

Quantitative Finance > Statistical Finance

The level crossing analysis of German stock market index (DAX) and daily oil price time series

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The level crossing analysis of DAX and oil price time series are given. We determine the average frequency of positive-slope crossings, ν_{α} , where $T_{\alpha} = 1/\nu_{\alpha}$ is the average waiting time for observing the level α again. We estimate the probability $P(K, \alpha)$, which provides us the probability of observing K times of the level α with positive slope, in time scale T_{α} . For analyzed time series we found that maximum K is about ≈ 6 . We show that by using the level crossing analysis one can forecasts the DAX and oil time series (normalized log-returns) with good precision for the levels in the interval $-0.1 < \alpha < 0.1$ and $-0.35 < \alpha < 0.35$, respectively.

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