

Abstract: Markov chains have been widely used to the credit risk measurement in the last years. Using these chains we can model movements and distribution of clients within rating grades. However, various types of markov chains could be used. The goal of the theses is to present these types together with their advantages and disadvantages. We focus our attention primarily on various parameter estimation methods and hypotheses testing about the parameters. The theses should help the reader with a decision, which model of a markov chain and which method of estimation should be used for him observed data.

We focus our attention primarily on the following models: a discrete-time markov chain, a continuous-time markov chain (we estimate based on continuous-time observations even discrete-time observations), moreover we present an eventuality of using semi-markov chains and semiparametric multiplicative hazard model applied on transition intensities.

We illustrate the presented methods on simulation experiments and simulation studies in the concluding part.

Keywords: credit risk, markov chain, estimates in markov chains, probability of default