JÖNKÖPING INTERNATIONAL BUSINESS SCHOOL
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# Investment Under Uncertainty

## - Risk Assessment in Emerging Market Countries

Paper within Bachelor Thesis in Economics
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**Bachelor thesis in Economics**

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| **Title:** | **Investment Under Uncertainty** – Risk Assessment in Emerging Market Countries |
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## Abstract

The overall purpose of the paper is to see how crediting institutions assess risks in emerging market countries. The paper describes prevalent economic and social conditions for each of the selected emerging market countries (Brazil, China, Kazakhstan, India, Russia and Ukraine) as examples of recent attractive investment locations in quest of higher returns. Second, recognizing the importance of ratings for risk management in credit institutions, the authors show what determines country ratings made by main rating agencies by running a linear regression on several macroeconomic indicators and the country ratings. It is also explained what the most widely-used ratings mean and described the correlation between the ratings as well as between the macroeconomic indicators and the ratings. The authors also describe the characteristic approach of a Scandinavian bank towards dealing with risk factors in emerging market countries. Concluding comments: risks happen to be inbound in the bank interest rates; there is no common pattern for banks to apply to all the emerging market countries and each market should be analyzed separately. Nordic banks have a relatively safe and careful strategy concerning lending in the emerging markets.

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# 1. INTRODUCTION

## 1.1 Background of the Study

Nowadays, it is difficult to find a single-standing prosperous bank that has never been a target for acquisition. The global trend in banking industry all over the world is characterized by mass mergers, centralization, reduction in the number of small banks and domination of bank holding companies, with extended chains of services and branches. In the process of global integration, Scandinavian and Western European commercial banks were not exceptions and most of them (SEB, Swedbank, Nordea, Handelsbanken, etc.) pioneered in the "stormy" environment of new markets for financial services.

Current uncertain business environment implies that crediting institutions face higher risks and need sound risk management in order to minimize risk exposure. Better approach and deeper analysis of country specific factors helps commercial banks to allocate resources in the process of risk estimation. Risk management techniques have evolved over time, though credit rating systems remain one of the cornerstones of credit risk management. Notwithstanding, credit risk can only be minimized, but not eliminated. Due to substantial differences in creditworthiness, nominal interest rates for bank loans in emerging market countries include larger risk premiums than in stable developed economies. The dynamic environment of the emerging markets nevertheless implies that banks would have to align with classical principals of precise calculation of risks and profitability of investment projects in order to establish good investments possibilities (Ross & Westerfield, 2005). The return expected above the risk-free rate is known as a market risk premium (MRP), and can be seen as a compensation for an extra risk. Thus, uncertain business environment is incorporated in higher interest rates for commercial loan takers, such as small and medium enterprises (SMEs) in emerging countries.

The topic of interest rates and risk premiums is relevant because interest rates available from commercial banks represent cost of debt for investors. In case of SMEs that do not issue shares, cost of debt represents the main source of finance together with internally generated cash flows (Damodaran, 2001). Therefore, they influence investment profitability, capital investment decision and investment opportunity. Cost of debt allows weighing the benefits of the potential investment with the liabilities and allows determining the true cost of taking an investment project.

## 1.2 Purpose

The overall purpose of the paper is to see how crediting institutions assess and manage risks in emerging market countries (EMCs), what factors are considered by crediting institutions when they face risks of crediting investments in uncertain environment of EMCs.

## 1.3 Organization of the Study

First of all, the paper describes the prevalent economic, financial, social conditions in typical emerging market countries to determine what distinguishes those countries from stable economies and to see the similarities and differences among emerging country markets. The authors look at the problem not only in the scale of emerging markets of Eastern Europe, but rather consider other countries of the world, so that each country would represent a region. Therefore, we take Brazil, China (continental), Kazakhstan, India, Russia and Ukraine as examples of large emerging markets that have recently been attracting attention of banks and individual investors in quest of higher returns.

Second, recognizing the importance of ratings for risk management in credit institutions, the authors show what determines country ratings made by main rating agencies by running a linear regression on several macroeconomic indicators and the country ratings. Furthermore, it is explained what the most widely-used ratings made by rating agencies mean. Also the authors briefly look at the correlation between the ratings as well as between the macroeconomic indicators and the ratings. The writers do not look at the relation between risk and the risk factors because the dynamic view over investment opportunities (Prostacos, 1983) and a great variety of factors (variables) involved into estimation of risk (Chapman & Ward, 2003) seem to make it irrelevant to run any sort of regression analysis of ordinary least squares. The result of such model would be misleading to large extent, probability of autocorrelation or spurious correlation is high as well as the probability of Type I and Type II statistical errors. Therefore, it is assumed that conclusions, made from running a regression model can be misleading, and thus, this type of method is avoided in the work on the topic.

Third, the authors describe what approach and methodology commercial banks pursue towards valuation of credit risks under uncertain environment with respect to the newly introduced Basel II International Convergence of Capital Measurements and Capital Standards. Here we also describe the characteristic approach of a Scandinavian bank towards dealing with risk factors in emerging market countries and the ways the bank uses to monitor debtors' actions for sound payback.

## 1.4 Methodology

In order to see how commercial banks deal with credit risk management in emerging market countries (EMCs), a composite questionnaire is composed which addresses either Risk Management departments or Emerging Markets' departments of several Scandinavian banks (Nordea, Swedbank, SEB, Handelsbanken). Those banks were one of the first and remain among the most active players in emerging markets, especially in Eastern Europe and Commonwealth of Independent States (CIS) countries. In the questionnaire the authors try to obtain information that would help create a general image of overall complex bank's approach towards financing corporations, exports and investment projects in emerging market countries. It was possible to receive responses from several banks (Nordea and Swedbank). Furthermore, publicly available official reports on risk management and valuation as well as country reports issued by banks

(SEB, Swedbank, Handelsbanken) are analyzed for the paper. Those reports help clarify some crucial issues in bank's approaches, without asking the bank officials directly, as far as the information has already been published. Further on, the information received from the banks on each question was analyzed together with the published reports. As a result, similarities in practices of such kind of operations were found. Thus it enables to come to a general conclusion on characteristic similar practices and approaches of Scandinavian banks dealing with credit risks in emerging countries and better understand, to what extent the label "Emerging Market" influences on the decision of the credit interest rate and terms of business loans.

### 1.5 Literature review

Firms need financing for capital expenditures, working capital, and other long-term uses. Therefore, the study of cost of debt and its determinants remains relevant. There have been a number of surveys on the way firms establish long-term financing strategies. They show that most of financing for positive net present value (NPV) projects is provided from internally generated cash flows. As a last resort a firm will use externally generated cash flow, and the first one to use is debt. Common stock is used last (Donaldson, 1961). These results are consistent with the international financial patterns in sources of funds as a percentage of total sources held by OECD (OECD, 1995).

One of the cornerstone theories, which can be also applicable within the frame of the paper, is Harry Markowitz's theory of portfolio diversification and risk, described in his work "Portfolio Selection" (1952). Markowitz highlighted the way, how investors could reduce the standard deviation of portfolio returns by choosing stocks, which are not highly correlated. The author also emphasized that risk aversion would be one of the core factors driving investors' decisions. Therefore, Markowitz concludes that investors with high risk aversion would tend to prefer holding diversified portfolios to minimize the risk associated with variance of returns. Based on this theory, it is generally believed that risk-averse investors try to maintain diversified portfolios.

However, empirical studies exploring the link between risk aversion and portfolio diversification do not necessarily support Markowitz mean-variance theory. For instance, the study of Barasinska, Schäfer and Stephan (2008) explores the link between risk aversion of households and their portfolio diversification using a large sample of German households. Main demographic characteristics (age, gender, number of children) of the members of household are controlled in the study. Moreover, information on socioeconomic status of household members (education, occupation, self-employment, income and ownership of financial assets) is provided. Despite some limitations, it was found that "self-declared risk aversion and actual behavior in diversifying investments do not always match as expected from the portfolio theory."

The paper by Ricardo Caballero (1991) shows that asymmetric adjustment costs are not sufficient to cause negative relation between investment and mean-preserving changes in uncertainty. What is also needed is imperfect competition. The author also finds that the asymmetry of adjustment costs does not influence greatly the sign of the investment-

uncertainty relation. Decisions of investors depend to a large extend on the price of capital and the expected marginal profitability of capital. Therefore, the sign of the investment-uncertainty relation is mainly established by the convexity of marginal profitability of capital in regards to prices. On the other side, with imperfect competition, the marginal profitability of capital is greatly influenced by the level of capital. Having much capital is worse than having little capital (Caballero, 1991).

In the paper of Baum, Caglayan and Talavera (2006) the impact of measures of uncertainty on firms' capital investment behavior is investigated, using a panel of U.S. firms. The authors consider three forms of uncertainty affecting firms' investment decisions. Those are own uncertainty that is derived from firms' stock returns, market uncertainty derived from Standard & Poor's 500 index returns and the relations between intrinsic and extrinsic uncertainty. It was found that "own uncertainty has a negative impact on investment in a model incorporating a measure of Tobin's Q, and a measure of Capital Asset Pricing Model based uncertainty has a negative effect on investment". Furthermore, it was found that market uncertainty has a positive impact of firm investment (Baum, Caglayan & Talavera, 2006).

There have been several researches conducted, using such statistical methods as principal component analysis and stepwise regressions that enable to prove that investment risk in EMCs is priced within the higher risks premiums, without taking into consideration firm-specific factors, such as beta coefficient, size and price-to-book value ratio for listed companies (Girard & Rahman, 2007). However, Girard and Rahman look at the problem of risk premiums at the equity market, whereas the problem of risk premiums on the debt market is considered in our paper. The results of Girard & Rahman, 2007 show that interest rates are relatively high in the countries with high risks.

Brigo and Pallavicini (2006) look at how counterparty risk influences interest rate by estimating the correlation between the default of an event and interest rates. For their studies they use a stochastic intensity model with possible jumps adopted for the default event. This allows estimating the correlation between counterparty risk and interest rates. In the paper it is found that counterparty risk significantly influences interest-rate payoff prices. Consequently, correlation between interest rates and default (intensity) considerably influences the adjustments due to counterparty risk. The pattern of such impacts as product characteristics and tenor structures change through fundamental numerical examples is analyzed in the paper. It allows finding of stable and reasonable patterns. If default intensities increase, with high positive correlation their correlated interest rates will increase more than with low correlation.

The study of Arunkumar and Kotreshwar (2005) stresses the importance of efficient risk management system in commercial banks and describes the relevant changes in risk management practices in Indian commercial banks after the introduction of the current Bank for International Settlement (BIS) regulatory model – New Basel Capital Accord and Risk Based Supervision. This study gives theoretical background on credit risk management and shows that continuous adjustment and improvement of credit risk management practices is a global trend.

It is claimed in the paper by English and Nelson “Bank Risk Rating of Business Loans” (1998) that mainly all large banks attempt to improve the measurement and management of credit risk by assigning risk ratings to business loans. Therefore it remains relevant to understand which factors influence ratings and what the ratings mean. Furthermore, the study finds that riskier loans generally carry higher interest rates, even after taking into account of other loan terms. The regression results from this study prove that banks of all sizes price the risk premiums.

## 2. THEORETICAL FRAMEWORK

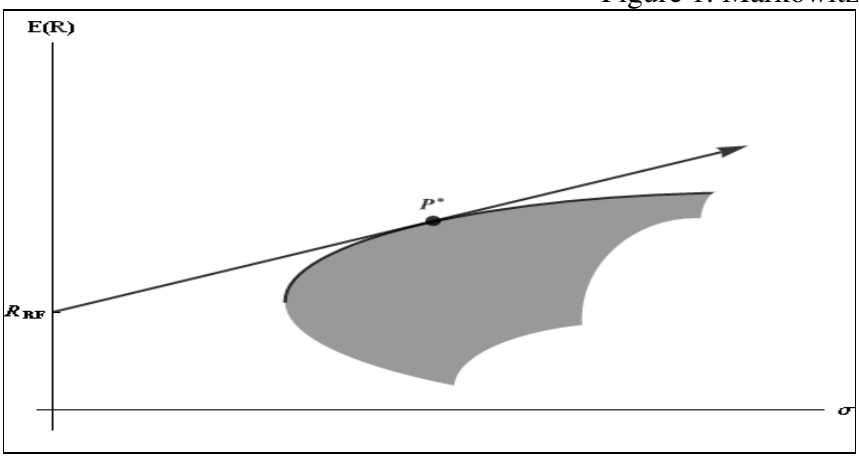
### 2.1 The Markowitz Portfolio Theory

Mean-variance theory is an important model of investment based on decision theory. The theory was developed in the 50's and 60's by Markowitz, Tobin and Sharpe. It shows how investors select assets when only the mean and variance of portfolio returns is considered. The theory relies on some assumptions. First, investors consider expected rates of return for alternative assets. Second, investment decisions are based on the levels of expected return and the expected risk. Third, investors prefer assets with higher expected returns for any given risk level, or with lower risk for any given expected return level (Brown & Reilly, 2005).

It is stated in the theorem that risk should be taken in the proportion to the risk premium and in reverse proportion with variance and risk aversion. Investor can reduce portfolio risk by diversifying assets, meaning by holding assets that are not perfectly correlated. Diversification can allow the same portfolio return with reduced risk. Risk-averse investors are predicted to have more diversified portfolios that can minimize the risks associated with variance of returns. Efficient portfolios (or Markowitz portfolios) are defined as the ones providing minimum variance for a given expected return or maximum expected return for a given variance (Markowitz, 1952).

Graphically, efficient portfolios are shown on the expected return/standard deviation (or risk) dimensions because according to the theory those parameters can summarize all the information about a portfolio of assets. In the diagram below the shaded area represents the set of parameter pairs of feasible portfolios. Along the upper edge of the feasible set is the efficient frontier. Each point on this line represents an efficient portfolio, that is, the portfolio that has the highest expected return for a given level of risk. From the point on the vertical axis at the rate of return on the risk-free asset and tangent to the efficient frontier runs the linear asset allocation line. At the point of tangency is located the super-efficient portfolio parameter (Damodaran, 2001).

Figure 1: Markowitz Portfolios




*Source: Damodaran, 2001*

Sharpe (1964) stated that the investors' optimal portfolio can lie on the line tangent to the efficient frontier and intersecting the vertical axis at the risk-free rate of return. Tobin's (1958) main finding was that the asset allocation line that divides portfolio into the part of investment into risky assets and the part of investment into risk-free assets.

## 2.2 Credit and Country Risk

Risk is defined as the possible outcomes when their probabilities are known, but the exact future consequences are unknown. Uncertainty is defined as the probability distribution, and thus the consequences for different outcomes are unknown. Credit risk is defined as the default by the borrower to repay lent money. It is the uncertainty associated with borrower's loan repayment (Arunkumar & Kotreshwar, 2005). This remains the most important risk to manage.

