The Applicability of Mean-Variance Analysis and Beta-factors in the Risk Assessment of Hedge Funds

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Master Thesis presented to the Graduate School of Business of the University of Stellenbosch

in partial fulfilment of the requirements for the degree of Master of Business Administration

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Degree of Confidentiality: Grade A

December 2007
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DECLARATION

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NUMBER OF PAGES: (INCLUDING THIS PAGE) 200
LECTURER: Prof. Eon Smit
COURSE: MBA FULL-TIME 2006
DUE DATE : 31/12/2007

CERTIFICATION

I certify the content of the assignment to be my own and original work and that all sources have been accurately reported and acknowledged, and that this document has not previously been submitted in its entirety or in part at any educational establishment.

______________________________
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ACKNOWLEDGEMENTS

I would like to thank Dirk Gojny and the HSH-Nordbank Research team for their active support during data collection and quantitative research on the topic. In addition, I extend my gratitude to Detlef Bargmann (HSH Nordbank Financial Markets Advisory AG) who provided access to the HF Research database, without which this thesis could not have been written. Furthermore, I would like to thank Prof. Eon Smit of the University of Stellenbosch for his academic support and insights into Statistics and Econometrics. Special appreciation goes to Olivia Rumble, who supported me in terms of the layout and proofreading of this document. Lastly, I would like to thank my parents, Dr. Dietmar Boehlandt and Barbara Boehlandt, for their continuous support throughout my studies.
ABSTRACT

Hedge funds are amongst the fastest growing types of investment funds, both in terms of worldwide assets under management, as well as the number of private and institutional investors. More recently, analysts and investors focused their attention on accurately estimating the inherent risks of hedge funds (e.g. Brooks & Kat, 2001; Fung & Hsieh, 2004). Past research suggests that the traditional approach of assessing the risks of investment funds through mean-variance analysis can lead to severe underestimation of left-hand-tail risks for hedge funds (Amenc, Malaise, Martellini & Vaissié, 2004; Favre & Galeano, 2002; Fung & Hsieh, 1999). This phenomenon is mainly attributable to the non-normal distribution of monthly hedge fund returns around the mean. In addition, it has been found that skewed return distribution with high excess kurtosis has substantial impact on the reliability of beta as a measure of systemic risk in hedge funds (Chan, Getmansky, Haas & Lo, 2005). Other problems when estimating hedge fund risks arise from serial correlation of time series (Getmansky, Lo & Makarov, 2003), managerial and survivorship bias (Amin & Kat, 2001), as well as spurious bias when estimating performance from economic time series (Fung & Hsieh, 2000). The following thesis provides statistical evidence of the limitations of traditional risk measures when applied to hedge fund investments. It also includes advice on how to improve the significance of the aforementioned risk measures. In the course of the mean-variance analysis, the applicability and reliability of Value at Risk as a risk measurement tool for hedge funds is explored. Furthermore, the reliability and accuracy of different univariate and multivariate regression models is tested. In the final chapter emphasis is placed on the possibilities of predicting the inherent risks of single funds from hedge fund style index performance. This should provide investors and analysts with an introductory framework for the appropriate risk assessment of hedge funds, considering the unique structure and dynamics of these alternative investment funds.