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Analysis of Cross-Correlations in Emerging Markets Using Random Matrix Theory

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Abstract : This paper investigates the universal financial dynamics in two dominant stock markets in Sub-Saharan Africa, through an in-depth analysis of the cross-correlation matrix of price returns in Nigerian Stock Market (NSM) and Johannesburg Stock Exchange (JSE), for the period 2009 to 2013. The strength of correlations between stocks is known to be higher in JSE than that of the NSM. Particularly important for modelling Nigerian derivatives in the future, the interactions of other stocks with the oil sector are weak, whereas the banking sector has strong positive interactions with the other sectors in the stock exchange. For the JSE, it is the oil sector and beverages that have greater sectorial correlations, instead of the banks which have the weaker correlation with other sectors in the stock exchange.

Keywords : random matrix theory, cross-correlations, emerging markets, option pricing, eigenvalues eigenvectors, inverse participation ratios and implied volatility
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