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Stock market prices and long-range dependence

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Abstract.

Using the CRSP (Center for Research in Security Prices) daily stock return data, we revisit the question of whether or not actual stock market prices exhibit long-range dependence. Our study is based on an empirical investigation reported in Teverovsky, Taqqu and Willinger [33] of the modified *rescaled adjusted range* or *R/S* statistic that was proposed by Lo [17] as a test for long-range dependence with good robustness properties under "extra" short-range dependence. Our main conclusion is that because the modified *R/S* statistic shows a strong preference for accepting the null hypothesis of no long-range dependence, irrespective of whether long-range dependence is present in the data or not, Lo's acceptance of the hypothesis for the CRSP data (i.e., no long-range dependence in stock market prices) is less conclusive than is usually regarded in the econometrics literature. In fact, upon further analysis of the data, we find empirical evidence of long-range

dependence in stock price returns, but because the corresponding degree of long-range dependence (measured via the Hurst parameter H) is typically very low (i.e., H-values around 0.60), the evidence is not absolutely conclusive.

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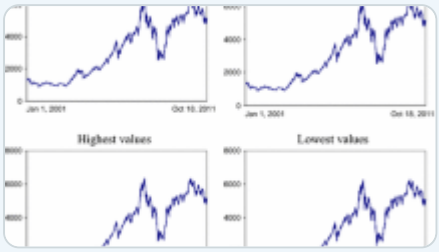

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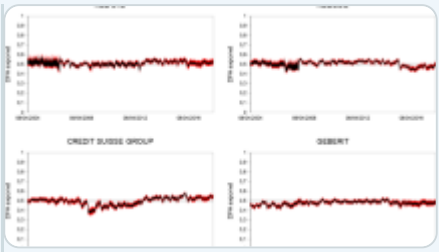

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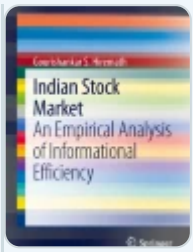

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