

Accepted Manuscript

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PII: S0927-538X(16)30003-8
DOI: doi: [10.1016/j.pacfn.2016.01.003](https://doi.org/10.1016/j.pacfn.2016.01.003)
Reference: PACFIN 809

To appear in: *Pacific-Basin Finance Journal*

Received date: 27 August 2015
Revised date: 4 December 2015
Accepted date: 18 January 2016



Please cite this article as: Mwamba, John W. Muteba, Hammoudeh, Shawkat, Gupta, Rangan, Financial tail risks in conventional and Islamic stock markets: A comparative analysis, *Pacific-Basin Finance Journal* (2016), doi: [10.1016/j.pacfn.2016.01.003](https://doi.org/10.1016/j.pacfn.2016.01.003)

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Financial Tail Risks in Conventional and Islamic Stock Markets: A Comparative Analysis[#]

John W. Muteba Mwamba^{*}, Shawkat Hammoudeh^{**} and Rangan Gupta^{***}

Abstract

This paper makes use of two types of extreme value distributions, namely: the generalised extreme value distribution often referred to as the block of maxima method (BMM), and the peak-over-threshold method (POT) of the extreme value distributions, to model the financial tail risks associated with the empirical daily log-return distributions of the Dow Jones Islamic market (DJIM), the U.S. S&P 500, the S&P Europe (SPEU), and the Asian S&P (SPAS50) indexes during the period between 01/01/1998 and 16/09/2015. Using both the maximum likelihood (ML) method and the bootstrap simulations to estimate the parameters of these extreme value distributions in the left and right tails separately, we find that the empirical distributions of conventional stock markets are characterized by a fat-left tail behaviour, which implies high probability of price drops during a financial crisis, and by a right-tail characterised by a truncation. This finding implies the existence of an upper bound on possible profit during an extreme event. The empirical distribution of the Islamic market is characterised by a thin-left tail behaviour, implying moderately low probability of price drops during a financial crisis, and by a right-tail without truncation implying large probability of positive returns during an extreme event. We divide our sample period into three equal sub-periods in order to avoid the impact of outliers and structural breaks. The results in each sub-period remain the same and also suggest that for all stock returns the BMM method performs better than the POT method, and that the Islamic stock market is less risky than the conventional stock markets during extreme events.

JEL Classification: G1, G13, G14.

Keywords: tail risk, extreme value distributions, expected shortfall, value at risk.

[#] We would like to thank an anonymous referee for many helpful comments. However, any remaining errors are solely ours.

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