

Various models, such as *ARMA* and *GARCH*, are used in the financial time series framework. The purpose of this thesis is to present an alternative for these models which are bilinear time series models. First chapter is theoretical, there is a short introduction to the theory of time series and *ARMA* models. Second chapter focuses on theoretical aspects of the simple bilinear model, third chapter presents the theory for general bilinear model in the similar fashion as for simple model. Last chapter is focused on practical aspects, it contains simulations and examines the properties of estimates based on the presented theory, final part is devoted to the comparison of properties of *ARMA* models and bilinear models for selected financial data.