

The purpose of this thesis is to explain how Bitcoin works, analyze the Bitcoin total variation and to separate the jump component of realized variance from the continuous part. In order to do so, we use estimates of quadratic variation and integrated variance. We detect jumps using a test which is based on the difference between realized variance and bipower variation. The results for BTC/USD exchange rate are then compared with the results for EUR/USD exchange rate, price of gold and for the S&P 500 index. In case of all datasets, we use data with five-minute frequency. It seems that no other work analyzing the Bitcoin total variation using the same methods to separate the jump component from the continuous part of a price process has been written so far. We found that jumps in the Bitcoin total variation are stronger than for other analyzed instruments. The results also suggest that the duration between jumps for Bitcoin considerably prolonged during the monitored period which may indicate that the behavior of price of bitcoin has stabilized over time. We also found out that the variance of price of bitcoin is higher during the monitored period in comparison with other analyzed instruments.