



2016 Enterprise Risk Management Symposium

April 6–8, 2016, Arlington, Virginia

Enterprise Risk-Reward Optimization: Two Critical Approaches

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Abstract

Enterprise risk management (ERM) is increasingly viewed as an essential discipline entirely distinct from internal audit or compliance, though many organizations still view its scope as only mitigation against severe downside events. Though strategic decisions very often balance risk and reward, few ERM frameworks determine the optimal tradeoff between these two concepts. This paper develops two technical approaches for the optimization of risk and reward at a company with a solid ERM framework and risk culture in place. These methods allow ERM to be more than protection against the downside; they enable enterprise risk-reward optimization (ERRO).

In a very general setting, this paper describes a straightforward, non-parametric approach to aggregate “stand-alone” or marginal distributions with desired correlations without imposing additional assumptions on those marginals. We then develop two optimizations for the enterprise, one based on maximizing return on economic capital and the other based on a mean-semivariance efficient frontier from the investor point of view. The definition of economic capital is applicable to any insurer or bank while the efficient frontier can be used in any for-profit company. In each case, the optimization methods use closed-form solutions and do not necessitate numerical search algorithms whose results are sometimes suboptimal and often require extensive computing resources.

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