



Quantitative Finance > Statistical Finance

# Characterizing price index behavior through fluctuation dynamics

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We study the nature of fluctuations in variety of price indices involving companies listed on the New York Stock Exchange. The fluctuations at multiple scales are extracted through the use of wavelets belonging to Daubechies basis. The fact that these basis sets satisfy vanishing moments conditions makes them ideal to extract local polynomial trends, through the low pass or 'average coefficients'. Subtracting the trends from the original time series yields the fluctuations, at different scales, depending on the level of low-pass coefficients used for finding the 'average behavior'. The fluctuations are then studied using wavelet based multifractal detrended fluctuation analysis to analyze their self-similar and non-statistical properties. Due to the multifractality of such time series, they deviate from Gaussian behavior in different frequency regimes. Their departure from random matrix theory predictions in such regimes is also analyzed. These deviations and non-statistical properties of the fluctuations can be instrumental in throwing significant light on the dynamics of financial markets.

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