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Evaluation the Value at Risk using the Skew t-Student Distribution

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Abstract

The statistical distribution is one of the important aspects in risk management. Value at risk (VaR) is a statistical technique used to measure and quantify the level of financial risk within a firm or investment portfolio over a specific time frame. shortcoming of statistical distribution can results in incorrect estimation of risk and lead to serious mismanagement of risk. Heavy-tail distribution can be considered for financial data well. The t-student is one of the heavy-tail distributions but it has not the skewness properties because it is symmetrical about zero. In this article, we consider the skew extension to the t-student distribution, namely skew t distribution (STD) which can be used for modeling the financial data. We apply the STD to the evaluation of the Tehran Stock Exchange data in Value-at-Risk framework. Finally, the backtesting method is used to validate the VaR model.

Keywords: EM algorithm; Kupiec Test, Skew t-student Distribution Tehran Stock Exchange; Value-at-Risk.

Classification: ۹۱G۷۰; ۹۱G۶۰; ۶۲F۱۰.

۱. Introduction

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