Preface

The volatility has been one of the cores of the financial theory research, in addition to the futures market is an important part of modern financial markets, the futures market volatility is an important part of the theory of financial markets research. This book includes the following four parts.

The first part is geopolitical risk uncertainty and oil future volatility: Evidence from MIDAS models. Using a textual analysis based geopolitical risk (GPR) index, this paper exploits the effects of geopolitical risk uncertainty on oil futures price volatility within a mixed data sampling (MIDAS) modeling framework. With a variety of MIDAS specifications, our in-sample estimation results suggest that the short-term (e.g. one-day-ahead) oil realized volatility is positively associated with GPR uncertainty, and our out-of-sample forecasting exercise indicates that the GPR index is useful for improving short-term oil futures volatility prediction. In addition, we find that the categorical GPR index: GPR action related index (GPA), contributes more to the long-term oil volatility forecasting, compared with GPR threat related index (GPT).

The second part is forecasting oil price volatility using high-frequency data: New evidence. In this part, we account for the conditional time-varying volatility of realized volatility to model and forecast oil futures price volatility based on the HAR-RV model and its various extensions. Our empirical results reveal several noteworthy observations. First, the in-sample results indicate that the residuals of the HAR-RV-type models exhibit a significant ARCH effect. Second, the out-of-sample results demonstrate that compared to the linear HAR-RV-type models, the HAR-RV-type models, including the FIGARCH structure models, can generally generate a higher forecast accuracy when forecasting short-term horizon volatility. Third, when predicting middle-term and long-term volatilities, the proposed model, i.e., HAR-S-RV-J-FIGARCH, can exhibit a higher predictive ability.

The third part is forecasting the volatility of crude oil futures using high-frequency data: Further evidence. We forecast the realized volatility of crude oil futures market using the heterogeneous autoregressive model for realized volatility (HAR-RV) and its various extensions. Out-of-sample findings indicate that the inclusion of jumps does not improve the forecasting accuracy of the volatility models whereas the “leverage effect” pertaining to the difference between positive and negative realized

semi-variances can significantly improve the forecasting accuracy in predicting the short- and medium-term volatility. However, the signed jump variations and its decomposition couldn't significantly enhance the models' forecasting accuracy on the long-term volatility.

The fourth part is does US Economic Policy Uncertainty matter for European stock markets volatility? In this study, we first investigate whether the US EPU index can contain useful predictive information to help in forecasting European stock markets. Using the out-of-sample forecasts, we can obtain several noteworthy findings. First, the EPU index of European countries seems not to significantly increase the forecast accuracy of these stock markets. Second, we determine that this model including the US EPU index can achieve better forecasting performance, strongly supports that it contains useful predictive information with respect to the European stock markets. Third, based on the US expansions and recessions, we find that the US EPU index can provide more useful forecasting information and can substantially increase the predictive ability for the European stock markets during the recessions than during the expansions.