions on capital movements or transfer risk. Thus the financial risk can impose various restrictions that could make it difficult to repatriate profits, dividends, or capital.

4.1.5 Operating Risk

The operating risk is a risk related to commercial performance of a country. It is connected with the operation of a business in a country and is associated with the degree of freedom for private companies to operate in a country. It includes the risks associated with the security, suitability and availability of various resources in the country. KCCRM includes eight different operational risk indicators which are: failures in infrastructural development, inadequate investment in human resource development, rise in level of local business and financial risk premiums, extent of industrial disputes and labour strikes, intellectual property rights infringement risk, public tensions and resistance against multinational companies or foreign goods, health and safety problems and quality control problems. A country has a human development risk if it is not investing enough in human resource development. Human development is concerned with people's well-being and quality of life. A low level of human development in a country indicates certain amount of risk for overall business excellence in terms of less healthy, trained and educated work force available and suitable for the required business functioning.

4.1.6 Country Risk

Country risk is the overall risk of a country. It is related with the location position of the country, whether the country is open or not to the foreign trade and transactions or any significant change in the country's comparative position in the world. The manifest variables included in the country risk index section of the measurement instrument are: extent of distances from economically or politically important countries and international trading alliances (location risk), closeness of the economy (lack of openness), rigidity in economic structural changes, failures in global competitiveness, a significant change in a country's comparative advantage (e.g.,

resource depletion, industry decline, demographic shift, etc.) and risks in information technology disruptions.

4.2 Development of Kanji-Chopra Country Risk Model

In this country risk model the systemic risk provides the foundation for financial risk, economic risk, political risk and operational risk. The way these are developed and supported will determine the degree of the country risk; thus a major challenge for the multinational companies to effectively manage the relationship among the country risk components.

In this case the latent variable structural model is used to represent the causal relationships among latent variables (systemic risk, financial risk, economic risk, political risk and operating risk and country risk). The purpose of the approach is to estimate the strength of the causal connections among the latent variables and to test the goodness of fit of the structural model. For the requirements of country risk evaluation it is necessary for the system to deliver meaningful results in terms of causal (cause-effect) relationship and a structural approach; that is to say that the analysis shall be model-based. Structural Equation Modelling¹³ (SEM) provides a means by which relationships can be tested. The purpose of the approach is to estimate the strength of the causal connections among the latent variables and to test the goodness of fit of the structural model (KCCRM). To estimate the strength of these causal connections, it is necessary for each of the latent variables to be operational in terms of manifest variables (measurement items). In reality, the manifest variables are measured by using measurement items, such as questionnaires; also, they serve as indicators of the latent variable.

A measurement instrument (i.e. questionnaire) is then developed and used to obtain scores from respondents on a variety of attributes

¹³ Structural equation modelling is also a multivariate technique combining aspects of multiple regression and factor analysis to estimate simultaneously a series of interrelated dependence relationships. Such models include one or more linear regression equations that describe how the endogenous constructs depend upon the exogenous constructs; their coefficients are called path coefficients. It is a powerful statistical approach in that it combines the measurement model and the structural equation model into a simultaneous statistical analysis. It provides parameters estimates of the direct and indirect association between observed variables and tests how well a model explains covariance in the data.

that provide an empirical content to the model's constructs. The country risk index is obtained using structural equation models that simultaneously measure the impact of all the variables on country risk. SEM traditionally has some assumptions, namely: independence of variables, random sampling of respondents, linearity of all relationships, multivariate normality of distribution, no kurtosis and no skewness, appropriate data measurement on interval or ratio scale, sample size between 100 and 400.

The importance of meeting these conditions depends on the estimation methods used. Some estimation methods can adjust for the violation of some of these assumptions. Kanji-Chopra Country Risk Measurement Software (KCCRMS) essentially uses the Partial Least Square (PLS) method in the simultaneous estimation of the weights of the constructs of the country risk system. It calculates these weights in a way that maximizes the goodness of fit of the models and thus the ability to explain country risk as the ultimate endogenous variable.

