Preface

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

The first part is forecasting the U.S. stock volatility: An aligned jump index from G7 stock markets. We propose new jump indexes that are aligned with the jump information on the G7 stock markets to predict the U.S. stock market volatility. We present several noteworthy findings. First, in-sample tests indicate that the impacts of the aligned jump indexes on one-step-ahead U.S. stock market volatility are significantly negative. Second, the aligned jump index based on the Partial Least Squares (PLS) approach remarkably exhibits a higher predictive power, showing that this new jump index can contain much more predictive information than jump itself or jump index based on the Principal Component Analysis (PCA). Third, the results are consistent across the direction-of-change test and a variety of robustness tests. Consequently, this research provides a new insight and constructs a powerful predictive variable for the U.S. stock market volatility forecasting.

The second part is economic policy uncertainty and the Chinese stock market volatility: Novel evidence. In this study, we investigate the impact of global economic policy uncertainty (GEPU) on Chinese stock market volatility. More importantly, for the first time, we explore the effects of directional GEPU based

on the changing directions of GEPU and Chinese economic policy uncertainty (EPU). We make several noteworthy findings. First, the in-sample estimated results show that up and down GEPU can lead to substantially high stock market volatility for China. Second, the out-of-sample estimated results support the contention that the GEPU index is helpful for predicting volatility. Moreover, compared to GEPU alone, directional GEPU can provide more useful information that can increase the forecast accuracy. Third, we empirically find that directional GEPU is more effective in predicting Chinese stock market volatility when GEPU and EPU rise in the same month.

The third part is forecasting oil futures price volatility: New evidence from realized range-based volatility. In this article, we investigate the impacts of jump intensity on futures volatility in the oil futures market using the heterogeneous autoregressive model of realized range-based volatility (HAR-RRV) and its extended model. We present several interesting and notable findings. First, short-term investors have larger influences on oil futures price volatility. In addition, negative returns are significant, but the effects of jumps and their intensity (probability) seem not to be significant during the in-sample period. Second, the out-of-sample results statistically support that our proposed models are able to garner higher forecast accuracy than the benchmark in both the statistical and economic senses, especially including significant jumps and jump intensity together. Third, our findings are strongly robust in various checks, such as different forecasting windows, sampling frequencies and volatility measures.

The fourth part is uncertainty and oil volatility: New evidence. In this study, we first investigate the impacts of economic policy uncertainty (EPU), monetary policy uncertainty (MPU), and both of them on oil market volatility. We

have several noteworthy findings. First, the EPU index can significantly increase the predictive ability compared to benchmark model for the oil market. Second, the high MPU index leads to high fluctuations with respect to oil market, and can remarkably help in forecasting oil volatility. Third, we first find that the MPU and EPU have useful complementary information, and considered both of them together is more powerful to predict oil volatility than separate them. Our conclusions are robust to different forecasting windows, measures and monetary policy uncertainty.