Predicting intraday jumps in stock prices using high-frequency information

Friday, April 16, 2021
12:00PM–1:00PM
Zoom (link in email)

Abstract: Predicting the intraday stock jumps is a significant but challenging problem in finance. Due to the instantaneous and imperceptibility characteristics of intraday stock jumps, relevant studies on their predictability remain limited. Our study proposes a data-driven approach to predict intraday stock jumps using the information embedded in liquidity measures and technical indicators. Specifically, a trading day is divided into a series of 5-minute intervals, and at the end of each interval, the candidate attributes defined by liquidity measures and technical indicators are input into machine learning algorithms to predict the arrival of a stock jump as well as its direction in the following 5-minute interval. Empirical study is conducted on the level-2 high-frequency data of 1271 stocks in the Shenzhen Stock Exchange of China to validate our approach. The result provides initial evidence of the predictability of jump arrivals and jump directions using level-2 stock data as well as the effectiveness of using a combination of liquidity measures and technical indicators in this prediction. We also reveal the superiority of using random forest compared to other machine learning algorithms in building prediction models. Importantly, our study provides a portable data-driven approach that exploits liquidity and technical information from level-2 stock data to predict intraday price jumps of individual stocks.