The approach used for country risk measurement reflects, on one hand, its general aims and purposes and, on the other, value-to-cost considerations of developing and operating such a system for the benefit of the global investor. Ensuring integration and alignment between the various systemic sub-systems means that country risk measures must be compatible and deployed in a coherent way within the society. The general approach for country risk measurement involves:

- adopting KCCRM as the framework for measuring the country risk against a set of well-established criteria that correspond to the socio-economic system;
- identifying the key to country risk contributors from whom the feedback is going to be collected;
- using suitable questionnaires covering each of the areas of KCCRM to conduct the assessment exercise;
- introducing the data collected from the questionnaires in KCCRMS;
- running the correspondent program files to obtain the systemic system's parameters and scores;
- analysing the score for each criterion, the overall country risk index and the relationships among the country risk measurement criteria;
- designing and implementing improvement strategies and monitoring their results;
- repeating the process from the third step.

5. METHODOLOGICAL FOUNDATIONS OF THE MODEL

This section discusses the methodological foundations of KCCRM. The country risk questionnaire in line with the systemic risks for cross-border investors is identified as the main instrument employed to measure country risk in a country that adopts KCCRM. In addition the general advantages and disadvantages of survey methodology, data collection and data analysis are examined using a suitable formula for the country risk index and KCCRMS.

Finally some key indicators are given regarding Kanji-Chopra software, which is the essential support for the analysis of the country risk data collected through the questionnaires. This section provides the basis for empirical work with the sole purpose of developing and validating a measurement tool to assess country risk and other factors of country risk in a society. Results obtained serve as a premise for an empirical study, which has the following objectives:

- to develop a reliable measurement instrument that measures the model's dimensions and country risk;
- to validate the causal connections in the structural model;
- to examine the causal connections or path coefficients among latent variables;
- to use the model to provide measures of country risk in terms of cross-country investors and systemic risks;
- to devise a mechanism for achieving a contestability target level by increasing the performance of an optimal mix of overseas investors.

As country risk dimensions cannot be observed directly they are measured by way of a measurement instrument that contains measurement scales pertaining to every country risk. The reliability of the measurement instrument is determined by using Cronbach α . In essence, this item gives a good estimate of reliability. Estimates of path coefficients are determined by using KCCRMS which also computes inner and outer coefficients and coefficient of determination, and reliability of measurements. After the model had been validated, it has been used as the measurement instrument to evaluate country risk. For each data set all the country risk dimension indices were computed by using a formula (see equation 1) that took into account outer path coefficients and mean scores of corresponding manifest variables. These indices were used as performance ratings of country risk dimensions for the particular data set.

Path Coefficients of the Model

Path coefficients represent the strength of causal connections specified in the model. There are two categories of path coefficients: those associated with relationships linking manifest variables to latent variables, usually called outer coefficients, and others associated with latent to latent variable relationships, usually called inner coefficients.

Reliability of Measurement Scales

Reliability refers to the consistency and stability of a score from a measurement scale. There are several general methods of determining reliability of a measurement scale. In this research the Cronbach α is used to assess the homogeneity of items that belong to the same dimension in the measurement instrument. A Cronbach (1951) alpha value (coefficient) gives a good indication of quality of the measurement scales employed to assess each criterion of the country risk system. It is a general method that was used to determine the internal consistency of latent variables that are being empirically reflected by manifest variables. It is calculated by using variance of individual questions and covariance between items. The formula is:

$$\alpha = \frac{k}{k-1} \left\{ 1 - \frac{\sum \sigma_i^2}{\sum \sigma_i^2 + 2 \sum \sigma_{ij}^2} \right\}$$

Where k = the number of items in the scale, σ_i^2 = the variance of item i , and σ_{ij}^2 = the covariance of the items i and j . In general a value of $\alpha = 0.7$ indicates that the measurement scale is reliable.

Country Risk Indices

The general formula for the systemic risk dimensions and country risk index (CRI) has been used as follows (Kanji, 2002 and Kanji and Chopra, 2007):

$$\text{CRI} = \frac{\sum w_i x_i - \sum w_i}{(N-1) \sum w_i} \times 100 \quad (1)$$

Where N = number of points on the scale; x_i = manifest variables; and w_i = outer coefficients. The index value has a range of 0 to 100. 0 indicates no risk and the values scores closer to zero indicate low-risk pole of the scale and the scores closer to 100 indicate high-risk pole of

the scale. Kanji-Chopra country risk measurement software has been developed to measure the indices with the help of the above formula.