Lending represents the main activity within the commercial banking industry. Asset holdings are dominated by loans and loans generate the largest part of operating income. Pricing a loan requires arrangers to evaluate the risk inherent in a loan. The principal credit risk factors that banks and institutional investors contend with in buying loans are default risk and loss-given-default risk. Among the primary ways that accounts judge these risks are ratings, credit statistics, industry sector trends, management strength, and sponsor. All of these, together, determine loan terms and conditions (Yang & Watters, 2008). In order to define the probability of default, credit analysis that is based on quantitative and qualitative data can be implemented. 70% of credit risk is determined by the default risk, while 30% can be determined by both market risk (market price fluctuations) and operational risk (internal control failure for example) (Arunkumar & Kotreshwar, 2005).

Intrinsic risk, transaction risk and concentration risk constitute credit risk. Transaction risk emphasizes vulnerability in the quality of credit, and changes in earnings that result from the way banks underwrite transactions of individual loans. Intrinsic risk focuses on the risk inherent in certain lines of business and loans to certain industries. It addresses the susceptibility to historic, predictive, and lending risk factors that characterize an industry or line of business. The mixture of intrinsic and transaction risks is called concentration risk of portfolio and may result from absence of diversification by geographic region, loan taker or business area. It determines extend of problems the bank can experience under adverse conditions (Arunkumar & Kotreshwar, 2005).

The global perspective imposes a consistent effect on the cross-border analysis of borrower creditworthiness. It allows weighing the diverse national considerations in order to assess a debt holder in its local context. Analysis of each debt holder should be held in conjunction with relevant financial characteristics of a specific country or region. If the regional environment poses an additional risk to corporations operating there, that should also be incorporated in the general credit risk assessment (Standard & Poor's, 2008). Country financial ratings are commonly-used in financial markets, primarily to measure the ability of government organizations to pay their debts on time. However, businesses

and other participants in international trade lacked a country rating system to accurately assess their global business-to-business trade risks, specifically the risks of corporate payment default in a given country (International Country Risk Guide, 2006).

Business risk analysis entails the assessment of an issuer's economic, operational, and competitive environment. The analysis of corporations of different nationalities calls for an appreciation of the environment where those corporations function that includes specific geographical and industrial mix (Standard & Poor's, 2008). However, it is important to state that there are credit-worthy companies in high-risk countries and companies with poor payment records in low-risk countries. Therefore, the overall risk depends on both the company's and the country's specific characteristics (International Country Risk Guide, 2006). Some companies have managed to honor their obligations even under severe circumstances, such as inflation, currency devaluation, and fiscal crisis that cause the government to default on its foreign currency debt. It means that such companies have a higher currency rate than sovereign local currency rating. Though it is mainly an exemption to the rule, and all companies are extensively affected by country factors.

In order to evaluate the borrower it is important that the debt issuer can show financial statements prepared in accordance with the prevailing local standards. They should meet international standards and should be audited by a reputable firm. In some emerging market countries it is crucial to resolve in advance what level of disclosure will be available on an ongoing basis (Standard & Poor's, 2008).

### 2.3 Business Risk Factors and Components

Country risk is defined as the risk that something may happen in a foreign country that will stop or discourage state-owned and/or privately owned customers in that country from paying their debts on time (Skandinaviska Enskilda Banken, 2007). One of the crucial positions to be highlighted is to define the conditions of determining the country risks by major crediting institutions (including main banks operating in Scandinavia and Western Europe). It is necessary to eliminate the credit-taker company's reputation, financial position, and to presume a stand-alone project. Therefore, business risk factors are evaluated by considering the possibility of a country's default on its liabilities, rather than the environment in which business has to operate. The business might face the core problems, such as unexpected fluctuations of inflation and exchange rates, changes in taxation regulations, business cycles, political and social environment, regional bank crisis and the possibility of natural disasters. Those characteristics, combined with the overall current rating of the country made by major rating agencies (e. g. S&P, Fitch and Moody's), create the business environment, which banks consider during when evaluating the creditworthiness of investment projects.

Many different providers of country risk data evaluate business risk factors that should be considered for the country risk analysis. Those providers include the Bank of America World Information Services, the International Country Risk Guide made by Coface, Control Risks Information Services, Euromoney, Business Environment Risk

Intelligence, Institutional Investor, S&P Rating Group, the Economist Intelligence Unit, Moody's Investor Services, etc. Different techniques are used by financial institutions and rating agencies in order to evaluate country risk. Rating agencies continuously track a series of individually rated indicators for different countries. It is possible to classify those indicators into a number of subsets. For example, Coface country ratings measures the average corporate payment default risk in a given country and indicates to what extent a company's financial commitments are affected by the local business, financial and political outlook. The subsets include political factors that could interrupt payment or performance of contracts in progress, risk of currency shortage as a consequence of balance of payments crisis that can result in transfer difficulties and/or rescheduling of public or private borrowers' foreign debt, the State's ability to meet its commitments abroad, risk of sudden devaluation because of significant capital withdrawals, risk of a systematic crisis in the banking sector that could be caused by financial bubbles, cyclical risk that reflects the likelihood of a slowdown in short-term growth independent of any above-mentioned risk factors, and payment behavior for short term transactions (International Country Risk Guide, 2006).

The International Country Risk Guide (ICRG) made by Coface assesses a country risk by evaluating economic, financial, and political criteria which are determined by different factors. The factors are then scored for each country. Eventually, the country risk score is composed by evaluating simultaneously all the three dimensions for each country. The country risk factors and scoring system used by ICRG are listed further:

*Table №1. Country Risk Factors*

| **Country Risk Factor** | **Risks Associated with** |
|---|---|
| Government Stability (*GST*) | government's ability to carry out its declared programs, and its ability to stay in office |
| Socioeconomic Conditions (*SOE*) | general public satisfaction with the government's economic policies |
| Investment Profile (*IPR*) | expropriation, taxation, repatriation of capital, and labor costs |
| Internal Conflict (*ICO*) | political violence and its impact on governance |
| External Conflict (*XCO*) | both the incumbent government and inward investment |
| Corruption risk (*COR*) | corruption within the political system |
| Military in Politics (*MIL*) | military involvement in politics |
| Religion Tensions (*RT*) | the domination of a single religious group or the suppression of religious freedom |
| Law and Order (*LO*) | the weakness and partiality of a legal system, and the lack of observance of law |
| Ethnic Tensions (*ET*) | tensions within a country attributable to racial, nationality, or language divisions |
| Democratic Accountability (*DA*) | government that is not responsive to its people |
| Foreign Debt as a percentage of GDP (*FD*) | gross foreign debt service per year, in U.S. dollars |

| | |
|---|---|
| Foreign Debt Service as a percentage of Exports of Goods and Services *(DS*) | foreign debt service per year, in U.S. dollars |
| Net International Liquidity as Months of Import (*LIQ*) | total estimated official reserves for a given year, in U.S. dollars |
| Exchange Rate Stability (*XSTB)* | risk associated with the appreciation/depreciation of a currency against the U.S. dollar |
| GDP per Head (*POP*) | low GDP per head for a given year |
| Real GDP growth (*GDPG*) | percentage increase or decrease in the estimated GDP |
| Annual inflation Rate (*INF*) | annual inflation budget deficit for a given year in the national currency |
| Current Account as a percentage of GDP (*CAG*) | current account balance deficit for a given year |

*Source: International Country Risk Guide, 2006*

## 2.4 Country Risk in Emerging Markets

In emerging markets country risk takes on added importance. Numerous country-specific factors pertain to corporate analysis, and all companies are extensively affected by country factors. With increasing integration of financial markets in the developing economies as a result of globalization, deregulation and advances in technology, financial institutions pay more attention to expansion to the emerging markets in order to benefit from diversification and higher returns (Girard & Rahman, 2007). Reduction of concentration risk is possible through diversification of credit portfolio.

In general, creditworthiness of emerging market countries have improved, judged by the general rating upgrade from the three officially recognized credit rating agencies, Standard & Poors, Moody's and Fitch (Skandinaviska Enskilda Banken, 2007). However, those positive changes might be less fundamental than hoped for but rather reflect a confluence of favorable developments. For example, many poorer countries have recently benefited from increased commodity prices, which still constitute the major export products from many emerging markets. Also, interest rates and investors' risk aversion in crediting countries have fallen to a low level that facilitates the refinance of the external debt of several heavily indebted emerging market countries. EMCs have also benefited from a boom in consumption and investment demand in the US that enables to boost their current account balances (Skandinaviska Enskilda Banken, 2007).

However, the favorable investment climate maintained in developing regions and the CIS is more than offset by the adverse effects of financial market turbulence, especially that arising from the US sub-prime market crisis in the second half of 2007 (Skandinaviska Enskilda Banken, 2007). The global financial crisis 2008 resulted in a severe economic downturn in particular in emerging country economies because of reduced credit and lower export demand. Risk aversion increased among investors that in turn resulted in less foreign-exchange loans. It influences negatively credit systems in emerging countries as "weak" credit institutions are acquired or nationalized.

## 2.5 Risk Assessment Framework

Risk is uncertainty in some form and is a natural ingredient in all types of operations. It denotes a potentially negative impact on a company that can arise due to current internal processes or future internal or external events. The concept of risk comprises both the likelihood that an event will occur and the impact it would have on the company (Swedbank, 2007). Currently banks are shifting towards a new high powered environment of financial operations and trading, that is characterized by unknown nature of risks. It becomes crucial for banks to have an efficient risk management system that allows continuous survival in the market. Thus effective credit risk management is vital for the success of the financial institution, especially in the industry characterized by tough competition and credit risk rating system becomes one of the cornerstones of credit risk management (Arunkumar & Kotreshwar, 2005). Credit institutions should apply a sharply framed system to distinguish risk event, evaluate its probability, calculate possible loss, and evaluate the possibility of its exposure, evaluate the costs of the risk facture and monitor it (see appendix 1). Risk management practitioners have constantly tried to improve current techniques and in recent years, many steps have been made in credit risk management (Mohan, 2001).

In general, most of the banks have developed in-house rating systems for their borrowers. The problem is a correct identification of prevalent risk factors, understand the value of those risks, and create possibility of risk diversification as well as include the costs of associated risks to the credit portfolio. The key problem of credit management model is absence of necessary data to make correct evaluation of parameters that include probability of default, ratings, and value of the loss in case of default, and determine factors that influence those parameters, also the correlation between risks (Arunkumar & Kotreshwar, 2005).

Risk management primary consists of preventive and curative measures. Risk assessment, measurement and pricing, warning system to pick early signals of possible defaults and better credit portfolio diversification constitute preventive measures. The purpose of curative measures, however, is to minimize consecutive losses through risk sharing, securitization, legal enforcement, derivative trading, etc (Arunkumar & Kotreshwar, 2005).

## 2.6 Credit Risk Management according to the New Basel Capital Accord

The progress in regards to risk management techniques was reached with an introduction of the current Bank for International Settlement (BIS) regulatory model. The New Basel Capital Accord started to function at the end of 2006, and all the banks (including domestic and international) should have joined the Accord (Arunkumar & Kotreshwar, 2005). The rules strengthen the link between risk taking and capital requirements. Also they require more strict requirements on banks concerning risk management. Moreover, they oblige credit institutions to disclose information about its risks, risk management and capital requirements (Swedbank, 2007). According to the Basel Accord banks can choose between two broad methodologies for calculating their capital requirements for

credit risk. One option is the Standardized Approach that measures credit risk in a standardized manner, supported by external credit assessments. The other option is the Internal Rating-based (IRB) Approach that allows banks to use their own rating systems for credit risk (e.g. used by Swedbank). Banks need to receive supervisory approval to use the IRB approach. When determining the risk weights in the standardized approach banks may use assessments by external credit assessment institutions recognized as eligible for capital purposes by national supervisors. When using the IRB approach, banks need to evaluate the risk components that determine the capital requirement for a given exposure. The risk components include measures of the probability of default (PD), loss given default (LGD), the exposure at default (EAD), and effective maturity (M) (International Convergence of Capital Measurement and Capital Standards, 2006). The expected loss (EL) is the product of the three risk dimensions:

$$PD * LGD * EAD = EL \quad (1.1)$$

EL provides an indication of the mean value of the credit loss that a bank is expected to incur. Also banks must maintain a capital buffer against unexpected losses (*UL*) to protect themselves against losses exceeding the predicted level. EL and UL both need to be considered in pricing and the monitoring of profitability. Eventually, the capital requirement for the credit risk is calculated on the basis of PD, LGD, EAD and the type and size of the counterparty (Swedbank, 2007). In some cases, banks can be required to use a supervisory value rather than an internal estimate for some risk components. The risk components serve as inputs to the risk-weight functions that have been developed for separate asset classes (International Convergence of Capital Measurement and Capital Standards, 2006). The general aim of the Basel Accord is to boost the safety of the world banking system.

### 2.7 Credit Risk and Risk Rating Systems

Banks tend to have at least rudimentary risk rating systems, and loan risk is reflected in price and non-price terms. Smaller banks tend to have less sophisticated rating systems, but still loans by such institutions are very likely to be rated, and the terms and conditions of such loans appear to be quite sensitive to risk (English & Nelson, 1998).

Risk rating matters because it helps banks to improve their operations in a number of ways. First, it forces the loan officer to make an explicit assessment of the risk of a loan at the time it is approved. Second, it provides management with a way to assess the risk of the current portfolio, and so decide how much additional risk is desirable. Finally, it provides a quantitative measure of how current lending decisions are affecting the riskiness of the loan portfolio. Taken together, these three benefits suggest that risk ratings should allow banks to price the credit risk of a loan more precisely. Another benefit is that monitoring resources can be allocated more efficiently – lower rated loan can receive more careful scrutiny and the downgrading of a loan may provide a signal to the bank that actions should be taken to avoid a loss. The resulting improvement in the liquidity of business loans would be expected to lower their costs.

Thus, external rating systems have large influence on decision of crediting institutions whether to give credit and which interest rate to offer. The widespread application of risk rating by banks should be favorable for the banking industry as well as for the economy as long as ratings are reliable and provide correct information about possible future loan losses (English & Nelson, 1998). Therefore, it becomes important to understand how major rating agencies compose their ratings, what those ratings mean and which factors have a major influence on ratings.

# 3. DATA AND STATISTICAL METHOD

## 3.1 Data

One of the key questions is remaining the same – What are the elements of uncertainty in the emerging markets? How do we distinguish stable semi-market or market economy from the one, still affected by severe fluctuations in political and economic development, what finally creates the image of uncertain, but still emerging market?

To see the so-called bird's view picture of macroeconomic indicators characterizing a range of selected economies for research, it was decided to make a composite analysis, based on data, provided by the Coface Database of Country Ratings (apart from sectoral risks). Moreover, it also makes sense to combine it with the bank reports of emerging markets done by SEB International Department. In addition, from the small and medium size enterprises perspective, these country-specific analyses are combined with recent reports represented in co-publication of the World Bank, International Finance Corporation and Palgrave Macmillan, called "Doing Business 2009".

