Hedge Funds as an Asset Class in Brazilian Pension Funds - an Application of Robust Portfolio Optimization Estimates

(full paper in Portuguese only)

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Abstract

We illustrate the use of a technique to obtain a robust covariance matrix that mitigates the error in variables problem in portfolio optimization applications. It consists of a contamination of the historical covariance matrix and makes use of the traditional mean-variance optimization procedure present in most commercially available portfolio software. The robust covariance matrix is employed in an analysis of whether the use of hedge funds improves the risk-return relationship of Brazilian pension funds. Hedge funds are increasingly appearing as an asset class in pension funds elsewhere, particularly those specialized in certain investment styles and funds of niche hedge funds. We verify if typical asset allocation sets of Brazilian pension funds present a superior risk-return relationship when hedge funds are included as an additional asset class. We use hedge fund indexes that represent a few different investment styles of Brazilian hedge funds. Our results show that hedge funds improve the risk-return relationship, lead to a greater accumulated return at end of one year, and demand a less frequent rebalancing of the portfolio. The usual 6% real annual return goal of Brazilian hedge funds may be attained with less volatility risk exposure. The asset allocations obtained with our robust covariance matrix performs better than the historical covariance matrix.

Keywords: Brazilian pension funds; Brazilian hedge funds; robust covariance estimate; portfolio optimization.

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