Data Collection

Collection of data using the questionnaire is the basic tool to measure country risk of a country against the model. Since each country risk dimension corresponds to a concept that cannot be directly measured due to complex nature of the various indicators of a particular risk, it must be translated into a set of indicators that are then converted into items of the questionnaire. Different components of country risk are typically derived by averaging the opinions of a panel of experts (economists, risk analysts and experts with leading institutions such as banks and money management firms) who in all the major country risk products evaluate the subjective indicators. Ideally, the questionnaire should be administered throughout the experts in different dimensions of country risk so that everyone's opinions can be accommodated. Specific questionnaires can be developed for the purpose of getting feedback from the experts, who will certainly have a say on how well they think the country is doing and what improvement they would like to see.

However, since the principals are universal, demanding that common aspects must be addressed under each criterion, these changes should be kept to a minimum as radical changes may jeopardise the model's reliability and the chance of getting meaningful and comparable results. To complete the questionnaire it is necessary only to indicate the extent to which the country has experienced each suggested dimension in a 1 to 10 scale. There are some requirements in terms of the number of questionnaire responses needed to perform the statistical analysis associated with KCCRM. A number around 250 usually gives the best results, but as a general rule it is possible to run the Kanji-Chopra index program with a number of responses between 100 and 250. Another recommendation is to use the questionnaire on a regular basis, so that the global investor can monitor progress over time and anticipate changes. Data thus collected should be analysed without delay in order to identify country risks and closely control the outcomes of the investment plans and the way they are being perceived by the experts.

Data Entry

Inputting the questionnaires' responses using Kanji-Chopra program is very simple. All that is needed is the introduction of

Part 2: Political risks - The extent to which the country has experienced

[illegible]

Part 3: Economic risks - The extent to which country has experienced

[illegible]

Part 4: Financial risks - The extent to which the country has experienced

[illegible]

Part 5: Operating risks - The extent to which country has experienced

[illegible]

Part 6: Country risk index - The extent to which
the country has experienced

Serial no.	Criteria	<i>Not at all</i> <i>Very much</i> →									
		1	2	3	4	5	6	7	8	9	10
1	Distance from economically or politically important countries and international trading alliances (location risk)										
2	Closeness of the economy (lack of openness)										
3	Rigidity in economic structural changes										
4	Failures in global competitiveness										
5	A significant change in a country's comparative advantage (e.g., resource depletion, industry decline, demographic shift, etc.)										
6	Risks in information technology disruptions										

Country Risk Measurement Software

The statistical reasoning behind KCCRM model is relatively complex, but the user will not need to have any particular mathematical expertise, although some basic skills and statistical knowledge will help. To support the implementation of KCCRM, Kanji-Chopra Country Risk Index Measurement (KCCRM) software package calculates all the associated indices and produces some standard graphics. As mentioned before, KCCRM is based on a structural equation modelling technique which combines aspects of multiple regression and factor analysis to estimate simultaneously a series of interrelated dependence relationships. The Kanji-Chopra software, which essentially uses the Partial Least Squares (PLS) method in the simultaneous estimation of the weights of the constructs of the model, calculates these weights in a way that maximises the goodness of fit of the model and thus has the ability to explain country risk as the ultimate endogenous variable. It is not necessary to have any particular expertise to work with the software package. Anyone who feels comfortable working with Windows usual software programs will soon become familiar with this package.

Data Analysis

Data analysis comprises estimating the various parameters of KCCRM and calculating the indices for each dimension as well as the final Country Risk Index (CRI). Kanji-Chopra Country Risk Index Measurement (KCCRM) software automatically calculates all the indices and produces some standard graphics. This software is based on a structural equation modelling technique which combines aspects of multiple regression and factor analysis to give simultaneous estimate of a series of interrelated dependence relationships. Given that all performance aspects are interrelated, the indices for the different variables of the model are calculated simultaneously according to the whole data set. Through the results provided, the society will know how each criterion impacts on the overall country risk index (structural or path coefficients) and where improvement efforts are more likely to have a greater impact.

An Illustrated Example

Data in this example has been collected from a country in the Middle East and the North African region (MENA) region by using various resources. Final finding and various tables have been presented in order to discuss the validity of the model and its importance. In this illustrative example we have collected some data from the group of experts in order to implement the Kanji-Chopra country risk model. Here, we present the main outputs of the Kanji-Chopra software program with some discussion and interpretation of the main results.