The later material investigates the regulations that enhance business activity and those that control it. It represents quantitative indicators on business regulations and the protection of property rights that can be compared across 181 economies over time. Regulations, affecting ten stages of business life are measured according to the following processes:

- starting a business;
- dealing with construction permits;
- employing workers;
- registering property;
- getting credit;
- protecting investors;
- paying taxes;
- trading across borders;
- enforcing contract;
- closing a business.

(Doing Business 2009, 2008).

### 3.1.1 Brazil

*Doing Business 2009 Ranking:* **125** (126 in 2008)

*Rating Agency Country Risk History:*

| | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 |
|---|---|---|---|---|---|---|
| Fitch | B+ | B | B | B+ | B+ | B+ |
| S&P | B+ | B+ | BB- | BB- | BB | BB+ |

Brazil has an average possibility of corporate default. The country is characterized by the volatile political and economic situation. In general, there was a positive growth and good macroeconomic balance recently. Demand within the country remains high that influences positively economic growth, which can be predicted within the 5% level. However, internal environment remains not positive enough to improve export performance of Brazil. Thus, current account deficit is predicted for the country in 2008 and 2009 unless there is a sound increase in foreign direct investment to the country. The Central Bank has stopped the reduction of interest rates. Therefore interest rates in Brazil remain relatively high. Moreover, public debt remains high (65% of GDP in gross terms and 45% in net terms in 2007). Due to high debt and lack of political stability, improvements in infrastructure and necessary reforms are postponed (International Country Risk Guide: Brazil, 2006).

*Assets:*

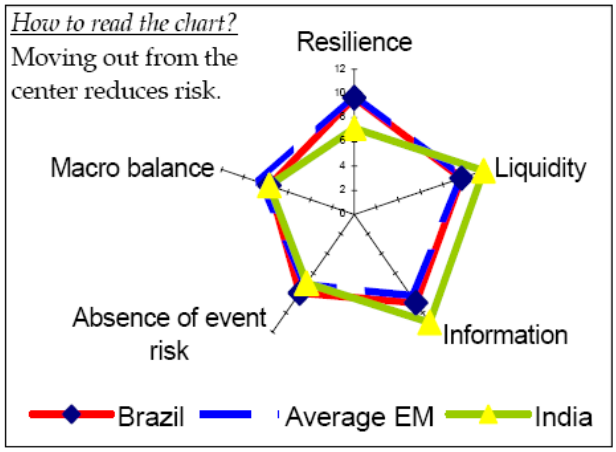
- Abundant natural resource base;
- Economic diversification with large export-oriented industrial sector;
- Better economic and market stability environment in recent years and planned reforms for future macroeconomic balance;
- Attractive for foreign investment due to large internal market and competitive labour costs.

*Weaknesses:*

- Not effective development of private or public transportation infrastructure;
- Dependence on fluctuations of raw material prices;
- Necessity of social reforms in all fields;
- Large public debt, affecting domestic interest rates with short maturity.

(International Country Risk Guide: Brazil, 2006).

*Risk assessment:*




*Source :www.seb.se*

*Graph:* Brazil's risk profile is close to the average for all emerging market countries, only somewhat weaker on macro balance. Compared with India, Brazil is weaker on liquidity and information, but stronger on resilience.

*Table №2. Doing Business: Brazil*

| | | | |
|---|---|---|---|
| **Starting a business** (rank) | **127** | **Protecting investors** (rank) | **70** |
| Procedures (number) | 18 | Extent of disclosure index (0-10) | 6 |
| Time (days) | 152 | Extent of director liability index (0-10) | 7 |
| Cost (%of income per capita) | 8.2 | | |
| Minimum capital (% of income per capita) | 0.0 | Ease of shareholder suits index (0-10) | 3 |
| | | Strength of investor protection index (0-10) | 5.3 |
| **Dealing with construction permits** (rank) | **108** | **Paying taxes** (rank) | **145** |
| | | Payments (number per year) | 11 |
| Procedures (number) | 18 | Time (hours per year) | 2600 |
| Time (days) | 411 | Total tax rate (% of profit) | 69.4 |
| Cost (% of income per capita) | 46.7 | | |
| **Employing workers** (rank) | **121** | **Trading across borders** (rank) | **92** |
| Difficulty of hiring index (0-100) | 78 | Documents to export (number) | 8 |
| Rigidity of hours index (0-100) | 60 | Time to export (days) | 14 |
| Difficulty of firing index (0-100) | 0 | Cost to export (US$ per container) | 1240 |
| Rigidity of employment index (0-100) | 46 | Documents to import (number) | 7 |
| | | Time to import (days) | 19 |
| Firing costs (weeks of salary) | 37 | Cost to import (US$ per container) | 1275 |
| **Registering property** (rank) | **111** | **Enforcing contracts** (rank) | **100** |
| Procedures (number) | 14 | Procedures (number) | 45 |
| Time (days) | 42 | Time (days) | 616 |
| Costs (% of the property value) | 2.7 | Cost (% of claim) | 16.5 |
| **Getting credit** (rank) | **84** | **Closing a business** (rank) | **127** |
| Strength of legal rights index (0-10) | 3 | Time (years) | 4.0 |
| Depth of credit information index (0-6) | 5 | Cost (% of estate) | 12 |
| | | Recovery rate (cents on the dollar) | 17.1 |
| Public registry coverage (% of adults) | 20.2 | | |
| Private bureau coverage (% of adults) | 62.2 | | |

*Source: combined data from Doing Business 2009 and 2008*

### 3.1.2 China

*Doing Business 2009 Ranking:* **61** (58 in 2008)

*Rating Agency Country Risk History:*

| | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 |
|---|---|---|---|---|---|---|
| Fitch | A- | A- | A- | A- | A | A |
| S&P | BBB | BBB | BBB+ | A- | A | A |
| Moody's | A3 | A3 | A2 | A2 | A2 | A1 |

China can be characterized as having stable political and economic environment though with high possibility of governmental interference in business. Average threat for corporate default exists in the country. Economic growth in China has remained one of the highest in the world during the recent years. This could be explained by high internal and external demand for the goods produced in the country. China is expected to have persistent current account surplus. On the other hand, domestic demand is expected to decrease due to the expected "burst of Stock Exchange bubble, the correction in the real estate market" and an increase in inflation. Chinese society can still be characterized by large inequality in incomes, in particular between urban and rural population, that can cause social and political turbulences (International Country Risk Guide: China, 2006).

*Assets:*

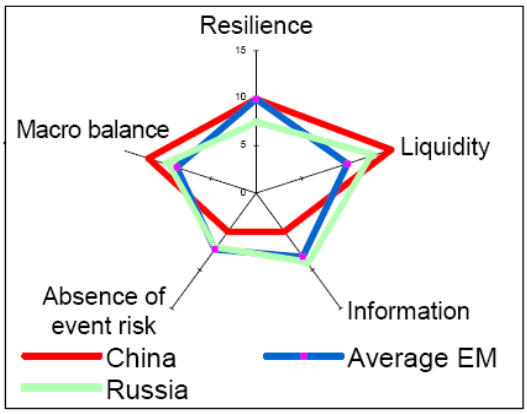
- High external account due to diversified and competitive industrial sector;
- Large infrastructural projects for Olympic Games 2008 in Beijing;
- High rate of corporate savings enables to finance most investments with internal funds;
- Rise-up of China on the international political and economic arena.

*Weaknesses:*

- Unsolved dispute with status of Taiwan;
- Some industrial and commercial sectors might experience large decline due to overcapacity in case of recession;
- Underdeveloped banking sector, which is already not enough to provide funds for potential projects and growth;
- Disregard of environmental problems;
- Social misbalance and increasing inequality.

(International Country Risk Guide: China, 2006)

*Risk Assessment:*




*Source: www.seb.se*

*Graph:* China scores above average on macro balance and liquidity, but is weaker on reliable information and more exposed to event risk than the average EMC. Resilience is about the average for EMCs.

*Table №3. Doing Business: China*

| | | | |
|---|---|---|---|
| **Starting a business** (rank) | **151** | **Protecting investors** (rank) | **88** |
| Procedures (number) | 14 | Extent of disclosure index (0-10) | 10 |
| Time (days) | 40 | Extent of director liability index (0-10) | 1 |
| Cost (%of income per capita) | 8.4 | | |
| Minimum capital (% of income per capita) | 158.1 | Ease of shareholder suits index (0-10) | 4 |
| | | Strength of investor protection index (0-10) | 5.0 |
| **Dealing with construction permits** (rank) | **176** | **Paying taxes** (rank) | **132** |
| | | Payments (number per year) | 9 |
| Procedures (number) | 37 | Time (hours per year) | 504 |
| Time (days) | 336 | Total tax rate (% of profit) | 79.9 |
| Cost (% of income per capita) | 698.4 | | |
| **Employing workers** (rank) | **111** | **Trading across borders** (rank) | **48** |
| Difficulty of hiring index (0-100) | 11 | Documents to export (number) | 7 |
| Rigidity of hours index (0-100) | 20 | Time to export (days) | 21 |
| Difficulty of firing index (0-100) | 50 | Cost to export (US$ per container) | 460 |
| Rigidity of employment index (0-100) | 27 | Documents to import (number) | 6 |
| | | Time to import (days) | 24 |
| Firing costs (weeks of salary) | 91 | Cost to import (US$ per container) | 545 |
| **Registering property** (rank) | **30** | **Enforcing contracts** (rank) | **18** |
| Procedures (number) | 4 | Procedures (number) | 34 |
| Time (days) | 29 | Time (days) | 406 |
| Costs (% of the property value) | 3.2 | Cost (% of claim) | 11.1 |
| **Getting credit** (rank) | **59** | **Closing a business** (rank) | **62** |
| Strength of legal rights index (0-10) | 6 | Time (years) | 1.7 |

| | | | |
|---|---|---|---|
| Depth of credit information index (0-6) | 4 | Cost (% of estate) | 22 |
| | | Recovery rate (cents on the dollar) | 35.3 |
| Public registry coverage (% of adults) | 58.8 0 | | |
| Private bureau coverage (% of adults) | | | |

*Source: combined data from Doing Business 2009 and 2008*

### 3.1.3 Kazakhstan

*Doing Business 2009 Ranking:* **70** (80 in 2008)

*Rating Agency Country Risk History:*

| | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 |
|---|---|---|---|---|---|---|
| Fitch | BB- | BB | BB+ | BB+ | BBB- | BBB |
| S&P | BB- | BB | BB+ | BB+ | BBB- | BBB |

Average corporate default risk exists in Kazakhstan. The country can be characterized by the volatile political and economic situation. However, stable relatively high rate of GDP growth has been evident in the country for the recent years. The economy has benefited from abundant natural recourses, such as oil, iron, uranium and others, but is expected to suffer heavily from the subprime crisis because the country is dependent on foreign credits. Financial crisis causes decreased consumption, a fall mainly in construction and financial sectors of the economy. However, current stable political power is expected to guarantee necessary measures to minimize the negative effects of financial crisis (International Country Risk Guide: Kazakhstan, 2006).

*Assets:*

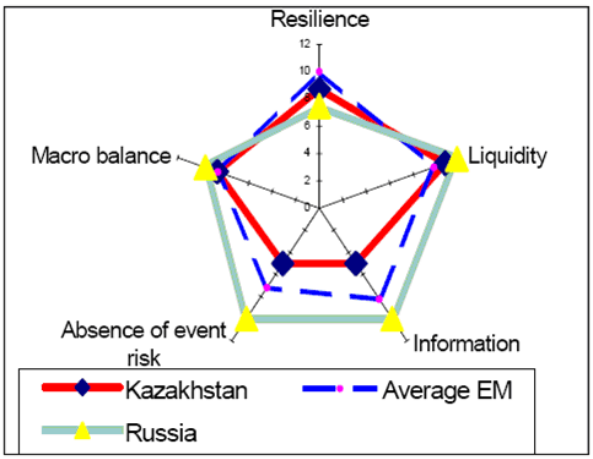
- One of the leading natural resource abundant countries (oil, natural gas, iron ore, uranium);
- Expected threefold increase of exports of oil due to new fields development and investments in infrastructure;
- Strong sovereign fund accumulated from oil revenues can support economy in case of crisis;
- Relatively more stable and open to foreign capital and cooperation compared to other Central Asian states.

*Weaknesses:*

- Already high level and ongoing growth of reliance on private credit;
- Uncertainty about further succession to current president Nazarbaev;
- High level of corruption and scarce transparency.

(International Country Risk Guide: Kazakhstan, 2006)

*Risk Assessment:*




*Source: www.seb.se*

*Graph:* The graph depicts the creditworthiness of Kazakhstan as "flat", meaning strong on liquidity and macro balance, though weaker on information and event risk, compared with other emerging market countries and one of its peers, Russia. Resilience is close to average.

*Table №4. Doing Business: Kazakhstan*

| | | | |
|---|---|---|---|
| **Starting a business** (rank) | **78** | **Protecting investors** (rank) | **53** |
| Procedures (number) | 8 | Extent of disclosure index (0-10) | 7 |
| Time (days) | 21 | Extent of director liability index (0-10) | 1 |
| Cost (%of income per capita) | 5.2 | | |
| Minimum capital (% of income per capita) | 15.9 | Ease of shareholder suits index (0-10) | 9 |
| | | Strength of investor protection index (0-10) | 5.7 |
| **Dealing with construction permits** (rank) | **175** | **Paying taxes** (rank) | **49** |
| Procedures (number) | 38 | Payments (number per year) | 9 |
| Time (days) | 231 | Time (hours per year) | 271 |
| Cost (% of income per capita) | 1431.8 | Total tax rate (% of profit) | 36.4 |
| **Employing workers** (rank) | **29** | **Trading across borders** (rank) | **180** |
| Difficulty of hiring index (0-100) | 0 | Documents to export (number) | 11 |
| Rigidity of hours index (0-100) | 40 | Time to export (days) | 89 |
| Difficulty of firing index (0-100) | 30 | Cost to export (US$ per container) | 3005 |
| Rigidity of employment index (0-100) | 23 | Documents to import (number) | 13 |
| | | Time to import (days) | 76 |
| Firing costs (weeks of salary) | 9 | Cost to import (US$ per container) | 3055 |
| **Registering property** (rank) | **25** | **Enforcing contracts** (rank) | **28** |
| Procedures (number) | 5 | Procedures (number) | 38 |
| Time (days) | 40 | Time (days) | 230 |
| Costs (% of the property value) | 0.1 | Cost (% of claim) | 22 |

| | | | |
|---|---|---|---|
| **Getting credit** (rank) | **43** | **Closing a business** (rank) | **100** |
| Strength of legal rights index (0-10) | 5 | Time (years) | 3.3 |
| Depth of credit information index (0-6) | 6 | Cost (% of estate) | 18 |
| | | Recovery rate (cents on the dollar) | 25.3 |
| Public registry coverage (% of adults) | 0.0 | | |
| Private bureau coverage (% of adults) | 25.6 | | |

*Source: combined data from Doing Business 2009, 2008*

### 3.1.4 India

*Doing Business 2009 Ranking:* **122** (120 in 2008)

Business environment is relatively secure, though with average probability of corporate default. Since 2003 India has demonstrated high GDP growth (9% in 2007). A slight decline in the economic growth is expected in the coming years, though GDP growth will remain high because of good foreign investment flow to the country, reasonable external debt and high savings. From the negative side, it remains challenging to obtain financial information for companies operating in India due to the lack of transparency. Inflation is still high that can be explained by the growing food and energy prices. Economic growth is slowed down by enormous needs to improve infrastructure and social services (International Country Risk Guide: India, 2006).

