

# Abstract

In this thesis we provide unique empirical support for the fractional cointegration of daily high and low stock prices. The recently formalized fractionally cointegrated VAR model by Johansen and Nielsen (2012) is used due to its ability to capture both the cointegration between daily high and low stock prices and the long memory of their linear combination, the range. Daily high and low stock prices are of particular interest as they provide valuable information about range-based volatility, which is considered a highly efficient and robust estimator of volatility. We provide a comparison of the Czech PX 50 index with the developed market indices (DAX, FTSE 100, S&P 500 and NIKKEI 225) during the 2003-2012 period as well as before and after the crisis. We find that the range of all indices displays long memory and is mostly in the non-stationary region (except for the ranges of the PX 50 and NIKKEI 225 indices in the pre-crisis period). These findings provide evidence that volatility may not be a stationary process. No common pattern is detected among all five market indices and different behaviour is also observed in the pre-crisis and post-crisis periods.