Statistical Reliability and Validity of KCCR Model

The methodology of KCCRM describes the construct, content and criterion validity of the model. The inner coefficients, inner R-squares, reliability alphas and indices of the survey instrument are analysed in order to assess the quality of the measurement and the suitability of the model.

Inner Coefficients

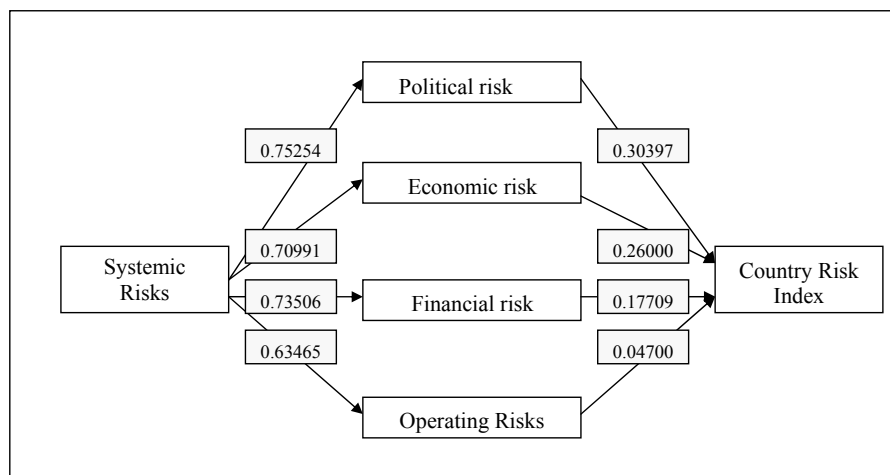
It is expected that the relationship between the various country risk measurements and the path coefficients will be positive, emphasising the nature and the principles of the model.

TABLE 3 - Inner Coefficients of Kanji-Chopra Country Risk Model

	SR	PR	ER	FR	OR	CRI
SR	0	0	0	0	0	0
PR	0.752542	0	0	0	0	0
ER	0.709916	0	0	0	0	0
FR	0.735067	0	0	0	0	0
OR	0.634659	0	0	0	0	0
CRI	0	0.30397	0.260007	0.177096	0.047003	0

These inner or path coefficients are indications of the relationship between independent and the dependent variables of the model. The values of table 3 and figure 1 show that all coefficients are positive and systemic risk values are strongly associated with the other factors of the model.

FIGURE 2 - Path Coefficients of the Model



Statistical Reliability of the Model

The reliability score alpha for the illustrated example is shown in table 4. The alpha scores for the latent variables of financial risk,

operating risk and economic risk were less than 0.7, indicating that the manifest variables were either inconsistent in explaining the latent variables or that the questions were not well understood by the respondents. The alpha values of systemic risk (0.682427), political risk (0.695361) were near 0.7 and country risk alpha was 0.80, indicating that each latent variable did fit the model as a positive indicator.

TABLE 4 - *Alpha Values of the Model*

SR	PR	ER	FR	OR	CR
0.682427	0.695361	0.596569	0.551856	0.579515	0.801132

The strength of the relationship is a proportion of the regression sum of squares corresponding to latent variables. The coefficient of determination can be used to evaluate the accuracy of a structural model. Table 5 indicates the values for the coefficient of determination for the paths leading up to country risk. The higher the value of r^2 , the better the model fits the data. The values of r^2 resulted to vary between 0.403 and 0.566. The minimum value of at least 0.65 was considered a reasonably high indication of model accuracy. In this case, none of the r^2 values was higher than the cut-off value of 0.65, meaning that the variations in the model explained less than 65% of the variance. However, given the positive scores of the model, several good correlations could be deduced from the data results.

TABLE 5 - *Inner R-Squares of the Model*

Path Variables	Inner R-Squares
SR----PR	0.566
SR----ER	0.504
SR-----FR	0.540
SR----OR	0.403
SR----CR	0.519

Outer Coefficients

These outer coefficients show how each question loads into the respective factors in the country risk model. Table 6 indicates how each variable contributes to the respective factors of the country risk model.