*Rating Agency Country Risk History:*

| | 2002 | 2003 | 2004 | 2005 | 2006 |
|---|---|---|---|---|---|
| Fitch | BB | BB | BB+ | BB+ | BBB- |
| S&P | BB | BB | BB | BB+ | BB+/pos |
| Moody's | Ba2 | Ba1 | Baa3 | Baa3 | Baa3 |

*Assets:*

- Quite small foreign debt and large enough foreign exchange reserves;
- Steady and "healthy" economic growth, based on exports, investment and growth of internal consumption;
- High savings rate creates benefit for corporate financing;
- Secure private property rights create advantage in development of progressive sectors, such as IT, pharmaceuticals, outsourcing, and textiles.

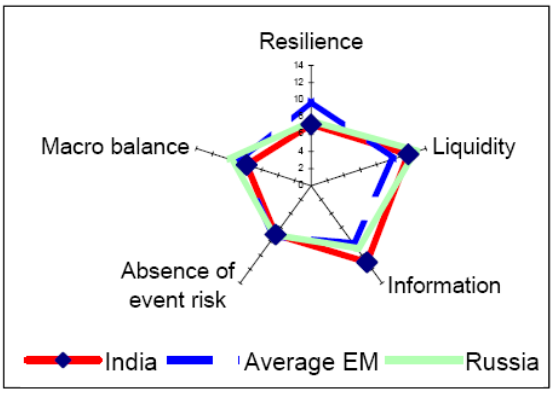
*Weaknesses:*

- Recent rapid increase in private company debt;
- Underdevelopment of transportation infrastructure in some areas;
- Rural areas are falling behind today's economic development;

- Public sector financial misbalances create the largest problem, when most of development projects can not be preceded as funds are spent on debt service.

(International Country Risk Guide: India, 2006)

*Risk Assessment:*




*Source: www.seb.se*

*Graph:* India's risk profile is strong on information and liquidity (like Russia), but other parts of the pentagon fall in or within average, meaning worse. Estimates of event risks include instability in neighboring Pakistan.

*Table №5. Doing Business: India*

| | | | |
|---|---|---|---|
| **Starting a business** (rank) | **121** | **Protecting investors** (rank) | **38** |
| Procedures (number) | 13 | Extent of disclosure index (0-10) | 7 |
| Time (days) | 30 | Extent of director liability index (0-10) | 4 |
| Cost (%of income per capita) | 70.1 | | |
| Minimum capital (% of income per capita) | 0 | Ease of shareholder suits index (0-10) | 7 |
| | | Strength of investor protection index (0-10) | 6.0 |
| **Dealing with construction permits** (rank) | **136** | **Paying taxes** (rank) | **169** |
| | | Payments (number per year) | 60 |
| Procedures (number) | 20 | Time (hours per year) | 271 |
| Time (days) | 224 | Total tax rate (% of profit) | 71.5 |
| Cost (% of income per capita) | 414.7 | | |
| **Employing workers** (rank) | **89** | **Trading across borders** (rank) | **90** |
| Difficulty of hiring index (0-100) | 0 | Documents to export (number) | 8 |
| Rigidity of hours index (0-100) | 20 | Time to export (days) | 17 |
| Difficulty of firing index (0-100) | 70 | Cost to export (US$ per container) | 945 |
| Rigidity of employment index (0-100) | 30 | Documents to import (number) | 9 |
| | | Time to import (days) | 20 |
| Firing costs (weeks of salary) | 56 | Cost to import (US$ per container) | 960 |

| | | | |
|---|---|---|---|
| **Registering property** (rank) | **105** | **Enforcing contracts** (rank) | **180** |
| Procedures (number) | 6 | Procedures (number) | 46 |
| Time (days) | 45 | Time (days) | 1420 |
| Costs (% of the property value) | 7.5 | Cost (% of claim) | 39.6 |
| **Getting credit** (rank) | **28** | **Closing a business** (rank) | **140** |
| Strength of legal rights index (0-10) | 8 | Time (years) | 10.0 |
| Depth of credit information index (0-6) | 4 | Cost (% of estate) | 9 |
| | | Recovery rate (cents on the dollar) | 10.4 |
| Public registry coverage (% of adults) | 0 | | |
| Private bureau coverage (% of adults) | 10.5 | | |

*Source: combined data from Doing Business 2009 and 2008*

### 3.1.5 Russia

*Doing Business 2009 Ranking:* **120** (112 in 2008)

Average corporate default risk is expected in Russian Federation. Political and economic situation can be characterized as being uncertain. Economic growth has been persistently high during the recent years, and is expected to rise even further due to an increase in domestic consumption and investment, both domestic and foreign direct investment. The risk of liquidity crisis is low because of high foreign exchange reserves. On the other hand, inflation has been also high and is expected remain at this level (13% in 2008). Credit risk remains high mainly due to the lack of transparency. Business environment is expected to improve after the election of new president because of an associated more liberal trend, political liberty and campaign against corruption (International Country Risk Guide: Russia, 2006).

*Rating Agency Country Risk History:*

| | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 |
|---|---|---|---|---|---|---|
| Fitch | B+ | BB- | BB+ | BBB- | BBB | BBB+ |
| S&P | B+ | BB | BB | BB+ | BBB | BBB+ |
| Moody's | B2 | B1 | Ba3 | Ba1 | Baa3 | Baa2 |

*Assets:*

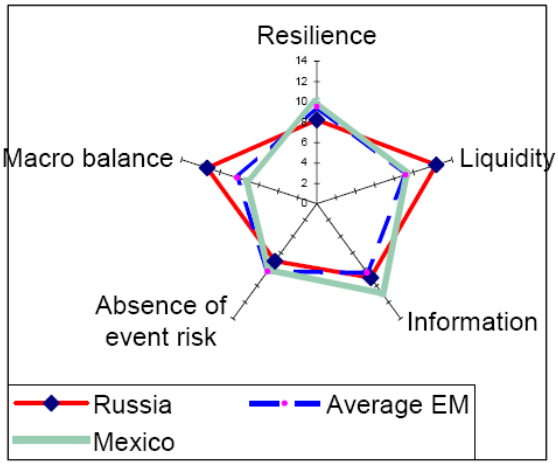
- Recent political stability enabled to increase Russia's energy status;
- Abundant natural resources and skilled labour;
- Large sovereign fund and relatively small foreign debt gives more political and economic stability and power to sustain crises;
- Olympic Games in Sotchi in 2014 would imply large infrastructural development projects and increase tourist attractiveness.

*Weaknesses:*

- Governmental intervention and takeovers of private business can damage country's reputation for FDI and management incentives;
- Depletion of capital equipment negatively affects competitiveness of industries;
- Investment rate remains one of the lowest among the major EMCs;
- Problems with inconsistency and implementations of reforms.

(International Country Risk Guide: Russia, 2006)

*Risk Assessment:*




*Source: www.seb.se*

*Graph:* Russia's risk profile looks strong on liquidity and macro balance – hard economic factors of medium term significance, but weaker on long-term factors, including resilience. Russia is also weaker on event risk, but slightly stronger on information, than average. According to SEB's perception, the closest country for comparison could be Mexico in this case.

*Table №6. Doing Business: Russia*

| | | | |
|---|---|---|---|
| **Starting a business** (rank) | **65** | **Protecting investors** (rank) | **88** |
| Procedures (number) | 8 | Extent of disclosure index (0-10) | 6 |
| Time (days) | 29 | Extent of director liability index (0-10) | 2 |
| Cost (%of income per capita) | 2.6 | Ease of shareholder suits index (0-10) | 7 |
| Minimum capital (% of income per capita) | 2.2 | Strength of investor protection index (0-10) | 5.0 |
| **Dealing with construction permits** (rank) | **180** | **Paying taxes** (rank) | **134** |
| Procedures (number) | 54 | Payments (number per year) | 22 |
| Time (days) | 704 | Time (hours per year) | 448 |
| Cost (% of income per capita) | 2612.7 | Total tax rate (% of profit) | 48.7 |
| **Employing workers** (rank) | **101** | **Trading across borders** (rank) | **161** |

| | | | |
|---|---|---|---|
| Difficulty of hiring index (0-100) | 33 | Documents to export (number) | 8 |
| Rigidity of hours index (0-100) | 60 | Time to export (days) | 36 |
| Difficulty of firing index (0-100) | 40 | Cost to export (US$ per container) | 2150 |
| Rigidity of employment index (0-100) | 44 | Documents to import (number) | 13 |
| | | Time to import (days) | 36 |
| Firing costs (weeks of salary) | 17 | Cost to import (US$ per container) | 2150 |
| **Registering property** (rank) | **49** | **Enforcing contracts** (rank) | **18** |
| Procedures (number) | 6 | Procedures (number) | 37 |
| Time (days) | 52 | Time (days) | 281 |
| Costs (% of the property value) | 0.2 | Cost (% of claim) | 13.4 |
| **Getting credit** (rank) | **109** | **Closing a business** (rank) | **89** |
| Strength of legal rights index (0-10) | 3 | Time (years) | 3.8 |
| Depth of credit information index (0-6) | 4 | Cost (% of estate) | 9 |
| | | Recovery rate (cents on the dollar) | 28.2 |
| Public registry coverage (% of adults) | 0 | | |
| Private bureau coverage (% of adults) | 10.0 | | |

*Source: combined data from Doing Business 2009 and 2008*

### 3.1.6 Ukraine

*Doing Business 2009 Ranking:* **145** (144 in 2008)

A very uncertain political and economic environment which effects high possibility of corporate default and various problems of making business is typical for Ukraine. Economic growth has been relatively high until 2008. However, economic activity has slowed significantly in 2008 due to the fall in the price for metal, an increase in the imported price for gas, financial crisis and political instability. Inflation remains at a high level. Imports continue to grow that result in an increase in external account deficit (International Country Risk Guide: Ukraine, 2006).

*Rating Agency Country Risk History:*

| | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 |
|---|---|---|---|---|---|---|
| Fitch | B | B+ | B+ | BB- | BB- | BB- |
| S&P | B | B | B+ | BB- | BB- | BB- |
| Moody's | B2 | B1 | B1 | B1 | B1 | B1 |

*Assets:*

- Low cost skilled labour force;
- Possibility to benefit from gas transits from Russia to EU due to geographical location in between;
- Current process of social democratization reflected in freedom of media;

- Low level of public debt limits sovereign risk.

*Weaknesses:*

- Inefficient energy-intensive industrial sector;
- Not diversified exports, concentrated mainly on metallurgical sector;
- Economy is highly dependent on steel and gas prices;
- Unclear taxation system, bureaucracy, problems with law enforcement and general inconsequence of political and economic development undermined business environment.

(International Country Risk Guide: Ukraine, 2006)

*Risk Assessment:*


*Source: www.seb.se*

*Graph:* Ukraine shows no particular strength and is generally weaker on all factors, than average among EMCs.

*Table №7. Doing Business: Ukraine*

| | | | |
|---|---|---|---|
| **Starting a business** (rank) | **128** | **Protecting investors** (rank) | **142** |
| Procedures (number) | 10 | Extent of disclosure index (0-10) | 1 |
| Time (days) | 27 | Extent of director liability index (0-10) | 3 |
| Cost (%of income per capita) | 5.5 | | |
| Minimum capital (% of income per capita) | 174.2 | Ease of shareholder suits index (0-10) | 7 |
| | | Strength of investor protection index (0-10) | 3.7 |
| **Dealing with construction permits** (rank) | **179** | **Paying taxes** (rank) | **180** |
| | | Payments (number per year) | 99 |
| Procedures (number) | 30 | Time (hours per year) | 848 |
| Time (days) | 471 | Total tax rate (% of profit) | 58.4 |
| Cost (% of income per capita) | 1901.7 | | |
| **Employing workers** (rank) | **100** | **Trading across borders** (rank) | **131** |
| Difficulty of hiring index (0-100) | 44 | Documents to export (number) | 6 |

| | | | |
|---|---|---|---|
| Rigidity of hours index (0-100) | 60 | Time to export (days) | 31 |
| Difficulty of firing index (0-100) | 30 | Cost to export (US$ per container) | 1230 |
| Rigidity of employment index (0-100) | 45 | Documents to import (number) | 10 |
| | | Time to import (days) | 36 |
| Firing costs (weeks of salary) | 13 | Cost to import (US$ per container) | 1250 |
| **Registering property** (rank) | **140** | **Enforcing contracts** (rank) | **49** |
| Procedures (number) | 10 | Procedures (number) | 30 |
| Time (days) | 93 | Time (days) | 354 |
| Costs (% of the property value) | 2.9 | Cost (% of claim) | 41.5 |
| **Getting credit** (rank) | **28** | **Closing a business** (rank) | **143** |
| Strength of legal rights index (0-10) | 9 | Time (years) | 2.9 |
| Depth of credit information index (0-6) | 3 | Cost (% of estate) | 42 |
| | | Recovery rate (cents on the dollar) | 9.1 |
| Public registry coverage (% of adults) | 0 | | |
| Private bureau coverage (% of adults) | 3.0 | | |

*Source: combined data from Doing Business 2009 and 2008*

### 3.2 Statistical Method and Results

The purpose of this part is to analyze the dependence of the country ratings made by the main rating agencies, such as Fitch, Standards & Poor's and Moody's on the main economic indicators. Issue ratings are an assessment of default risk, but may incorporate an assessment of relative seniority or ultimate recovery in the event of default.

Firstly, the Fitch International Long-term Credit Rating is considered. It is used as a benchmark measure of probability of default and is formally described as an Issuer Default Rating (IDR). Secondly, Standards & Poor's Long-Term Issue Credit Rating is considered. It is based on the following considerations:

- Likelihood of payment—capacity and willingness of the obligor to meet its financial commitment on an obligation in accordance with the terms of the obligation
- Nature of and provisions of the obligation
- Protection afforded by, and relative position of, the obligation in the event of bankruptcy, reorganization, or other arrangement under the laws of bankruptcy and other laws affecting creditors' rights.

*Source: Understanding Credit Ratings, Standard & Poor's, 2002*

The Fitch International Long-term Credit Rating and Standards & Poor's Long-Term Issue Credit Rating use the same grading scale (see Appendix 2 and 3). Therefore, it is decided to assign the highest number to the highest possible rating for both those ratings in order to transform nominal data into ordinal data, so that D=0, RD=1, C=2, CC=3,

CCC=4, B- = 5, B = 6, B+ = 7, BB- = 8, BB = 9, BB+ = 10, BBB- = 11, BBB = 12, BBB+ = 13, A- = 14, A = 15, A+ = 16, AA = 17, AAA = 18.

