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Ordinal utility and the market prices of semi-moments

ABSTRACT

Mean-variance is certainly one of the fundamental approaches to decision under uncertainty, with important applications in portfolio choice and equilibrium asset pricing.

It is not difficult to show (Cesari and D'Adda, 2010) that mean-variance is a special case of a general non-expected, ordinal utility approach in which no independence axiom is used and the main results of asset pricing theory can be derived and straightforwardly generalized to higher moments.

This ordinal utility function is used in the classical (microeconomic) constrained optimization problem and the Capital Asset Pricing Model is easily obtained, in the usual mean-variance form as well as in more general forms. In this paper we try to make a step farther, simplifying and deepening the model in the attempt to identify the fundamental sources of asset value. The idea is to define an ordinal utility in three (semi) moments: mean, downside risk and upside risk, obtaining, as a consequence, the market prices of the three basic moments entering the fundamental valuation equation. The analysis is worked out in the two-asset case and implemented making use of the index option contracts quoted at the Chicago Board Option Exchange. The results over the recent stock market turbulence show the contributions of price and quantity effects of risks on market valuations.

KEYWORDS: non-expected utility, asset pricing, downside risk, mean-variance, option prices

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