TABLE 6 - *Outer Coefficients of the Model*

SR	PR	ER	FR	OR	CR
0.531173	0	0	0	0	0
0.294166	0	0	0	0	0
-0.04565	0	0	0	0	0
0.284097	0	0	0	0	0
0.080868	0	0	0	0	0
0.348763	0	0	0	0	0
0	-0.00842	0	0	0	0
0	0.131313	0	0	0	0
0	0.070485	0	0	0	0
0	0.263753	0	0	0	0
0	0.259317	0	0	0	0
0	0.291653	0	0	0	0
0	0.399776	0	0	0	0
0	0	0.268476	0	0	0
0	0	0.374049	0	0	0
0	0	0.268805	0	0	0
0	0	0.025089	0	0	0
0	0	0.417078	0	0	0
0	0	-0.16293	0	0	0
0	0	0.057233	0	0	0
0	0	0	0.494505	0	0
0	0	0	0.119149	0	0
0	0	0	0.222078	0	0
0	0	0	-0.174390	0	0
0	0	0	0.386769	0	0
0	0	0	0.166776	0	0
0	0	0	0.105427	0	0
0	0	0	0	0.590684	0
0	0	0	0	0.276096	0
0	0	0	0	0.132805	0
0	0	0	0	0.044549	0
0	0	0	0	0.205584	0
0	0	0	0	0.026222	0
0	0	0	0	-0.070600	0
0	0	0	0	0.015162	0
0	0	0	0	0	0.2630310
0	0	0	0	0	0.2160909
0	0	0	0	0	0.1015646
0	0	0	0	0	0.2622610
0	0	0	0	0	0.2197059
0	0	0	0	0	0.2985671

Country Risk Indices

It is relatively easy to interpret the scores obtained for each criterion of the country risk measurement system. The final country

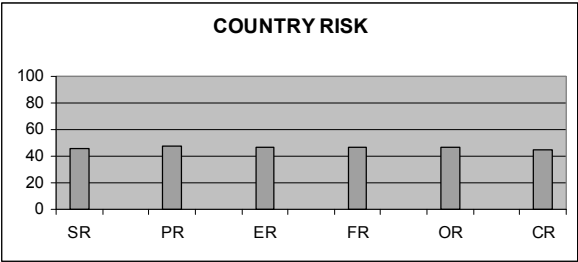
risk will reflect the simultaneous effect of all the relationships estimated in the model.

TABLE 7 - *Country Risk Indices*

Systemic Risk	F1	45.84
Political Risk	F2	47.21
Economic Risk	F3	46.84
Financial Risk	F4	46.64
Operating Risk	F5	46.36
Country Risk Index	F6	45.15

Here the measurement instrument consists of 41 questions in six dimensions that correspond to the five critical factors and country risk. Each question uses a ten-point scale on which respondents rate their country with respect to specific risk. The analysis of country risk using Partial Least Squares method provided a measure of strength of causal connection (inner coefficients) between the models constructs (critical factors). The values of inner coefficients are found to be positive non-zero, providing support for causal connection among critical factors and country risk.

FIGURE 3 - *Country Risk Indices*



6. ANALYSIS AND INTERPRETATION OF RESULTS

The responses to the research questions have to be addressed and mean scores and outer coefficients (weights) are analysed to facilitate the interpretation of the results. The survey questions provide insights to country risks through the analysis and interpretation of the results. The criterion for making judgement is based on the

grading system. The lower index value means low country risk and vice versa. For example, below 25% will provide a good indication for investment with low risk, while 50% will give medium risk and 75% will indicate a higher risk. The value of index above 75% will indicate extremely high risk investment.

Table 7 shows that systemic risk provides an index of 45.84%, indicating that investors face moderate systemic risks. Table 8 reveals the results for the overall systemic risks. In our illustrative study, the value of -0.045 of outer coefficient indicates that there is a disagreement among the respondents about market failures and associated externalities. There is confusion on this dimension either due to the unsuitability of the manifest variable or this is a highly controversial and problematic area. So investors must look into this problem prior to investing. Also the capital markets themselves are not increasingly central to any examination of systemic risk as indicated by the outer coefficient value of 0.0809, which means this dimension of the systemic risk index is contributing very little to the overall country risk. Therefore, an investor need not worry about this issue. On the other hand, the outer coefficient of .5311 indicates that the country lacks a robust system and procedures to cope very well with the probability of economic shocks and events that can cause a chain of bad economic consequences. An investor needs to be very careful about it as it is a high risk area. The outer coefficient of .3488 indicates that there is a risk as the policies and procedures have not been managing and regulating the systemic risk in the public sector quite well. There is a low possibility of failures in the entire banking (.2942) and non-banking system or critical financial intermediaries such as hedge funds that significantly affect the availability and cost of capital, as indicated by the outer coefficient of .2841.

