FINANCIAL MATHEMATICS RESEARCH GROUP

Webinar Series

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### Via Google Meet meet.google.com/ahi-nxac-avp

'*Assessing distributional model risk under parametric bootstrap methods*'

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ABSTRACT: Despite the weaknesses, Value-at-Risk (VaR) is still the risk measure that practitioners and regulatory bodies customarily utilize for calculation of risk capital in the financial institutions such as banks. This work is concerned with the forecasting of credit Value-at-Risk and assessment of distributional model risk (DMR). Therefore, the DMR for credit risk model is assessed by estimating upper confidence level using the bootstrap method. Random variables coming from different parametric distributions are assumed as proxies to the systematic common factor for Vasicek single factor model. The Bootstrap Monte-Carlo simulations are performed for assessing the accuracy of the credit VaR using the proposed bootstrap upper confidence level and other techniques of bootstrap confidence levels. The techniques include the basic percentile, standard hybrid percentile and bias-corrected percentile approaches. Furthermore, a modified hybrid percentile (MHP) is proposed for forecasting the credit VaR using the bootstrap upper confidence levels. The result show that the proposed MHP method is highly in favour of both asymmetrical and symmetrical distributions.

AMS subject classifications: 91B05, 91G40, 91G70, 62F40, 62F40
Keywords: Credit Risk, Credit Value-at-Risk, Distribution Model Risk, Symmetrical and Asymmetrical distributions, Parametric Bootstrap
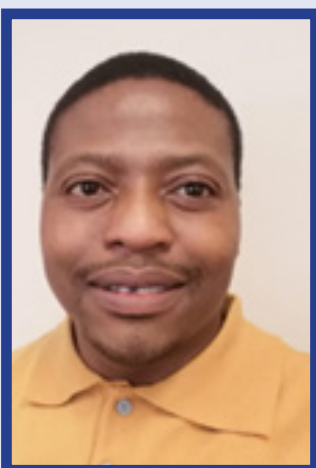
BIO: Dr Modisane Seitshiro, obtained a B.Sc. degree in 2002 and a Statistics B.Com. honours degree in 2003 at North-West University, Mahikeng Campus. In 2007, he was awarded an MSc degree in Mathematical Statistics by NWU, Potchefstroom Campus. He was employed by Standard Bank South Africa in Market Risk from September 2007 to January 2013. He became permanently employed as a Mathematical and Statistical Science lecturer at North-West University, Vanderbijlpark Campus from February 2013 to-date. In December 2020, he was conferred with a PhD in Business Mathematics and Informatics from North-West University, Potchefstroom Campus, South Africa. His thesis topic is the "Valuation of initial margin and model risk". His research interests are Financial Time Series Analysis, Model Risk, Statistical Learning and Quantitative Risk Analysis.

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