

Prospect and Markowitz Stochastic Dominance

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Abstract:

Levy and Levy (2002, 2004) develop the Prospect and Markowitz stochastic dominance theory with S-shaped and reverse S-shaped utility functions for investors. In this paper, we extend Levy and Levy's Prospect Stochastic Dominance theory (PSD) and Markowitz Stochastic Dominance theory (MSD) to the first three orders and link the corresponding S-shaped and reverse S-shaped utility functions to the first three orders. We also provide experiments to illustrate each case of the MSD and PSD to the first three orders and demonstrate that the higher order MSD and PSD cannot be replaced by the lower order MSD and PSD. Prospect theory has been regarded as a challenge to the expected utility paradigm. Levy and Levy (2002) prove that the second order PSD and MSD satisfy the expected utility paradigm. In our paper we take Levy and Levy's results one step further by showing that both PSD and MSD of any order are consistent with the expected utility paradigm. Furthermore, we formulate some other properties for the PSD and MSD including the hierarchy that exists in both PSD and MSD relationships; arbitrage opportunities that exist in the first orders of both PSD and MSD; and that for any two prospects under certain conditions, their third order MSD preference will be 'the opposite' of or 'the same' as their counterpart third order PSD preference. By extending Levy and Levy's work, we provide investors with more tools for empirical analysis, with which they can identify the first order PSD and MSD prospects and discern arbitrage opportunities that could increase his/her utility as well as wealth and set up a zero dollar portfolio to make huge profit. Our tools also enable investors to identify the third order PSD and MSD prospects and make better choices.