

Modelling stock market volatility in Macedonia

DRAGAN TEVDOVSKI (*University “Ss. Cyril and Methodius”, Faculty of Economics, Macedonia, dragan@eccf.ukim.edu.mk*)

MARIJA TRPKOVA (*University “Ss. Cyril and Methodius”, Faculty of Economics, Macedonia, marijat@eccf.ukim.edu.mk*)

This paper examines the behaviour of stock returns in an emerging stock market, the Macedonian Stock Exchange. The focus is on the relationship between returns and conditional volatility of the Macedonian Stock Exchange Index (MBI10). The MBI10 daily returns time series displays stylized fact for returns such as volatility clustering and high kurtosis. In addition, the autocorrelation function of squared returns is slow decaying. We found existence of the ARCH effects in the daily returns of the stock index. Therefore, we tested how accurately GARCH type of models forecast volatility. The conditional mean follows a GARCH-M model, while for the conditional variance one symmetric (GARCH) and two asymmetric GARCH type of models (EGARCH and GJR) are used. Three error distributions were assumed, i.e. Gaussian, Student-t and Generalized Error distribution.

We tested the theory that a negative shock to financial time series is likely to cause volatility to rise by more than a positive shock of the same magnitude and found only weak evidence for the asymmetric response of volatility to positive and negative shocks. At the end of the paper, we investigate accuracy of the in-sample and out-of-sample forecasts. The GARCH models with non-Gaussian error distributions provide better forecasting accuracy.

Keywords: Stock market, modelling volatility, ARCH effects, GARCH models, non-Gaussian error distribution