

# THE PROBABILITY OF DEFAULT UNDER IFRS 9: MULTI-PERIOD ESTIMATION AND MACROECONOMIC FORECAST

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## Abstract

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In this paper we propose a straightforward, flexible and intuitive computational framework for the multi-period probability of default estimation incorporating macroeconomic forecasts. The concept is based on Markov models, the estimated economic adjustment coefficient and the official economic forecasts of the Czech National Bank. The economic forecasts are taken into account in a separate step to better distinguish between idiosyncratic and systemic risk. This approach is also attractive from the interpretational point of view. The proposed framework can be used especially when calculating lifetime expected credit losses under IFRS 9.

**Keywords:** credit risk, economic forecast, IFRS 9, Markov chains, probability of default

## INTRODUCTION

The probability of default is one of the most important risk parameters estimated in credit institutions, especially banks, and plays a major role in credit risk analysis and management. Given the fact that one of the fundamental activities of banks is granting loans, the banking industry places a great deal of emphasis on credit risk. Credit risk is commonly understood as the potential that a borrower or counterparty will fail to meet its contractual obligations (see Basel Committee for Banking Supervision, 2000). For a bank, it is crucial to evaluate the credit risk associated with potential clients (loan applicants), as well as with actual clients. Credit risk evaluation of (potential) clients is performed within credit scoring, which is a process (or statistical approach) for predicting the probability that a loan applicant or a client will default (Hand, Henley, 1997; Berger, Frame, 2007). Therefore, credit scoring is usually divided into two basic categories – application credit scoring (used for credit risk evaluation of loan applicants) and behavioural credit scoring (used for credit risk evaluation of actual clients).

Banks have historically focused mainly on application credit scoring since granting loans is a vital part of their business. A qualitative approach (based on the credit officer's judgement) dominated for these purposes up until the 1970s. However, this approach is associated with several obvious problems – in particular subjectivity, inconsistency, inefficiency and incomprehensiveness. Since the 1970s, with the developments in information technology, a quantitative approach has prevailed and statistical credit scoring models have been developed and enhanced. These models help to overcome the deficiencies of the qualitative approach based on the credit officer's judgement. Despite the fact that the quantitative approach may also be associated with several problems (development of models using historical data, the assumptions needed to apply certain statistical methods do not hold etc.), credit scoring models have become a standard technique for credit risk evaluation and estimation of the probability of default, and according to Bailey (2004) are now one of the most popular models used in finance in general. For further discussion on the history of credit scoring and associated issues see Chandler,

# Multi State Markov Modeling Of Ifrs9 Default Probability

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