The overall political risk index is 47.21 % (Table 7) which is again quite moderate in this case. Table 9 shows the detailed results of political risk factors. The outer coefficient or weight of -0.0084 indicates that the respondents' disagreement with the frequency of government changes is one of the significant factors of political risk. The democratic accountability and decision-making processes in the government reveal country's weak position with the result of low outer coefficient value of .0705. The outer coefficient of political unrest and ethnic conflicts and violence (0.1313) is also small and contributing very little to the overall index and it should not be a concern for overseas investment. On the other hand, the legal and regulatory controls (law and order) in the country are quite a matter of concern for overseas investors in the country with a high outer coefficient value

of .3998. Corruption perceptions (.2637), bureaucratic quality and war, terrorist activities, kidnapping, arm insurrections and military in politics (.2593) factors have been found to be contributing to the overall index and is less suitable for overseas investment. An investor should watch this before investing since corruption and bureaucratic hurdles can have adverse affect on the returns of investment by increasing operating costs and hence considerably reducing profits.

TABLE 8 - *Results for Systemic Risks*

Serial no.	Criteria	Average Score	Outer Coefficients
1	Economic shocks and events that can cause a chain of bad economic consequences	5.21	.5311
2	Risks and failures in the entire banking system	5.08	.2942
3	Market failures and associated externalities	5.26	-0.045
4	Possibility of chain of failures of non-banking or critical financial intermediaries such as hedge funds that significantly affect the availability and cost of capital	5.08	.2841
5	Increase in examination of systemic risks in capital market	5.11	.0809
6	Systemic risk in public sector	5.01	.3488

TABLE 9 - *Results for Political Risks*

Serial no.	Criteria	Average Score	Outer Coefficients
1	Frequent changes in central government (government instability)	5.18	-0.0084
2	Political unrest and ethnic conflicts and violence	5.27	.1313
3	Lack of democratic accountability and decision-making processes in the government	5.14	.0705
4	Corruption in public offices and among politicians.	5.29	.2637
5	War damage, terrorist activities, sea piracy, arm insurrections, kidnapping or military in politics	5.33	.2593
6	Bureaucratic quality and hurdles in various policy implementations	5.09	.2916
7	Legal and regulatory controls in conducting business activities (law and order)	5.29	.3998

Table 7 reveals the overall index of economic risk as 47.21, which is below 50% indicating that there is medium risk in the country but requires a careful investment by watching certain factors. Table 10 shows that there has been no agreement among the respondents regarding the deficit in current account balance as a significant factor affecting overseas investment, as indicated by the outer coefficient -0.1629. However, the outer coefficient of .0251 indicates that rise in tax rates is not a significant factor contributing to the economic risk index, so investors need not worry about it. The country risk is also not much affected by labour force participation rate, as indicated by a low value of outer coefficient (.0572). The outer coefficient of .4171 for annual unemployment rate is quite significant and a matter of concern for global investors. This shows that there is a serious trouble in the economy and people are out of jobs. The other factors of concern are obstacles in achieving desired and sustainable *per capita* gross domestic product growth rate (.2684), level of government budget deficits and monetary stability (0.3740) and the level of inflation rate (0.2688), since they are contributing to the overall country risk index. The country risk can be significantly reduced by reducing economic risk index through significantly reducing annual unemployment rate, government budget deficits/fiscal irresponsibility and monetary instability, annual inflation rate and obstacles in achieving desired and sustainable *per capita* gross domestic product growth rate. An overseas investor should be careful about these manifest variables.

TABLE 10 - Results for Economic Risks

Serial no.	Criteria	Average Score	Outer Coefficients
1	Obstacles in achieving desired and sustainable <i>per capita</i> gross domestic product growth rate	5.07	.2684
2	Government budget deficits/fiscal irresponsibility and monetary instability	5.24	.3740
3	Annual inflation rate	5.07	.2688
4	Rise in tax rates or fall in tax incentives for overseas investors	4.88	.0251
5	Annual unemployment rate	5.31	.4171
6	Deficit in current account balance	4.95	-0.1629
7	Labour force participation rate decline	5.07	.0572

