

COPULA BASED GARCH(1,1) MODELS

JEGORS FJODOROVŠ, ANDREJS MATVEJEVS

Chair of Theory of Probability and Mathematical Statistics, Riga Technical University

Meza iela 1/4, Rīga, LV-1048, Latvija

E-mail: `jegors.fjodorovs@swedbank.lv`, `andrejs.matvejevs@rtu.lv`

Our research studies the construction and estimation of copula-based semi parametric stationary Markov model which is used for GARCH(1,1) modeling. These copula-based models are characterized by nonparametric marginal distributions and parametric copula functions, while the copulas capture all the scale-free temporal dependence of the processes. In our copula dependence study we used results of Nelson [1] studies about distribution of the volatility, which is inverse Gamma distribution. These results help us to construct copula for such dependence and evaluate parameters of the semi parametric regression via copula function [2]. Also, using this results it is possible to make simulation for a lot financial market situation, which cannot be fully described with standard Pearson correlation.

REFERENCES

- [1] D.B. Nelson. ARCH models as diffusion approximations. *Journal of Econometrics*, **44** 1-2: 7-38, 1990.
- [2] X.Chen, Y.Fan. Estimation of copula-based semiparametric time series models. *Journal of Econometrics*, **2006** .