

Essays on Cost Efficiency

Jit Seng Chen

Supervisors: Prof. dr. Steven Vanduffel (VUB) en Prof. dr. Carole Bernard (University of Waterloo, Canada)

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Abstract

This thesis applies the theory of cost efficiency in three different directions.

Part I of this thesis focuses on the design and pricing of cost efficient payoffs. We construct the counterparts of some common option payoffs in the presence of stochastic interest rates modeled by the Vasicek process and derive their respective pricing formulas. We also apply this methodology to the Asian executive option to derive its cost efficient counterpart that produces significant benefits in cost, subjective value, and incentive effects.

In Part II, we investigate the investor's optimal portfolio selection problem. Using the tools of cost efficiency, we show that the optimal portfolio in any behavioral framework that respects first order stochastic dominance can be rationalized using the classical Expected Utility Theory. This greatly simplifies many complications that are inherent to behavioral portfolio selection models. As a case in point, we apply our technique to the optimal portfolio selection problem according to Cumulative Prospect Theory and derive new results that are of independent interest.

Part III of this thesis extends the theory of cost efficiency by introducing state-dependent constraints when constructing cost efficient payoffs. We create new payoffs that provide protection during market crashes, maintain a prescribed target distribution as a whole, and come at the cheapest possible price. Since these payoffs are not available in the market yet, we experiment with different methods of replicating them and test the performance of a particular out-of-sample replicating strategy against historical data.