The overall financial risk for the country is 46.64 % (Table 7), which is again below 50% and requires careful investment. The outer coefficient of -0.1744 for manifest variable called liquidity risk shows some sort of disagreement among respondents as to whether overseas investors can sell their fixed assets in short term to raise liquidity or cash. The outer coefficient of restrictions on capital movements or transfer risk (.1054) indicates that this manifest variable contributes least to the overall index and hence there is least risk for overseas investors, in this regard. The outer coefficient .4945 indicates a concern with the degree of gross external indebtedness. However, the country is making regular and timely repayments of interest and principal of foreign debt, as indicted by the lower value of outer coefficient (.1191) which reflects a low risk as it is contributing very little to the overall country risk index. The outer coefficient of .3868 indicates that there is a risk of currency or exchange rate instability or currency crashing in value. An investor should look into this very carefully prior to investing as this can be fatal in terms of losing all the profits through rising the value of the currency of the country where investment is made. The outer coefficient .1667 indicates that the factor of restrictions on currency convertibility is not contributing significantly to the overall country risk index. The country also does not seem to have an adequate level of foreign reserves to defend the currency or financial maturity (.2208). An investor should watch this manifest variable.

TABLE 11 - *Results for Financial Risks*

Serial no.	Criteria	Average Score	Outer Coefficients
1	Gross external indebtedness	4.86	.4945
2	Regular and timely repayments of interest and principal on foreign debt	5.17	.1191
3	Inadequate level of foreign reserves to defend the currency or financial maturity	5.10	.2208
4	Liquidity risk	5.35	-0.1744
5	Currency or exchange rate instability or currency crashing in value	5.00	.3868
6	Restrictions on currency convertibility	5.19	.1667
7	Restrictions on capital movements (transfer risk)	5.10	.1054

The overall operating risk index is 46.36 which is again below 50% representing medium risk. Table 12 reveals that the outer coefficient -0.0706 indicates that there is no agreement among the respondents on the issue that the health and safety problems in a country can contribute to country risk. The systems of quality control in various industries and safety issues (.0152) indicate insignificant effect on the level of country risk. Public tensions and resistance against multinational companies or foreign goods also does not contribute to the overall country risk index (.0262). The country has not been much affected from regular industrial disputes and IT disruption (.0445). However, the outer coefficient (.1328) of local business and financial risks premiums is quite low and not contributing much to the overall country risk index, indicating that it should not be a major concern for overseas investors.

The intellectual property rights infringement risk poses a risk in the country (.2056). There is a lack of adequate investment in human resource development such as education, health and skill formulation (.2761). Human development is concerned with people's well-being and quality of life. A low level of human development in a country indicates certain amount of risk for overall business excellence in terms of less healthy, trained and educated work force available and suitable for the required business functioning. The infrastructural

TABLE 12 - *Results for Operating Risks*

Serial no.	Criteria	Average Score	Outer Coefficients
1	Failures in infrastructural development	5.17	.5907
2	Inadequate investment in human resource development	5.05	.2761
3	Rise in local business and financial risks premiums	5.26	.1328
4	Industrial disputes and labour strikes	5.19	.0445
5	Intellectual property rights infringement risk	5.23	.2056
6	Public tensions and resistance against multinational companies or foreign goods	5.09	.0262
7	Health and safety problems	4.96	-0.0706
8	Quality control and safety problems	5.17	.0152

development in the country is quite bad and is the biggest contributor to the overall country risk index (.5907). A foreign investor should be extremely careful about this as the lack of infrastructure facilities such as roads, transport, regular supply of electricity, etc. can make a business suffer badly.

In our illustrative example, the overall country risk index has been found to be 45.15% (Table 7) which indicates a moderate risk. There is a problem in the international trading alliances and the country is quite distant from economically or politically important countries such as Mercosur, NAFTA, and EU, as indicated by the outer coefficient .2630. As a result the country is not availing the full benefits of international trade alliances. Risks in information technology disruptions (.2986) are there and should be watched carefully. Policy makers and investors need to improve this area in order to improve upon the country risk. There has not been a significant change in a country's comparative advantage (e.g., resource depletion, industry decline, demographic shift, etc.) representing a moderate degree of country risk (.2197). The country is not fully open to foreign trade or investors in all sectors of the economy, as indicated by the outer coefficient .2161. The country also experiences some failures in global competitiveness in certain sectors (.2623). However, the manifest variable of rigidity in economic structural changes (.1015) is not contributing much to the country risk index.

