Abstract

Stock market crashes were considered as an chaotic even for a long time. However, more than a decade ago a specific behavior was observed, which accompanied most of the crashes: an accelerating growth of price and log-periodic oscillations. The log-periodic power law was found to have an ability to capture the behavior prior to crash and even predict the most probable time of the crash. The log-periodic power law requires a complicated fitting method to find the estimated values of its seven parameters. In the thesis, an alternative simpler fitting method is proposed, which is equally likely to find the true estimates of parameters, thus generating an equally good fit of log-periodic power law. Furthermore, four stock indices are fitted to log-periodic power law and examined for possible log-periodic oscillations in different time periods, including a very recent period of 2017. In all of the analyzed indices, a log-periodic oscillations could be observed. One index, analyzed in past period, was fitted to log-periodic power law, which was able to capture the oscillations and predict the critical time of crash. In the rest of the selected stocks, which were analyzed in a recent period, the critical time was estimated with varying results.