Moody's long-term obligation ratings use a different grading scale (see Appendix 4). They are opinions of the relative credit risk of fixed-income obligations with an original maturity of one year or more. They address the possibility that a financial obligation will not be honored as promised. Such ratings reflect both the likelihood of default and any financial loss suffered in the event of default.

For the Moody's long-term obligation ratings also the highest number is assigned to the highest possible rating in order to transform nominal data into ordinal data, so that C=0, Ca=1, Caa3 =2, Caa2 =3, Caa1 = 4, B3 = 5, B2 = 6, B1 = 7, Ba3 = 8, Ba2 = 9, Ba1 = 10, Baa3 = 11, Ba2 = 12, Baa1 = 13, A3 = 14, A2 = 15, A1 = 16, Aa3 = 17, Aa2 = 18, Aa1 = 19, AAA = 20.

The following five macroeconomic indicators are considered to influence country ratings: 1. Economic growth (%); 2. Inflation (period-end rate); 3. Foreign debt (% GDP); 4. Debt service (% exports)[1]; 5. Real interest rate.

Intuitively, it can be predicted that there is positive relation between economic growth and the ratings, negative relation between foreign debt, debt service, real interest rate and the ratings. Inflation should have a negative or no effect on the country's credit rating because most important is expected inflation and stability of inflation rate.

In order to see which macroeconomic indicators predict country ratings, a model that includes one of the ratings as a dependent variable and the macroeconomic indicators as explanatory variables is composed. Firstly, the dataset of pooled data is created by looking at the same cross-sectional units over time from 2002 to 2007 (see Appendix 10). Afterwards, a linear regression is run on those variables to determine if the explanatory variables can accurately predict the ratings (see Appendix 5).

The hypothesis is tested $H_0$: there is significant relation between the macroeconomic indicators and the ratings (separately for each variable), using the following model:

Model 1: $Y_i = c + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \varepsilon$, where
$Y_i$ – the rating (S&P or Fitch),
$X_1$ – Economic growth (%),
$X_2$ – Inflation (period-end rate),
$X_3$ – Foreign debt (% GDP),
$X_4$ – Debt Service (% exports),
$X_5$ – Real Interest Rate,
$\varepsilon$ – Error term.

[1] Debt service is defined as a ratio of debt service payments (interest and principal due during a year) made by a country to that country's export earnings.

From the regression model with the Fitch ratings, statistically significant beta coefficients are obtained for economic growth ($X_1$), foreign debt ($X_3$) and real interest rate ($X_5$), fixing the significance level at 5%. P-values for those dependent variables lie within 0.05 limitations. Therefore, the null-hypothesis for those variables cannot be rejected. However, the p-values for inflation ($X_2$) and debt service ($X_4$) are not significant. The null-hypothesis for those variables can be rejected. The results of the regression suggest that when the economic growth goes up by 1%, the average Fitch rating goes up by about 0.442 units. When foreign debt goes up by 1%, the average Fitch rating goes down by about 0.108 units. When real interest rate goes up by 1%, the average Fitch rating goes down by about 0.367 units (see Appendix 5).
If to look at the model of the Standard and Poor's rating, then statistically significant relation exists between the dependent variable and foreign debt (p-value = 0.03), economic growth (p-value = 0.026), and debt service (p-value = 0.048). Therefore, the null-hypothesis for those variables cannot be rejected. However, the model shows insignificant relation between the Standard and Poor's rating and inflation, as well as the real interest rate. Thus, the null-hypothesis for those variables can be rejected. The results of the regression model suggest that when economic growth goes up by 1 %, the average Standard & Poor's rating goes up by approximately 0.433 units. When foreign debt goes up by 1 %, the Standard and Poor's rating goes down by about 0.107 units. When debt service goes up by 1 %, the Standard & Poor's rating goes up by approximately 0.85 units (see Appendix 5).

If to compare the two models on the Fitch and on the Standard and Poor's rating, then $R^2$, the coefficient of determination, is higher for the model on the Fitch rating. $R^2$ measures the overall goodness of fit of the regression model. Thus, the regression model on the Fitch rating has higher overall fit because its independent variables explain the higher proportion variance in the dependent variable.

In the next step dummy variables for each country are included in order to control for the country effects, and to see the effect of macroeconomic indicators on the ratings within each country. Only five dummy variables are included in the regression model and the Brazil dummy variable is left out to avoid falling into the dummy-variable trap (the situation of perfect collinearity). Therefore, the beta coefficients of the other five dummy variables are interpreted in comparison to the Brazil category. The hypothesis is tested $H_0$: there is significant relation between the macroeconomic indicators and the ratings within each country (separately for each variable), using the following regression model:

Model 2: $Y_i = c + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 D_1 + \beta_7 D_2 + \beta_8 D_3 + \beta_9 D_4 + \beta_{10} D_5 + \varepsilon$, where
$Y_i$ – the rating (S&P or Fitch),
$X_1$ – Economic growth (%),
$X_2$ – Inflation (period-end rate),
$X_3$ – Foreign debt (% GDP),
$X_4$ – Debt Service (% exports),
$X_5$ – Real Interest Rate,
$D_1$ – dummy variable for China,
$D_2$ – dummy variable for India,

$D_3$ – dummy variable for Kazakhstan,
$D_4$ – dummy variable for Russia,
$D_5$ – dummy variable for Ukraine,
 – error term.

As a result, statistically significant outcomes are obtained only for inflation (p-value = 0.001) and real interest rate (p-value = 0.000) as well as for China (p-value = 0.002) and Ukraine (p-value = 0.023) dummy variables (see Appendix 6). When real interest rates in China or Ukraine increase by 1%, then the Fitch rating of those countries goes down by 0.467 units.

The intercept value c represents the mean value for the dependent variable (Brazil) when all of the independent dummy variables are zero. The coefficients attached to the dummy variables are known as the differential intercept coefficients because they tell by how much the value of the intercept that receives the value of 1 differs from the intercept coefficient of the benchmark category. The intercept values for Brazil, China and Ukraine are statistically different, being 14,662 for Brazil, 18.439 (= 14,662 + 3,777) for China, and 10,858 (14,662 -3,804) for Ukraine. These differences in intercepts may be due to unique features of each country, such as differences in other economic, social and political factors.

If to look at the analogous model on the Standard and Poor's rating (see Appendix 6), then the only statistically significant results are the beta coefficients of inflation (p-value = 0.001), real interest rate (p-value = 0.001) as well as of dummy variables of India (p-value = 0.006) and Ukraine (p-value = 0.002). This implies that with an increase of real interest rates in India or Ukraine, the average Standard and Poor's rating of those countries goes down by 0.392 units. The intercept values for Brazil, India and Ukraine are statistically different, being 15,501 for Brazil, 12.22 (= 15,501 - 3,281) for India, and 9,759 (15,501 -5,742) for Ukraine. These differences in intercepts may be due to unique features of each country, such as differences in other economic, social and political factors.

If to consider correlation between country ratings (transformed in the numeric variables) and macroeconomic indicators it is possible to use Spearman's rank correlation coefficient. Spearman's rank correlation coefficient requires data that is at least ordinal, and the calculation is carried out on the ranks of the data. $H_0$: predicts no correlation ($r_s = 0$), $H_1$: predicts significant correlation ($r_s \neq 0$). Positive correlation between the economic growth in the country and the country rating, and negative correlation between inflation, foreign debt, debt service, real interest rate and the country's rating can be predicted. Therefore, directional hypothesis that requires a one-tailed test is used. When the correlation coefficients are computed, it can be seen that above-mentioned predictions are true (see Appendix 7).

Significant correlation exists between all the ratings, with the greatest between the Fitch ratings and the Moody's ratings ($r_s = 0.966$), and the least between the Fitch rating and Standard & Poor's rating ($r_s = 0.932$) (see Appendix 8).

### 3.3 Limitations of the Approach

Overall, the use of dummy variables increases model fit (coefficient of determination), but at a cost of fewer degrees of freedom and loss of generality of the model. The increased $R^2$ value however is not surprising because more variables are included in the model. The problem with the inclusion of dummy variables is whether the inclusion and the consequent loss of degrees of freedom are necessary. Too many dummies result in a model that does not provide any general conclusions. Thus, the main limitation of the approach is that the introduction of dummy variables consumes a large number of degrees of freedom. Therefore, it is necessary to consider the number of dummy variables to be introduced against the total number of observations available for analysis because the model with dummy variables requires more observations. Even though the $R^2$ has increased at the model with dummy variables, fewer estimated coefficients are statistically significant.

Furthermore, with too many variables in the model, there is always the possibility of multicollinearity which might make precise estimation of one or more parameters difficult. Another important limitation of the models is that the ratings are composite and include a far larger number of indicators. Therefore, the above-mentioned models do not include all relevant explanatory variables. Moreover, the model shows that some variables that seem to influence the rankings (like inflation), are constantly persistent in a country and there is no predicted relation between a change in those indicators and the ratings.

# 4. ANALYSIS

After the comprehensive analysis of all the above mentioned countries it is seen that there is not much of common pattern between different types of risks in all the six countries. So, it is hard to assume that any kind of template or financial product package could be developed in order to provide sound risk management in all of the EMCs.

Even though there are some similarities that affect higher level of risk in those countries, the reasons and types of risks differ to a large extent from one country to another. What is more or less similar to all of the observed emerging markets, is a high level of economic growth, relatively high level of exports, most of the countries put efforts to reduce inflation (Brazil, China and India are successful examples), which thus implies high interest rates on credit. It is worth mentioning, that sometimes the controversial situation exists when inflation is higher than bank interest rate on the loans. That is due to the inter-bank loans from foreign banks, which provided funds to domestic banks on a considerably lower interest rate, while domestic banks later provided credits to borrowers on a higher rate (but still sometimes slightly lower than inflation).

Business environment in EMCs can be characterized as complicated and bureaucratic compared to stable economies what implies unclear taxation system, time-consuming and puzzling procedures of starting business, dealing with licenses, registering properties, and enforcing contracts. It is also very important to mention that difficulties of getting credit in those countries can be greatly explained by underdevelopment of integrated databases of credit history of clients and thus creating problems of asymmetric information. Banks might not have access to disclosed credit history of the borrowers. That is why they impose high average interest rate on all of them that becomes a large sunk cost to really creditworthy borrowers. Investor's rights are usually not well protected and procedure of debt redeem does not function properly. Due to lack in overall transparency of information, intermediation costs tend to be quite high (European Business Association, 2007).

Banking industry needs to manage a large number of risks when operating in EMCs. One of the main factors that banks consider when they take decisions on loans is whether the loan taker will be able to return the loan and to pay the interest. In order to evaluate the probability of pay-back, credit institutions need to look at the environment where the loan taker operates and which risk factors the loan taker faces. Thus, country-specific and environment-specific risk factors become an important consideration for credit institutions (confirmed by the banks' survey). For example, firms obtaining credit in Sweden and in Ukraine for example, would face different rates on the equal projects, and this gap between interest rates can be substantially different. Before the sub-prime crisis of 2007/2008 some banks were benefiting from such differences, sort of arbitraging the credits: obtaining funds on much lower rates from foreign banks and providing them to domestic clients on much higher market rates.

Rating systems enable credit institutions to account of correlations across borrowers in different countries. The ratings consider the environment where loan is taken and where

banks operate. Therefore, ratings are influenced by the main macroeconomic indicators. Statistically significant positive relation was found between the ratings and economic growth. Also, statistically significant negative relation was found between the ratings and foreign debt, debt service and real interest rate. In particular, there exists persistent negative relation between real interest rate and the ratings, both in general models without dummy variables and when controlled for the country effects. It means that the higher the interest rate, the lower is the rating of the country. It also implies lower expected level of investment to the country (if ratings are considered by investors) according to the Markowitz portfolio theory.

To see how banks manage credit risks peculiar to EMCs it was decided to trace the stepwise banks' approach towards risk management in EMCs through conducting a survey (see Appendix 9). It is assumed that credit risk management techniques are similar among different banks and therefore a characteristic method used by Scandinavian banks is described here.

The number of operations conducted by Scandinavian banks in EMCs is relatively small because Nordic banks mainly finance local companies and exports to EMCs supplied by local Nordic companies. The demand for financing investments of Nordic origin is rather limited because local companies tend to finance investment projects themselves. Subsidiaries of Scandinavian corporations mainly borrow from their local banks. In case companies borrow to finance their subsidiaries in emerging markets, Scandinavian banks require corporate guarantees to give credits. The number of cases of financing small and medium enterprises (SMEs) in EMCs is quite low. Scandinavian banks can finance corporations only when they are well-established, very strong and well-known at the local market. Though, Scandinavian banks still prefer to use export credit agencies, such as the Swedish Export Credits Guarantee Board (EKN) as guarantors.

The main risk factors that banks consider when providing credits in EMCs is commercial risk – the risk of counterparty default and also the political risk factor. Therefore, it can be stated that political stability becomes a crucial factor for business prosperity, especially for investments with a long-term perspective. Political instability complicates efficient business activity and long-term investment. Only short-term investments to exploit the available resources are possible without stability.

In order to avoid risks and to minimize uncertainty banks tend to use in-house build analysis models for banks, countries and corporations. The main methods of risk management are risk absorption (modifying and executing the project as if the risk will materialize with certainty). Also banks have to accept risk (take the risk consequences into account), transfer risk (sell the risks to the third party, including insurance and contracting), reduce risk (take actions to reduce the probability or the severity of the risk) and avoid risk (perform an alternative approach which does not contain the risk). Less frequently banks manage risk using risk containment (continue with the original plans while monitoring the risk) and risk contingency (prepare a rescue plan in case the risk realizes).

Speaking about the credit period the banks tend to provide credits in EMCs, most of the credits are provided for less than one year. However, there are a few cases of credits with longer terms, even over ten years. In this case long term credits usually have to be backed up with export credit agency guarantees. Banks tend to monitor internal processes in the borrowing company in EMCs from six to twelve months in order to ensure safe pay-back. In order to monitor borrowing company's performance banks use audited financial reports which are adjusted to specific country environment using own-built models. In order to monitor the performance of banks operating in emerging countries, mainly financial reports are used. The software called Bankscope is used for this purpose that also provides information about audit. Banks usually do not require collaterals for loans in EMCs, but rather financial or other types of covenants. The percentage of impaired loans in emerging markets is usually quite low compared to loans in the local market. If to consider future development plans of Scandinavian banks, most banks mainly focus on the "new" European market countries, such as Baltic States and Poland, Russia where the Nordic banks already have established operations and networks.

