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Modelling and Forecasting the Stock Market Volatility of SSE Composite Index Using GARCH Models

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Abstract. The stock market is constantly changing with uncertainties. Rapid dissemination of information and fast capital flow will lead to fluctuations of stock price, and the undulating price will affect the market in return. This is a process of mutual influence and mutual conduction. China's stock market, which pertains to an emerging market, has been acutely volatile since the very beginning, and often appear radical ups and downs. This paper selects the SSE Composite Index as research object, through the application of GARCH type models to conduct empirical analysis, carving the features of this index from an econometric perspective. And on basis of the status quo of the volatility of SSE Composite Index, it offers some suggestions.
The result shows that from the time series point of view, the SSE Composite Index possesses significant properties of time-varying and clustering. Series distribution of it presents leptokurtosis with significant ARCH and GARCH effects. Moreover, by comparing the fitting and forecast performance of GARCH (1, 1) (symmetric) and TARCH (1, 1) and EGARCH (1, 1) (asymmetric), it can be concluded that EGARCH (1, 1) outperforms the others. Besides, China's securities market should strengthen its system construction, reduce excessive government intervention and advocate rational investment philosophy.

Keywords: Modelling, Forecasting, Stock market, SSE composite index, GARCH models, Stock price, Mutual conduction

1 Introduction

1.1 Background

Since the Shanghai Stock Exchange was formally established in 1990, China's stock market has gone through a development journey of 27 years. Whereas it is now still of no high level of normalization in terms of supervision or institution, and with a strong volatility. The unstable stock market, unscientific investments