Quantitative Finance
Seminar

Optimal Investment Strategies Based on Financial Crisis Indicators

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Abstract: The main objective of this study is to build successful investment strategies and devise optimal portfolio structures by exploiting the power of forecast of our financial crisis indicators based on random matrix theory. While using daily data constituted of the components of a major equity index like the Standard and Poors 500 or the Shanghai-Shenzhen CSI 300, the financial crisis indicators used in this paper are of two kinds. Firstly we consider the financial crisis indicators based on measuring the Hellinger distance between the empirical distribution of the eigenvalues of the correlation matrix of those index components and a distribution of reference built to either reflect a calm or agitated market situation. Secondly, we consider the financial crisis indicators based on the study of the spectral radius of the correlation matrix of the index components where the coefficients have been weighted in order to give more importance to the stock components that satisfy a chosen characteristic related to the structure of the index, market conditions or the nature of the companies which are part of the index. For example, we will attempt to give more importance in the computation of the indicators to the most traded stocks, the stocks from the companies with the highest market capitalization or from the companies with an optimal debt to capital ratio (financial leverage). Our optimal investment strategies exploit the forecasting power of the financial crisis indicators described above in order to produce a buy, sell or stay put signal every day that is able to anticipate most of the market downturns while keeping the number of false positives at an acceptable level. Such tools are very valuable for investors who can use them to anticipate market evolution in order to maximize their profit and limit their losses as well as for market regulators who can use those tools to anticipate systemic events and therefore attempt to mitigate their effects.

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