## 5. RESULTS

1. Even though there are many similarities in EMCs' economic state and business environment (high level of economic growth, high inflation, high interest rates, complicated business environment, bureaucracy, unclear taxation system, difficulties of getting credit, lack of transparency, to a large extend not effectively protected investor rights, corruption), each country should be analyzed separately by credit institutions due to different prevalent risk factors and characteristic economic, social, and political environment;
2. Survey of Scandinavian banks confirms importance of ratings for crediting institutions (both external ratings and ratings made with the help of in-house rating systems);
3. The model without dummy variables proved existence of statistically significant relation between the ratings and economic growth, foreign debt, debt service, and real interest rates;
4. Fewer estimated coefficients are statistically significant in the model with dummy variables mainly due to the small number of observations;
5. There is positive correlation between economic growth and the ratings, and negative correlation between inflation, foreign debt, debt service, real interest rates and the ratings;
6. The survey of Scandinavian banks confirmed the hypothesis that higher country-specific risk factors and unstable operational environment of companies and crediting institutions are reflected in stricter terms and conditions for bank loans and higher risk premiums;
7. Commercial risk of counterparty default is the main risk factor for consideration of Scandinavian banks when giving credit to subsidiary banks and companies operating in EMCs.
8. Banks pay attention to both country-specific risk factors and business environment when crediting companies and banks in EMCs;

9. Banks often use in-house analysis models for banks, countries and corporations to minimize credit risks;
10. Scandinavian banks are risk averse and have careful approach towards providing credit in EMCs:
    - Prefer to use export credit agencies as guarantors;
    - Small number of operations in EMCs;
    - Most credits are provided for short terms;
    - Long-term credits need to be backed up with export credit agency guarantors;
11. To monitor borrowers' performance, audited financial reports are used by Scandinavian banks;
12. Scandinavian banks aim to enter mainly closest European countries.

# 6. CONCLUSIONS AND SUGGESTIONS

## 6.1 Discussion and Conclusion

In this section it is summed up what was managed to achieve as a result of this research. First of all, it is reflected in different terms what uncertain environment typical for emerging markets actually implies. Various types of risks were estimated that can potentially change profitability of financial projects conducted in EMCs. The empirical estimations were based on the data obtained for six EMCs that have recently been attracting attention of investors in quest for higher returns. It enabled to observe the examples of particular countries, the features of uncertain environment and risk assessment both from the perspective of the commercial banks (lenders) and small and medium-sized enterprises (borrowers). It is assumed that in most cases SME's are financed primarily by internally generated funds and external debts from the banks. That is why such sequence of observations was chosen.

Moreover, the comprehensive analysis of business and political environment of all of the above mentioned EMCs helped to conclude that despite some similarities, there are no actual common patterns in risk assessment between them and thus, it would be mistaken to apply any so-called "one-fits-all" template or package of credit solutions. It means that each country should be observed and analyzed separately to identify its strength, weaknesses, operation environment, political risks and development trends. As long as empirical part of the studies was based on the surveys and reports of Scandinavian banks, it can be concluded that banks themselves pay much attention to macroeconomic and political indicators while investigating the emerging markets.

One of the important indicators for banks when they provide credit in the EMCs was the credit ratings of the largest rating agencies, such as Standard and Poor, Moody's and Fitch. Taking this into consideration, the regression model of interdependence of the ratings on the five countries' macroeconomic indicators (economic growth, inflation, foreign debt, debt service, and real interest rate) was composed. Despite the fact, that there is a great variety of factors that impose influence on the ratings and might distort the model, it is still relevant for some of the indicators, both without and with dummy variables.

Comprehensive work on this topic also enabled to conclude, that up till now risk and specifically credit risk remains the least explored topics of economics, finance and business administration. It is still hard to determine precisely what discount rate to use for example as long as too many factors (variables) are involved in the process. Uncertainly and risk valuation remain one of the "unsolved" problems of the economic disciplines and there is still no sure-fire models developed (Brealey, Myers, Allen, 2006).

In the end, all of the conclusions were also to some extent confirmed by the bank survey, addressed primarily to Risk or Emerging Market departments of Scandinavian banks. In practice, it turned out to be that even though foreign banks try to expand their network in emerging markets, Scandinavian banks tend to be risk-averse and can be characterized by careful approach towards providing credit to companies. Usually it is a short-term credit, given mainly to stable Nordic companies to finance the operational expenses. Moreover, banks prefer to use export credit agencies as guarantors and even though no collateral usually needed, it does not imply that credit is easily accessible for businesses.

### 6.2 Limitations

In regards to the statistical method the main limitation of the approach is a small number of observations to make general conclusions about the dependence between the macroeconomic indicators and the ratings. Therefore, the research could further benefit from the inclusion of more countries and larger time frame. Moreover, the ratings are composite and are influenced by many different variables as well as by the general economic, social, political situation in each country. Therefore, the approach of choosing the most influential factors on ratings could be biased.

In terms of the characteristics of a typical approach of credit institutions towards risks in EMCs, responses from two Scandinavian banks (Nordea and Swedbank) were received and the information from publicly available reports from other banks was used. Thus, the research is mainly focused on risk assessment methodology of Scandinavian banks.

### 6.3 Proposals for Further Research

As a topic for further research it can be suggested to include more financial institutions from other countries. Further research on the practices of financial institutions towards credit risk could be beneficial.

It is also suggested to evaluate deeper the current situation in regards to the global financial crisis. Furthermore, it is possible to investigate the topic of risks of investment from the perspective of political situation in order to show how continued political infighting complicates economic policies and results in slow progress on economic reforms. In frames of cross-scientific research, the writers found that it could be possible to find better approach in risk assessment, combining features of software engineering, financial engineering and banking. That would help to find better combinations of risk premiums, so that different types of risks would not overlap, resulting in higher premiums (Ben-David, Raz, 2001).

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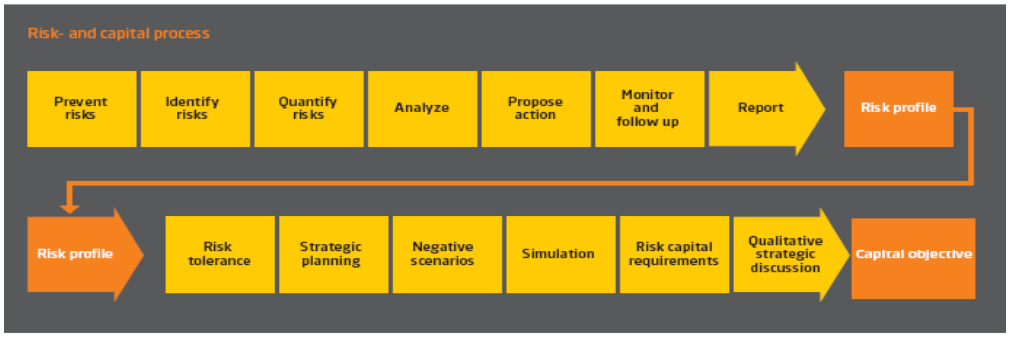
APPENDIX 1




*Source: www.swedbank.se*

APPENDIX 2

Fitch International Long-term Credit Rating applies the following grading system:

Investment Grade

AAA: Highest credit quality. 'AAA' ratings denote the lowest expectation of credit risk. They are assigned only in case of exceptionally strong capacity for payment of financial commitments. This capacity is highly unlikely to be adversely affected by foreseeable events.

AA: Very high credit quality. 'AA' ratings denote expectations of very low credit risk. They indicate very strong capacity for payment of financial commitments. This capacity is not significantly vulnerable to foreseeable events.

A: High credit quality. 'A' ratings denote expectations of low credit risk. The capacity for payment of financial commitments is considered strong. This capacity may, nevertheless, be more vulnerable to changes in circumstances or in economic conditions than is the case for higher ratings.

BBB: Good credit quality. 'BBB' ratings indicate that there are currently expectations of low credit risk. The capacity for payment of financial commitments is considered adequate but adverse changes in circumstances and economic conditions are more likely to impair this capacity. This is the lowest investment grade category.

Speculative Grade

BB: indicate that there is a possibility of credit risk developing, particularly as the result of adverse economic change over time; however, business or financial alternatives may be available to allow financial commitments to be met. Securities rated in this category are not investment grade.

B: Highly speculative.

CCC: For issuers and performing obligations, default is a real possibility. Capacity for meeting financial commitments is solely reliant upon sustained, favorable business or economic conditions. For individual obligations, may indicate distressed or defaulted obligations with potential for average to superior levels of recovery. Differences in credit quality may be denoted by plus/minus distinctions.

CC: For issuers and performing obligations, default of some kind appears probable. For individual obligations, may indicate distressed or defaulted obligations.

C: For issuers and performing obligations, default is imminent. For individual obligations, may indicate distressed or defaulted obligations with potential for below-average to poor recoveries.

RD: Indicates an entity that has failed to make due payments (within the applicable grace period) on some but not all material financial obligations, but continues to honor other classes of obligations.

D: Indicates an entity or sovereign that has defaulted on all of its financial obligations.

The modifiers "+" or "-" may be applied to a rating to denote relative status within major rating categories. Such suffixes are not added to the 'AAA' Long-term rating category, to categories below 'CCC'.

(Fitch Rating Definitions, *Fitch Corporate,* 2008)

APPENDIX 3

The grading scale for the Standards & Poor's Long-Term Issue Credit Ratings:

AAA: the highest rating assigned by Standard & Poor's. The obligor's capacity to meet its financial commitment on the obligation is extremely strong.

AA: differs from the highest-rated obligations only to a small degree. The obligor's capacity to meet its financial commitment on the obligation is very strong.

A: somewhat more susceptible to the adverse effects of changes in circumstances and economic conditions than obligations in higher-rated categories. However, the obligor's capacity to meet its financial commitment on the obligation is still strong.

BBB: exhibits adequate protection parameters. However, adverse economic conditions or changing circumstances are more likely to lead to a weakened capacity of the obligor to meet its financial commitment on the obligation.

BB: less vulnerable to nonpayment than other speculative issues. However, it faces major ongoing uncertainties or exposure to adverse business, financial, or economic conditions which could lead to the obligor's inadequate capacity to meet its financial commitment on the obligation.

B: more vulnerable to nonpayment than obligations rated 'BB', but the obligor currently has the capacity to meet its financial commitment on the obligation. Adverse business, financial, or economic conditions will likely impair the obligor's capacity or willingness to meet its financial commitment on the obligation.

CCC: currently vulnerable to nonpayment, and is dependent upon favorable business, financial, and economic conditions for the obligor to meet its financial commitment on the obligation. In the event of adverse business, financial, or economic conditions, the obligor is not likely to have the capacity to meet its financial commitment on the obligation.

CC: currently highly vulnerable to nonpayment.

C: assigned to obligations that are currently highly vulnerable to nonpayment, obligations that have payment arrearages allowed by the terms of the documents, or obligations of an issuer that is the subject of a bankruptcy petition or similar action which have not experienced a payment default. Among others, the 'C' rating may be assigned to subordinated debt, preferred stock or other obligations on which cash payments have been suspended in accordance with the instrument's terms.

D: payment default, used when payments on an obligation are not made on the date due even if the applicable grace period has not expired, unless Standard & Poor's believes that such payments will be made during such grace period. The 'D' rating also will be used upon the filing of a bankruptcy petition or the taking of a similar action if payments on an obligation are jeopardized.

Plus (+) or minus (-)

The ratings from 'AA' to 'CCC' may be modified by the addition of a plus (+) or minus (-) sign to show relative standing within the major rating categories.

(*Understanding Credit Ratings*, Standard & Poor's, 2002)

APPENDIX 4

The grading system for the Moody's long-term obligation ratings:

Aaa: the highest quality, with minimal credit risk.

Aa: high quality and are subject to very low credit risk.

A: upper-medium grade and are subject to low credit risk.

Baa: moderate credit risk, medium-grade and as such may possess certain speculative characteristics.

Ba: have speculative elements and are subject to substantial credit risk.

B: speculative and are subject to high credit risk.

Caa: poor standing and are subject to very high credit risk.

Ca: highly speculative and are likely in, or very near, default, with some prospect of recovery of principal and interest.
C: the lowest rated class of bonds and are typically in default, with little prospect for recovery of principal or interest.

Moody's appends numerical modifiers 1, 2, and 3 to each generic rating classification from Aa through Caa. The modifier 1 indicates that the obligation ranks in the higher end of its generic rating category; the modifier 2 indicates a mid-range ranking; and the modifier 3 indicates a ranking in the lower end of that generic rating category

(Moody's Rating Symbols and Definitions, 2003)

## APPENDIX 5

The linear regression on the Fitch rating and five macroeconomic indicators

**Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | **,747[a]** | **,558** | **,486** | **2,0583475** |

a. Predictors: (Constant), Real Interest Rate, Foreign Debt (% GDP), Inflation (period-end rate), Economic Growth (%), Debt Service (% exports)

**ANOVA[b]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | **165,632** | **5** | **33,126** | **7,819** | **,000[a]** |
| | Residual | **131,341** | **31** | **4,237** | | |
| | Total | **296,973** | **36** | | | |

a. Predictors: (Constant), Real Interest Rate, Foreign Debt (% GDP), Inflation (period-end rate), Economic Growth (%), Debt Service (% exports)

b. Dependent Variable: Fitch rating

**Coefficients**[a]

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | **10,673** | **2,460** | | **4,339** | **,000** |
| | Economic Growth (%) | **,442** | **,195** | **,418** | **2,261** | **,031** |
| | Inflation (period-end rate) | **,280** | **,147** | **,428** | **1,905** | **,066** |
| | Foreign Debt (% GDP) | **-,108** | **,035** | **-,886** | **-3,125** | **,004** |
| | Debt Service (% exports) | **,064** | **,043** | **,346** | **1,483** | **,148** |
| | Real Interest Rate | **-,367** | **,157** | **-,649** | **-2,340** | **,026** |

a. Dependent Variable: Fitch rating

The linear regression on Standard & Poor's rating and five macroeconomic indicators

**Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | **,696**[a] | **,484** | **,401** | **1,9514526** |

a. Predictors: (Constant), Real Interest Rate, Foreign Debt (% GDP), Inflation (period-end rate), Economic Growth (%), Debt Service (% exports)

**ANOVA**[b]

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | **110,920** | **5** | **22,184** | **5,825** | **,001**[a] |
| | Residual | **118,053** | **31** | **3,808** | | |
| | Total | **228,973** | **36** | | | |

a. Predictors: (Constant), Real Interest Rate, Foreign Debt (% GDP), Inflation (period-end rate), Economic Growth (%), Debt Service (% exports)

b. Dependent Variable: Standard & Poor's Rating

**Coefficients**[a]

| Model | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|
| | B | Std. Error | Beta | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 1 | (Constant) | **9,896** | **2,332** | | **4,243** | **,000** |
| | Economic Growth (%) | **,433** | **,185** | **,467** | **2,338** | **,026** |
| | Inflation (period-end rate) | **,246** | **,139** | **,428** | **1,764** | **,088** |
| | Foreign Debt (% GDP) | **-,107** | **,033** | **-,996** | **-3,253** | **,003** |
| | Debt Service (% exports) | **,085** | **,041** | **,519** | **2,063** | **,048** |
| | Real Interest Rate | **-,296** | **,149** | **-,595** | **-1,987** | **,056** |

a. Dependent Variable: Standard & Poor's Rating

## APPENDIX 6

The linear regression on the Fitch rating, five macroeconomic indicators and on dummy variables for each country

**Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | **,956[a]** | **,914** | **,881** | **,9887372** |

a. Predictors: (Constant), Ukraine, Economic Growth (%), India, Inflation (period-end rate), Kazakhstan, Russia, Debt Service (% exports), China, Real Interest Rate, Foreign Debt (% GDP)

**ANOVA[b]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | **271,555** | **10** | **27,156** | **27,778** | **,000[a]** |
| | Residual | **25,418** | **26** | **,978** | | |
| | Total | **296,973** | **36** | | | |

a. Predictors: (Constant), Ukraine, Economic Growth (%), India, Inflation (period-end rate), Kazakhstan, Russia, Debt Service (% exports), China, Real Interest Rate, Foreign Debt (% GDP)

b. Dependent Variable: Fitch rating

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | **14,662** | **1,622** | | **9,038** | **,000** |
| | Economic Growth (%) | **-,150** | **,110** | **-,142** | **-1,361** | **,185** |
| | Inflation (period-end rate) | **,329** | **,087** | **,503** | **3,786** | **,001** |
| | Foreign Debt (% GDP) | **-,036** | **,045** | **-,293** | **-,794** | **,434** |
| | Debt Service (% exports) | **-,006** | **,032** | **-,031** | **-,177** | **,861** |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Real Interest Rate | **-,467** | **,095** | **-,825** | **-4,906** | **,000** |
| | China | **3,777** | **1,074** | **,522** | **3,517** | **,002** |
| | India | **-1,227** | **1,036** | **-,160** | **-1,184** | **,247** |
| | Kazakhstan | **-,990** | **2,650** | **-,129** | **-,373** | **,712** |
| | Russia | **,715** | **,952** | **,093** | **,751** | **,460** |
| | Ukraine | **-3,804** | **1,568** | **-,495** | **-2,425** | **,023** |
| a. Dependent Variable: Fitch rating | | | | | | |

The linear regression on Standard & Poor's rating, five macroeconomic indicators and the dummy variables for each country

**Model Summary**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | **,935[a]** | **,875** | **,826** | **1,0508690** |

a. Predictors: (Constant), Ukraine, Economic Growth (%), India, Inflation (period-end rate), Kazakhstan, Russia, Debt Service (% exports), China, Real Interest Rate, Foreign Debt (% GDP)

**ANOVA[b]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | **200,261** | **10** | **20,026** | **18,134** | **,000[a]** |
| | Residual | **28,712** | **26** | **1,104** | | |
| | Total | **228,973** | **36** | | | |

a. Predictors: (Constant), Ukraine, Economic Growth (%), India, Inflation (period-end rate), Kazakhstan, Russia, Debt Service (% exports), China, Real Interest Rate, Foreign Debt (% GDP)

b. Dependent Variable: Standard & Poor's Rating

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | **15,501** | **1,724** | | **8,990** | **,000** |
| | Economic Growth (%) | **-,081** | **,117** | **-,087** | **-,687** | **,498** |
| | Inflation (period-end rate) | **,328** | **,092** | **,571** | **3,551** | **,001** |
| | Foreign Debt (% GDP) | **-,036** | **,048** | **-,333** | **-,747** | **,462** |
| | Debt Service (% exports) | **-,027** | **,034** | **-,167** | **-,794** | **,434** |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Real Interest Rate | **-,392** | **,101** | **-,789** | **-3,877** | **,001** |
| | China | **1,148** | **1,142** | **,181** | **1,005** | **,324** |
| | India | **-3,281** | **1,102** | **-,486** | **-2,978** | **,006** |
| | Kazakhstan | **-2,092** | **2,817** | **-,310** | **-,743** | **,464** |
| | Russia | **-1,454** | **1,012** | **-,215** | **-1,436** | **,163** |
| | Ukraine | **-5,742** | **1,667** | **-,851** | **-3,445** | **,002** |
| a. Dependent Variable: Standard & Poor's Rating | | | | | | |

# APPENDIX 7

## 1. Correlation of macroeconomic indicators and the Fitch ratings:

**Correlations**

| | | | Fitch rating | Economic Growth (%) | Inflation (period-end rate) | Foreign Debt (% GDP) | Debt Service (% exports) | Real Interest Rate |
|---|---|---|---|---|---|---|---|---|
| Spearman's rho | Fitch rating | Correlation Coefficient | 1,000 | ,586** | -,298* | -,473** | -,554** | -,506** |
| | | Sig. (1-tailed) | . | ,000 | ,034 | ,001 | ,000 | ,001 |
| | | N | 38 | 38 | 38 | 38 | 38 | 37 |
| | Economic Growth (%) | Correlation Coefficient | ,586** | 1,000 | -,262* | -,130 | -,461** | -,757** |
| | | Sig. (1-tailed) | ,000 | . | ,047 | ,206 | ,001 | ,000 |
| | | N | 38 | 42 | 42 | 42 | 42 | 41 |
| | Inflation (period-end rate) | Correlation Coefficient | -,298* | -,262* | 1,000 | ,732** | ,450** | ,416** |
| | | Sig. (1-tailed) | ,034 | ,047 | . | ,000 | ,001 | ,003 |
| | | N | 38 | 42 | 42 | 42 | 42 | 41 |
| | Foreign Debt (% GDP) | Correlation Coefficient | -,473** | -,130 | ,732** | 1,000 | ,640** | ,039 |
| | | Sig. (1-tailed) | ,001 | ,206 | ,000 | . | ,000 | ,405 |
| | | N | 38 | 42 | 42 | 42 | 42 | 41 |
| | Debt Service (% exports) | Correlation Coefficient | -,554** | -,461** | ,450** | ,640** | 1,000 | ,285* |
| | | Sig. (1-tailed) | ,000 | ,001 | ,001 | ,000 | . | ,035 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | N | 38 | 42 | 42 | 42 | 42 | 41 |
| | Real Interest Rate | Correlation Coefficient | -,506** | -,757** | ,416** | ,039 | ,285* | 1,000 |
| | | Sig. (1-tailed) | ,001 | ,000 | ,003 | ,405 | ,035 | . |
| | | N | 37 | 41 | 41 | 41 | 41 | 41 |

**. Correlation is significant at the 0.01 level (1-tailed).

*. Correlation is significant at the 0.05 level (1-tailed).

2. Correlation of the macroeconomic indicators and the Standard and Poor's ratings:

**Correlations**

| | | | Economic Growth (%) | Inflation (period-end rate) | Foreign Debt (% GDP) | Debt Service (% exports) | Real Interest Rate | Standard & Poor's Rating |
|---|---|---|---|---|---|---|---|---|
| Spearman's rho | Economic Growth (%) | Correlation Coefficient | **1,000** | **-,262*** | **-,130** | **-,461**** | **-,757**** | **,514**** |
| | | Sig. (1-tailed) | **.** | **,047** | **,206** | **,001** | **,000** | **,000** |
| | | N | **42** | **42** | **42** | **42** | **41** | **38** |
| | Inflation (period-end rate) | Correlation Coefficient | **-,262*** | **1,000** | **,732**** | **,450**** | **,416**** | **-,384**** |
| | | Sig. (1-tailed) | **,047** | **.** | **,000** | **,001** | **,003** | **,009** |
| | | N | **42** | **42** | **42** | **42** | **41** | **38** |
| | Foreign Debt (% GDP) | Correlation Coefficient | **-,130** | **,732**** | **1,000** | **,640**** | **,039** | **-,541**** |
| | | Sig. (1-tailed) | **,206** | **,000** | **.** | **,000** | **,405** | **,000** |
| | | N | **42** | **42** | **42** | **42** | **41** | **38** |
| | Debt Service (% exports) | Correlation Coefficient | **-,461**** | **,450**** | **,640**** | **1,000** | **,285*** | **-,438**** |
| | | Sig. (1-tailed) | **,001** | **,001** | **,000** | **.** | **,035** | **,003** |
| | | N | **42** | **42** | **42** | **42** | **41** | **38** |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Real Interest Rate | Correlation Coefficient | -,757** | ,416** | ,039 | ,285* | 1,000 | -,412** |
| | | Sig. (1-tailed) | ,000 | ,003 | ,405 | ,035 | . | ,006 |
| | | N | 41 | 41 | 41 | 41 | 41 | 37 |
| | Standard & Poor's Rating | Correlation Coefficient | ,514** | -,384** | -,541** | -,438** | -,412** | 1,000 |
| | | Sig. (1-tailed) | ,000 | ,009 | ,000 | ,003 | ,006 | . |
| | | N | 38 | 38 | 38 | 38 | 37 | 38 |

*. Correlation is significant at the 0.05 level (1-tailed).

**. Correlation is significant at the 0.01 level (1-tailed).

3. Correlation of the macroeconomic indicators and the Moody's ratings:

**Correlations**

| | | | Economic Growth (%) | Inflation (period-end rate) | Foreign Debt (% GDP) | Debt Service (% exports) | Real Interest Rate | Moody's Rating |
|---|---|---|---|---|---|---|---|---|
| Spearman's rho | Economic Growth (%) | Correlation Coefficient | 1,000 | -,262* | -,130 | -,461** | -,757** | ,655** |
| | | Sig. (1-tailed) | . | ,047 | ,206 | ,001 | ,000 | ,000 |
| | | N | 42 | 42 | 42 | 42 | 41 | 24 |
| | Inflation (period-end rate) | Correlation Coefficient | -,262* | 1,000 | ,732** | ,450** | ,416** | -,596** |
| | | Sig. (1-tailed) | ,047 | . | ,000 | ,001 | ,003 | ,001 |
| | | N | 42 | 42 | 42 | 42 | 41 | 24 |
| | Foreign Debt (% GDP) | Correlation Coefficient | -,130 | ,732** | 1,000 | ,640** | ,039 | -,863** |
| | | Sig. (1-tailed) | ,206 | ,000 | . | ,000 | ,405 | ,000 |
| | | N | 42 | 42 | 42 | 42 | 41 | 24 |
| | Debt Service (% exports) | Correlation Coefficient | -,461** | ,450** | ,640** | 1,000 | ,285* | -,594** |
| | | Sig. (1-tailed) | ,001 | ,001 | ,000 | . | ,035 | ,001 |
| | | N | 42 | 42 | 42 | 42 | 41 | 24 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Real Interest Rate | Correlation Coefficient | -,757** | ,416** | ,039 | ,285* | 1,000 | -,667** |
| | | Sig. (1-tailed) | ,000 | ,003 | ,405 | ,035 | . | ,000 |
| | | N | 41 | 41 | 41 | 41 | 41 | 24 |
| | Moody's Rating | Correlation Coefficient | ,655** | -,596** | -,863** | -,594** | -,667** | 1,000 |
| | | Sig. (1-tailed) | ,000 | ,001 | ,000 | ,001 | ,000 | . |
| | | N | 24 | 24 | 24 | 24 | 24 | 24 |

*. Correlation is significant at the 0.05 level (1-tailed).

**. Correlation is significant at the 0.01 level (1-tailed).

Results:

- Spearman's Correlation Coefficient shows positive correlation between economic growth and countries' ratings that indicated that both variables increase or decrease together. Economic growth has the greatest correlation with Moody's rating ($r_s$ = 0.655) and the lowest with Standard and Poor's rating ($r_s$ = 0.514), with the Fitch rating in between ($r_s$ = 0.586).
- Spearman's Correlation Coefficient shows negative correlation between inflation and countries' ratings that indicated that as inflation increases, so the country's rating decreases, and vice versa. Inflation has the greatest correlation with Moody's rating (r = -0.596) and the lowest correlation with Fitch rating (r = -0.298), with the Standard and Poor's rating in between (r = -0.384).
- Spearman's Correlation Coefficient shows negative correlation between foreign debt in a country and country's ratings that indicates that as foreign debt increases, so the country's rating decreases, and vice versa. Foreign debt has the greatest correlation with Moody's rating (r = -0.863) and the lowest correlation with Fitch rating (r = -0.473), with the Standard and Poor's rating in between (r = -0.541).
- Spearman's Correlation Coefficient shows negative correlation between debt service in a country and country's ratings that indicates that as debt service increases, so the country's rating decreases, and vice versa. Debt service has the

greatest correlation with Moody's rating (r = -0.594) and the lowest correlation with Standard and Poor's rating (r = -0.438), with the Fitch rating in between (r = -0.554).

- Spearman's Correlation Coefficient shows negative correlation between real interest rate in a country and country's ratings that indicates that as interest rate increases, so the country's rating decreases, and vice versa. Real interest rate has the greatest correlation with Moody's rating (r = -0.667) and the lowest correlation with Standard and Poor's rating (r = -0.412) with the Fitch rating in between (r = -0.506).

APPENDIX 8 - Correlation between the ratings

**Correlations**

| | | | Fitch rating | Standard & Poor's Rating |
|---|---|---|---|---|
| Spearman's rho | Fitch rating | Correlation Coefficient | **1,000** | **,932**** |
| | | Sig. (2-tailed) | **.** | **,000** |
| | | N | **38** | **38** |
| | Standard & Poor's Rating | Correlation Coefficient | **,932**** | **1,000** |
| | | Sig. (2-tailed) | **,000** | **.** |
| | | N | **38** | **38** |

**. Correlation is significant at the 0.01 level (2-tailed).

**Correlations**

| | | | Fitch rating | Moody's Rating |
|---|---|---|---|---|
| Spearman's rho | Fitch rating | Correlation Coefficient | **1,000** | **,966**** |
| | | Sig. (1-tailed) | **.** | **,000** |
| | | N | **38** | **24** |
| | Moody's Rating | Correlation Coefficient | **,966**** | **1,000** |
| | | Sig. (1-tailed) | **,000** | **.** |
| | | N | **24** | **24** |

**. Correlation is significant at the 0.01 level (1-tailed).

**Correlations**

| | | | Moody's Rating | Standard & Poor's Rating |
|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| Spearman's rho | Moody's Rating | Correlation Coefficient | **1,000** | **,952**** |
| | | Sig. (1-tailed) | **.** | **,000** |
| | | N | **24** | **24** |
| | Standard & Poor's Rating | Correlation Coefficient | **,952**** | **1,000** |
| | | Sig. (1-tailed) | **,000** | **.** |
| | | N | **24** | **38** |
| **. Correlation is significant at the 0.01 level (1-tailed). | | | | |

## APPENDIX 9 - The survey questions

TO WHOM IT MAY CONCERN

Dear Sir / Madam

We are two students of Jönköping International Business School, Sweden. Currently we are in the process of writing a Bachelor thesis on the following topic: *"Investment Project Valuation under Uncertainty: SME Perspective".*
In the frame of the paper, we would like also to investigate how the cost of debt influence investment projects in so-called emerging market countries (Ukraine, Brazil, Russian Federation, Kazakhstan, China and India). We would like to see, how the uncertainty environment is incorporated in the nominal interest rate applied to the country and therefore, investor's decisions.
We would be very grateful, if you would be so kind to answer the following questions and provide any relevant information, helpful for writing of the thesis. If by some reason, there is no data available to answer some of the questions, please skip them. It would be also very nice of you to give us any advice or recommendation on the structure and approach of the paper on such topic as ours.

