

SPECIAL COLLECTION LIBRARY USE ONLY

National University of Science and Technology
Faculty of Commerce

PASSIVE INVESTMENT MANAGEMENT ON THE ZIMBABWE STOCK EXCHANGE: EVIDENCE FROM MARKET MICROSTRUCTURE AND PORTFOLIO PERFORMANCE

TAONAZISO CHOWA

PhD coordinater and his successor Prof. P. M. Makhurane, Ambassador

Director, Dr P. Nkala and other members of the NUST - GSB PhD coll

A thesis submitted in fulfilment for the degree of Doctor of Philosophy in Business

Administration

Graduate School of Business, 2015.

LIERARY

NATIONAL UNIVERSITY OF SCIENCE
AND TECHNOLOGY
P.O. BOX 346 BULAWAYO
ZIMBABWE

DATE ACCESSION CLASS No. 1984 Bulkers Sakhile and 1



ABSTRACT

This study advances the application of the broad theoretical frame of the modern/meanvariance portfolio theory to a frontier stock market setting using the linear programming mean absolute deviation index tracker, based on the Zimbabwe Stock Exchange's institutional investor landscape, trading costs, liquidity, volume, returns and market efficiency consistencies. A dominantly positivist paradigm following the deductive research process, involving quantitative analysis of data based on tests and models was used. Secondary data analysis was done using; Microsoft Excel spreadsheets and Solver Add-In, E-Views 6.0/7.0, Altreva Adaptive Modeler 1.4.1 and the Visual Recurrence Analysis software. The research used Zimbabwe Stock Exchange historical data from January 1994 to December 2013. Ethical considerations were taken into account with confidentiality maintained for individual respondents, while the listed company data used already had ethical documentation. Findings show that; the Zimbabwean fund management landscape is dominated by institutional life and pension funds under third party administration through asset management firms and can only invest in local assets. The Brock, Dechert and Scheinkman (BDS) independence tests on the Zimbabwe Dollar industrial index data (1994 showed nonlinearity beyond the Generalised Autoregressive Conditional Heteroskedasticity (GARCH) effects, while the Correlation Dimension plots for raw data and the residuals gave inconclusive results between deterministic or stochastic nonlinearity over the same period. The Hurst Exponent vales showed that the industrial index exhibited random walk and persistence over 1994 - 2006, before showing anti-persistent and mean reversion, behaviour over 2009 - 2013 and therefore non chaotic in both instances. The Zimbabwe Stock Exchange industrial index and selected 18 fundamentally strong counters exhibits a general positive 'momentum' relationship between returns volatility and traded volumes over the years 2009 - 2012, but with insignificant predictive power. Zimbabwe Stock Exchange data for the industrial index and 20 continually listed counters over 1994 - 2013 rejected the huypothesises for random walk (Augmented Dickey-Fuller test), constant efficiency (CHOW Test and Dummy variable test), despite the Kalman Filter estimation graphs indicating continual but unstable efficiency. Investor information assimilation on the Zimbabwe Stock Exchange shows no abnormal returns under both the event study methodology tests (2010 -2012) and the capital asset pricing model (2010 - 2013) for individual firms and broad sectors respectively. A linear programming mean absolute deviation passive index tracking portfolios selected nineteen counters from the thirty eight Zimbabwe Stock Exchange counters, made up of the top 10 counters by market capitalisation, minimum of 10% liquidity over year 2011 and at least three counters per sector. The pure linear programming mean absolute deviation index tracker portfolio (P1) and its two variants based on the counter (P2) and sector (P3) weights scaling were tested for both retrospective (July 2009 - June 2011) and prospective (July 2011 - June 2013) performances based on tracking metrics and notional portfolio value migration analysis. All the three portfolios were superior retrospectively and there was moderate prospective dominance over the industrial index over six and up to eighteen months for P1 and P2 respectively, thereby, supporting capitalisation, liquidity, sector balance and mean absolute deviation in stock selection and the empirical passive rebalancing horizons of at least 26 weeks. The research concludes that the Zimbabwe Stock Exchange market microstructure characterised by high transactions costs, prospects for higher returns momentum and low liquidity are factors that favour simple buy-hold index tracking strategies. The study presented a new, thorough, diverse and complete reconciliatory evaluation of the Zimbabwe Stock Exchange and recommends for the development and adoption of passively managed index tracking portfolios in Zimbabwe for better capital preservation and accumulation