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On Allocations to Portfolios of Assets with Statistically Dependent Potential Risk Returns

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Abstract

This note studies how the allocation impacts on the expected potential return of the portfolio of risk assets with some new dependence structures characterized through the orthant probability of their potential returns. As applications, we revisit the financial risk model and actuarial default risk model, and study the dependence structure of potential risk returns and the utility functions such that in the optimal allocations the assets are arranged in ascending order. The main results complement some related ones of Cheung and Yang (2004) and Chen and Hu (2008).

Key words Arrangement increasing; Default risks; Lower orthant arrangement increasing; Risk averse

1 Introduction

In financial engineering and actuarial sciences, it is one main concern to reasonably allocate the initial wealth to concerned risk assets so as to pursue maximal return in the market. The problems on the optimal asset allocation [have](#) been paid a lot of attention in the past two to three decades. Traditionally, such problems are discussed under the framework of expected utility theory. That is, the investors mainly devote to allocating the initial wealth to concerned assets so as to maximize the expected utility of the total potential return. In general, the default risk is the possibility that a borrower is incapable of paying the interest or the principal

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