If you are interested in the results and conclusions of this research, we would be happy to provide you with it after completion.

We thank you very much for cooperation and excuse us to take your time.

Respectfully,

Marina Boltenko and Ivan Arkhipov

*Jönköping International Business School*
*Bachelor of Science in Economics Program*

1. What are the average loan interest rates implied in the following countries for small and medium-sized companies (if bank operates there):

| Sweden | Ukraine | Russia | Kazakhstan | Brazil | China | India |
|---|---|---|---|---|---|---|
| | | | | | | |

2. What are the common (non industry-specific) risk criteria, while valuating the projects under uncertainty? (inflation risk, political risk, legislation risk…)?

_____

_____

_____

3. Do you use any specific software (not necessary to specify) for optimization of costs-and-benefits of risk avoidance that minimizes uncertainly?

YES NO

4. How do you manage risk (choose from the following options, please):

| | |
|---|---|
| | Risk avoidance (performing an alternative approach which does not contain the risk) |
| | Risk reduction (taking actions to reduce the probability or the severity of the risk) |
| | Risk transfer ("selling" the risk to a third party, including insurance and contracting) |
| | Risk containment (continuing with the original plan, while monitoring the risk) |
| | Contingency (preparing a rescue plan in case the risk realizes) |
| | Risk absorption (modifying and executing the project as if the risk will materialize with certainty) |
| | Risk acceptance (taking the risk consequences into account) |

5. What is the average <u>preferable credit period</u> the bank is eager to provide credits in the emerging market countries?

| Less than 1 year | 2-3 years | 4-6 years | 7-9 years | 10 and more years |
|---|---|---|---|---|
| | | | | |

6. How often does the bank has to monitor the internal processes in the borrowing company to ensure safe payback?

_____

_____

7. What is the mechanism of monitoring of company's performance? Does the bank require only financial statements, or it is necessary to provide internal/external audit statements as well?

_____

_____

_____

8. Are there more requirements of collaterals for emerging market's creditors than Scandinavian creditors?

YES NO

Comments:_____

_____

9. What is the per cent of impaired loans in Sweden and in the following markets (if the bank operates there):

| Sweden | Ukraine | Russia | Kazakhstan | Brazil | China | India |
|---|---|---|---|---|---|---|
| | | | | | | |

10. Please, indicate the preferable locations, where the bank is most interested to expend its crediting services for small and medium sized enterprises?

| | Ukraine | | India |
|---|---|---|---|
| | | | |

| | | | |
|---|---|---|---|
| | Russian Federation | | Poland |
| | Brazil | | Latvia |
| | India | | Lithuania |
| | Kazakhstan | | Estonia |
| | China | | Romania |
| | Bulgaria | | Hungary |

11. Please add any other concerns, comments and visions of the bank's position on investment processes in individual projects of emerging markets under uncertainty: _____

APPENDIX 10

**Macroeconomic Indicators:**

**Table 1: Brazil**

| *USD billions or percentage* | **2002** | **2003** | **2004** | **2005** | **2006** | **2007** | **2008(f)** | **2009(f)** |
|---|---|---|---|---|---|---|---|---|
| **Economic growth (%)** | 1,9 | 1.2 | 5.7 | 2.9 | 3.7 | 5.4 | 4.6 | 4.1 |
| **Inflation (period-end rate)** | 14,7 | 10.4 | 7.6 | 5.7 | 3.1 | 4.5 | 6.0 | 4.8 |
| **Public sector balance (%GDP)** | -4,6 | -4.6 | -2.4 | -3.0 | -3.0 | -2.3 | -2.5 | -2.4 |
| **Exports** | 60,4 | 73.1 | 96.5 | 118.3 | 137.8 | 160.7 | 180.0 | 193.3 |
| **Imports** | 47,2 | 48.3 | 62.8 | 73.6 | 91.4 | 120.6 | 155.0 | 174.8 |
| **Trade balance** | 13,1 | 24.8 | 33.6 | 44.7 | 46.5 | 40.0 | 25.0 | 18.5 |
| **Current account balance** | -7,7 | 4.2 | 11.7 | 14.0 | 13.6 | 3.6 | -15.8 | -21.3 |
| **Current account balance (%GDP)** | -1,7 | 0.8 | 1.8 | 1.6 | 1.3 | 0.3 | -1.0 | -1.3 |
| **Foreign debt (%GDP)** | 49,6 | 42.7 | 33.2 | 21.3 | 18.6 | 18.6 | 17.0 | 17.8 |
| **Debt service (%Exports)** | 65,3 | 68.1 | 48.2 | 39.5 | 30.7 | 26.2 | 18.9 | 14.5 |
| **Foreign currency reserves (in months of imports)** | 5,4 | 6.9 | 6.1 | 5.1 | 6.7 | 11.1 | 12.4 | 13.1 |
| **Interest rate** | | 23,4 | 16,2 | 19,1 | 15,3 | 12,0 | 12,5 | 13,0 |

(e) estimate (f) forecast

*Source; www.coface.com, OEF (Oxford Economic Forecasting)*

**Table 2: China**

| *USD billions or percentage* | **2002** | **2003** | **2004** | **2005** | **2006** | **2007e** | **2008f** | **2009f** |
|---|---|---|---|---|---|---|---|---|
| **Economic growth (%)** | 8,0 | 10,0 | 10,1 | 10,4 | 11,6 | 11,9 | 9,5 | 8,5 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Inflation (%)** | -0,8 | 1,2 | 3,9 | 1,8 | 1,5 | 4,8 | 6,4 | 4,3 |
| **Public sector balance (%GDP)** | -2,9 | -2,2 | -1,3 | -1,2 | -0,8 | 0,7 | -1,0 | -1,0 |
| **Exports** | 325,7 | 438,3 | 593,4 | 762,5 | 969,7 | 1220,0 | 1492,0 | 1762,0 |
| **Imports** | 281,5 | 393,6 | 534,4 | 628,3 | 751,9 | 904,6 | 1157,0 | 1377,0 |
| **Trade balance** | 44,2 | 44,7 | 59,0 | 134,2 | 217,7 | 315,4 | 335,0 | 385,0 |
| **Current account balance** | 35,4 | 45,9 | 68,7 | 160,8 | 249,9 | 371,8 | 380,0 | 435,0 |
| **Current account balance (%GDP)** | 2,7 | 2,8% | 3,6% | 7,2% | 9,4% | 11,3% | 9,1% | 8,7% |
| **Foreign debt (%GDP)** | 13,4 | 12,7% | 12,8% | 12,5% | 12,2% | 11,4% | 9,9% | 9,1% |
| **Debt service (%Exports)** | 7,1 | 4,7% | 3,1% | 2,9% | 2,3% | 2,1% | 1,7% | 1,4% |
| **Foreign exchange reserves (in months of G&S imports)** | 9,9 | 10,4 | 11,8 | 13,4 | 14,4 | 16,8 | 17,9 | 19,3 |
| **Interest rates** | 5,3 | 5,3 | 5,4 | 5,6 | 5,9 | 6,7 | 7,3 | 6,5 |

(e) estimate (f) forecast

*Source; www.coface.com, OEF (Oxford Economic Forecasting)*

### Table 3: Kazakhstan

| *USD billions or percentage* | **2002** | **2003** | **2004** | **2005** | **2006** | **2007(e)** | **2008(f)** |
|---|---|---|---|---|---|---|---|
| **Economic growth (%)** | 9,8 | 9,3 | 9,6 | 9,7 | 10,6 | 8,5 | 6,7 |
| **Inflation (%)** | 6,6 | 6,8 | 6,7 | 7,5 | 8,4 | 18,8 | 13,0 |
| **Public sector balance (%GDP)** | -0,8 | -0,9 | -0,2 | 0,6 | 0,8 | -1,7 | -1,9 |
| **Exports** | 9,468 | 13,2 | 20,6 | 28,3 | 38,8 | 48,3 | 62,4 |
| **Imports** | 6,848 | 9,6 | 13,8 | 18,0 | 24,1 | 33,2 | 43,6 |
| **Trade balance** | 2,620 | 3,6 | 6,8 | 10,3 | 14,7 | 15,1 | 18,8 |
| **Current account balance** | 768 | -0,3 | 0,4 | -1,1 | -1,8 | -7,2 | -6,3 |
| **Current account balance (%GDP)** | 3,7 | -1,0 | 0,8 | -1,8 | -2,2 | -6,9 | -4,6 |
| **Foreign debt (%GDP)** | 69,3 | 74,0 | 75,9 | 76,0 | 92,2 | 92,9 | 74,5 |
| **Debt service (%Exports)** | 25,9 | 33,8 | 36,5 | 41,0 | 32,9 | 37,1 | 34,4 |
| **Foreign exchange reserves (in months of imports)** | 3,4 | 3,8 | 4,8 | 2,6 | 5,0 | 3,3 | 2,6 |
| **Interest rate** | 5,2 | 5,9 | 3,3 | 3,3 | 3,3 | 7,0 | 7,0 |

(e) estimate (f) forecast

*Source; www.coface.com, OEF (Oxford Economic Forecasting)*

### Table 4: India

| *USD billions or percentage* | **2002/03** | **2003/04** | **2004/05** | **2005/06** | **2006/07(f)** | **2007/08(f)** | **2008/09(f)** |
|---|---|---|---|---|---|---|---|
| **Economic growth (%)** | 4,0 | 8.5 | 7.5 | 9.4 | 9.6 | 9 | 8 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Inflation (%)** | 6,0 | 4.8 | 5.3 | 3.9 | 6.6 | 6.4 | 4 |
| **Public sector balance (%GDP)** | -10,7 | -8.4 | -7.4 | -6.7 | -6.4 | -5.3 | -4.7 |
| **Exports** | 52,5 | 66.3 | 85.2 | 105.2 | 128.1 | 157.2 | 188.8 |
| **Imports** | 58,9 | 72.0 | 107.0 | 141.4 | 172.1 | 213.6 | 255.2 |
| **Trade balance** | -6,4 | -5.7 | -21.8 | -36.2 | -44.1 | -56.4 | -66.4 |
| **Current account balance** | 4,1 | 14.1 | -2.5 | -9.9 | -9.7 | -11.5 | -19.6 |
| **Current account balance (%GDP)** | 0.8 | 2.3 | -0.4 | -1.2 | -1.1 | -1.0 | -1.4 |
| **Foreign debt (%GDP)** | 23,0 | 21.2% | 19.9% | 18.5% | 19.9% | 20.4% | 19.6% |
| **Debt service (%Exports)** | 13,5 | 13.2 | 8.2 | 8.1 | 5.2 | 5.3 | 4.9 |
| **Foreign exchange reserves (in months of imports).** | 9,4 | 12.4 | 10.5 | 8.6 | 9.2 | 11.8 | 12.0 |
| **Interest rate** | 7,1 | 6,2 | 6,1 | 6,8 | 7,7 | 8,0 | 7,4 |

(e) estimated (f) forecast

*Source; www.coface.com, OEF (Oxford Economic Forecasting)*

## Table 5: Russia

| *USD billions or percentage* | **2002** | **2003** | **2004** | **2005** | **2006** | **2007 e** | **2008 f** | **2009 f** |
|---|---|---|---|---|---|---|---|---|
| **Economic growth (%)** | 4,7 | 7,3 | 7,2 | 6,4 | 7,4 | 8,1 | 7,0 | 6,0 |
| **Inflation (%)** | 15,0 | 12,0 | 12 | 10,9 | 9,0 | 12 | 13 | 10 |
| **Public sector balance (%GDP)** | 1,4 | 1,7 | 4,3 | 7,5 | 7,5 | 4,0 | 1,6 | -1,1 |
| **Exports** | 90,9 | 135,9 | 183,2 | 243,8 | 303,9 | 374,4 | 428,4 | 402,5 |
| **Imports** | 49,0 | 76 | 97,4 | 125 | 165 | 236,3 | 335,0 | 379,2 |
| **Trade balance** | 42,1 | 59,9 | 85,8 | 118,4 | 139,2 | 138,1 | 93,4 | 23,3 |
| **Current account balance** | 27,5 | 33,9 | 56,8 | 83,5 | 94,3 | 77,5 | 20,3 | -56,2 |
| **Current account balance (%GDP)** | 8,0 | 7,8 | 9,6 | 10,9 | 9,6 | 6,1 | 1,2 | -3,0 |
| **Foreign debt (%GDP)** | 41,6 | 40,3 | 34,4 | 30,6 | 28,9 | 30,8 | 28,2 | 29,6 |
| **Debt service (%Exports)** | 19,4 | 13,0 | 21,9 | 22,5 | 18,2 | 10,9 | 10,0 | 11,3 |
| **Foreign exchange reserves (in months of imports).** | 6,8 | 6,9 | 9,2 | 10,8 | 13,3 | 14,4 | 12,8 | 11,2 |
| **Interest rate** | 22,5 | 16,5 | 13,3 | 12,8 | 11,5 | 10,0 | 8,8 | 8,0 |

(e) estimate (f) forecast

*Source; www.coface.com, OEF (Oxford Economic Forecasting)*

## Table 6: Ukraine

| *USD billions or percentage* | **2002** | **2003** | **2004** | **2005** | **2006** | **2007(e)** | **2008(f)** |
|---|---|---|---|---|---|---|---|
| **Economic growth (%)** | 5,2 | 9.6 | 12.1 | 2.7 | 7.1 | 7.2 | 6.3 |
| **Inflation (%)** | -0,6 | 8.3 | 12.3 | 10.3 | 11.6 | 14.6 | 10.2 |
| **Public sector balance (%GDP)** | 0,2 | -0.2 | -3.2 | -1.8 | -0.7 | -1.7 | -1.1 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Exports** | 18,7 | 23.7 | 33.4 | 35.0 | 38.9 | 46.7 | 50.2 |
| **Imports** | 18,0 | 23.2 | 29.7 | 36.2 | 44.1 | 54.3 | 60.6 |
| **Trade balance** | 0,7 | 0.5 | 3.7 | -1.1 | -5.2 | -7.6 | -10.4 |
| **Current account balance** | 3,2 | 2.9 | 6.9 | 2.5 | -1.6 | -4.1 | -7.0 |
| **Current account balance (%GDP)** | 7,5 | 5.8 | 10.6 | 2.9 | -1.5 | -2.9 | -4.3 |
| **Foreign debt (%GDP)** | 24,0 | 47.5 | 47.2 | 46.0 | 51.2 | 50.0 | 53.1 |
| **Debt service (%Exports)** | 5,4 | 11.7 | 9.2 | 12.0 | 7.5 | 7.1 | 8.1 |
| **Foreign exchange reserves (in months of imports)** | 2,5 | 2.8 | 3.0 | 5.0 | 4.7 | 4.8 | 4.8 |
| **Interest rate** | 7,0 | 7,0 | 9,0 | 10,0 | 9,0 | 8,0 | 13,0 |

(e) estimated (f) forecast

*Source; www.coface.com, OEF (Oxford Economic Forecasting)*