TABLE 13 - *Results for Country Risk Index*

Serial no.	Criteria	Average Score	Outer Coefficients
1	Distance from economically or politically important countries and international trading alliances (location risk)	5.18	.2630
2	Closeness of the economy (lack of openness)	5.07	.2161
3	Rigidity in economic structural changes	4.95	.1015
4	Failures in global competitiveness	5.04	.2623
5	A significant change in a country's comparative advantage (e.g., resource depletion, industry decline, demographic shift, etc.)	5.08	.2197
6	Risks in information technology disruptions	5.00	.2986

7. CONCLUSIONS

There is a plethora of methodologies for country risk measurement that focus on the political, socioeconomic, geographical or security dimensions. However, in this paper we develop a new approach of taking into account all factors of country risk simultaneously. Conceptualising, measuring and examining country risk separately from sovereign credit risk, by using a holistic, multivariate and simultaneous estimation modelling approach, can provide a more direct and meaningful assessment of the on-the-ground risks faced by multinational companies and investors. KCCRM includes more country-specific variables such as systemic, economic, political, financial, legal, geographical and operating factors that contribute to the overall risk environment in order to construct a composite country risk index. KCCRM does provide a significant value and indicator that can guide investors in their decisions about relative attractiveness of various global/regional locations by making them better aware of how changes in the business environment in these locations can adversely affect their operating profits or value of their assets. KCCRM is very comprehensive and can underpin more specific risk factors in one location/country and can compare across various countries/locations, which is more evident from the analysis of the results of the illustrative example given in Tables 3 to 13. In conclusion, the adoption of KCCRM to country risk measurement appears to produce a more accurate reflection of the degree to which a country's operating environment is unpredictable, which is a key element of risk for managers. However, further work is needed to adopt this model to compare country risk for various countries across the world.

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ABSTRACT

Country risk is of increasing importance in the evaluation of overseas investments, international trade flows, foreign direct investments and volatility and predictability in stock market returns. A clear understanding of the concept, measurement and management of the level and magnitude of country risk is imperative for a global investor since the overseas operating profits and the value of assets can be adversely affected. All previous conceptualisations, techniques and methods of measuring the country risk are *ad hoc*, narrow, partial in approach and suffer from various drawbacks. Also, country risk measures remain notoriously unreliable in predicting unfavourable changes in operating conditions and relatively little time has been given to addressing methodological issues involved in the conceptualisation, assessment and management of country risk. However, in this paper we introduce a new conceptualisation and measurement of country risk. Based on a holistic and system modelling approach, this paper constructs a latent variable structural equations model to measure country risk within certain boundaries of the whole system. The model decomposes the country risk index into political risk index, financial risk index, economic risk index, and operational risk index. This paper describes the general process used to create country risk assessment measure and examines the degree of association among various risk measures.

Keywords: Country Risk, System Modelling Approach, Kanji-Chopra Country Risk Model, Political Risk, Economic Risk, Financial Risk, Systemic Risk

JEL Classification: C32, E22

RIASSUNTO

La misura del rischio paese: un nuovo approccio system modelling

Il rischio paese sta assumendo una rilevanza crescente sulla valutazione degli investimenti all'estero, dei flussi di commercio internazionale, degli investimenti diretti esteri, della volatilità e prevedibilità dei rendimenti azionari. Una chiara comprensione, la misurazione e la gestione del rischio paese sono imperativi per un investitore globale poiché tale rischio può influenzare negativamente i profitti e il valore degli attivi di operazioni all'estero. Ad oggi vengono adottate concettualizzazioni, tecniche e metodi di misurazione del rischio paese *ad hoc*, che presentano numerosi inconvenienti. Inoltre, le valutazioni del rischio paese si sono notoriamente rivelate inaffidabili nel predire modifiche sfavorevoli alle condizioni operative e, sino ad oggi, lo studio delle problematiche metodologiche inerenti la concettualizzazione, la valutazione e la gestione del rischio paese è stato trascurato. In questo lavoro viene introdotta una nuova definizione e quantificazione del rischio paese. Sulla base di un approccio olistico e *system modelling* viene elaborato un modello di equazioni a variabili latenti che suddivide il rischio paese in politico, finanziario, economico e operativo. Lo studio descrive anche il procedimento generale usato per definire il rischio paese ed esamina il grado di associazione tra le misure del rischio.