

Executive Summary

The research of price movements continues to play an essential role in financial literature. The so-called price jumps, which can be described as price movements that are abnormal and unexpected, form an integral part of this research. The existence of price jumps has critical consequences for risk management (Hanousek et al. (2012)) and, therefore, for all market participants. Another topic that often forms the basis for discussion in literature but also in practice is portfolio rebalancing. Since, for many investors, the adherence to a fixed risk range is a fundamental principle, the issue here is mostly not whether the portfolio should be rebalanced but when the right time is and how often the portfolio should be rebalanced (Dayanandan and Lam (2015)).

This thesis aims to address these two subjects in more detail and to link them partially. The objective here is to use the occurrence of different types of price jumps as points in time for rebalancing processes. In a first step, a high-frequency data set, consisting of the stocks that are included in the S&P 100 index, is analyzed using so-called BNS based methods (Barndorff-Nielsen and Shephard (2004, 2006)) to see if price jumps can be identified on a daily basis. BNS based tests are built on the fact that the volatility of an asset price can be divided into two components: a continuous component that is determined by continuous price variations and a price jump component that is determined by large price changes (Bonaccolto et al. (2021)). In order to identify if at least one price jump has occurred on a specific day, BNS based tests compare the bipower variation, which contains only the first component, and the realized variation, which contains both components, to see if they are different. After the intraday returns have been standardized, the same procedure is now performed on an intraday basis, which allows determining the individual intraday jumps.

Lastly, the results of the jump detection tests are used to establish rebalancing rules, where the localized price jumps represent time points at which portfolios consisting of the constituents of the S&P 100 are rebalanced. The risk-return performance is tested using a modified Sharpe ratio, where the risk-free rate is excluded.

The results indicate that in the data set under examination, price jumps occurred very frequently. Out of the total of 750 trading days, only about 10% were days on which no price jump could be detected in any of the 98 assets. Furthermore, it was observed that intraday jumps were very unevenly distributed during the day and often occurred in the first few minutes and in the last few minutes of the trading day. The results of the different rebalancing rules studied revealed that in no single case, a better risk-return profile could be observed compared to a portfolio that was not rebalanced in the same period.