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## The Credit Risk and its Measurement, Hedging and Monitoring

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### Abstract

Credit risk or default risk involves inability or unwillingness of a customer or counterparty to meet commitments in relation to lending, trading, hedging, settlement and other financial transactions. The Credit Risk is generally made up of transaction risk or default risk and portfolio risk. The portfolio risk in turn comprises intrinsic and concentration risk. The credit risk of a bank's portfolio depends on both external and internal factors. The external factors are the state of the economy, wide swings in commodity/equity prices, foreign exchange rates and interest rates, trade restrictions, economic sanctions, Government policies, etc. The internal factors are deficiencies in loan policies/administration, absence of prudential credit concentration limits, inadequately defined lending limits for Loan Officers/Credit Committees, deficiencies in appraisal of borrowers' financial position, excessive dependence on collaterals and inadequate risk pricing, absence of loan review mechanism and post sanction surveillance, etc. This paper points out the measurement, hedging and monitoring of the credit risk.

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### 1. Introduction

Credit risk management is the part of the comprehensive management and also the part of the control system. Credit risk can be considered as one of the major risk because it is associated with every active trade. Banks generally handled risk management strategy that incorporates the principles of risk management processes including risk identification, monitoring and measurement. The aim of the credit risk management is to maintain the efficiency of the business activities and the continuity of the business.

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Credit risk is the risk of loss given default that does not meet its obligation under the conditions of the contract and thus causes the holders of creditor's loss. These obligations arise from lending activities, trade and investment activities, payment and settlement of securities trading on its own and foreign account. (Jilek, 2000) There may be cases if a counterparty fails to honour its undertaking and repay fully or partially due principal and interest, have not repaid on time. Credit risk is part of most balance sheet assets and off-balance sheet transactions series (bank acceptances or bank guarantee). (Kašparovská, 2006)

Credit risk includes credit risk default, risk of the guarantor or counterparties of the derivatives. This risk is present in all sector of the financial market, but most important is in banks, mainly from credit activities and off-balance sheet activities, such as guarantees. Credit risk also arises by entering into derivative transactions, securities lending, repurchase transactions and negotiation. For derivative transactions conducted an analysis of the creditworthiness of counterparties and watching its changes.

## 2. Measurement of the Credit Risk

It is necessary to measure the credit risk. The purpose of the credit risk measurement is the quantification of potential losses from credit operation. The amount of losses is never known with certainty therefore it is necessary to estimate it. There are two basic approaches to define credit losses and thus to quantify the credit risk.

### *The methods based on the absolute position in Credit risk*

This approach is also known as "default-mode". Each borrower may be found at the end of the risk horizon in only two states – default or success. Credit risk then arises from default of the debtor.

Access to credit risk measurement through discrete models is typical for homogenous portfolio (mainly, banks' exposures to retail small clients with unified credit products). Among the known methods using discrete models can be classified CreditRisk+, KMV model or CreditPortfolioView, (Vlachý, 2006)

These methods show the volume of balance sheet assets, which is exposed to credit risk. When selling the loan to the client, the credit risk or potential loss, represented the entire amount of the loan together with accrued interest and fees, and it is possible to correct if there is the existence of quality collateral. By using this method, bank do not constitute reserves and adjusting entries to the sold loans. The reserves will be started to form only when there is a breach of loan agreement terms by client as an expression of possible loss of credit.

### *The methods based on the expected rate of default on credit claims*

This approach is also known as "market-to-market". The debtor may be located in any from n-located rating grades including the failure in the end of the risk horizon. In this approach, the credit risk arises from the debtor transition to a lower rating grade.

This approach uses the method of continuous models to credit risk measurement. It is characterized by the fact, that unlike the discrete models that operate on a system of only two options for situation of client – failure or success, there are multiple values, which the debtor can acquire. This approach is more suitable for non-homogeneous files such as loans to large companies. Determination of individual risk categories are usually based on external credit ratings. Credit migration is then likely to transition from category to the second category.

The differences between these two approaches for credit risk measurement are more than evident. Methods based on absolute position have positive approach to the credit risk. They assume that the loan will be repaid on time and properly. Reserves and remedies are starting to be created at the moment when the problem comes. In contrast, methods based on the expected rate of default are more realistic. Based on the assessment of the client's credit, each loan have a risk weight of defaults and the bank begins to form reserves and remedies. Individual risk weights are based on historical data and represent the relationship between the risk of default and its credit rating. In practice, the methods on the expected rate of default are more use because they faithfully served the image of credit risk which the bank exposed.

These methods estimate the amount of expected losses but also the probability of the loss. Total risk amount (the amount of potential loss) is equal to the probability of default and the amount of loss. Each loan is included to the appropriate risk category and have its risk weighting.

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