

Fractal geometry of prior-to-crash market situations

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The search for laws governing the occurrence of financial crashes is one of the most important activities in the field of econophysics.[1] We analyze several different stock market indices over different five-year critical periods prior to market crash, and we study the multifractal spectral decomposition of the corresponding signals, identifying their common properties, which typify prior-to-crash market situations built up over a short number of years. Further, we identify a thermodynamic-algorithm spectral decomposition common to these pre-crash periods. We relate the two types of spectra, and interpret these results in terms of stock index variations during the corresponding time periods under study. We show that though these stock market indices (DJIA, Merval, among others) exhibit quite different macroeconomic behavior, still they follow nearly the same geometric multifractal law, which could lead to get a sort of taxonomy of the prior-to-crash market situations.

Keywords

References

[1] Rotundo G., “Logistic Function in Large Financial Crashes” in Logistic Map and the Route to Chaos (2006) Springer NY.