Title: Multivariate GARCH

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Abstract: This thesis will examine the regional and global linkages as evidence of integration of stock markets in Frankfurt, Amsterdam, Prague and the U.S. Therefore we will utilize the multivariate GARCH approach that investigates the dynamics of volatility transmission of related foreign exchange rates. Also, we will define three basic model classes. For each of the model classes a theoretical review, basic properties and estimation procedure with proofs are provided. We illustrate each approach by applying the models to daily market data. The two main aims of the thesis are to discuss and report the existence of regional and global stock markets linkages and provide a comparison of such multivariate GARCH models on the data sample. The main contribution of the thesis is that it treats the data in the context of real development in financial markets and takes into account the real situation during and after the financial crisis of 2008. We find out that the estimated time-varying conditional correlations indicate limited integration among the markets, which implies that investors can benefit from the risk reduction by investing in the different stock markets, especially during the crisis.

Keywords: multivariate GARCH, VECH, BEKK, O-GARCH, GO-GARCH, CCC, DCC