

Portfolio Selection with Mental Accounts.

An alternative approach combining loss aversion and hyperbolic discounting.

by

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The identification of a risk measure coherent with the real investor behavior has always been a prominent theme in the asset management industry. Standard deviation, a traditional indicator used in portfolio models, does not seem to be an appropriate risk proxy, especially for retail investors, who tend to consider risk the negative tail of the distribution only. This is why

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traditional asset allocation methodologies may not be consistent with the real preferences of individual investors.

The paper can be considered a complement to the model proposed by Das, Markowitz, Scheid, and Statman (2010). The authors have developed a mental accounting portfolio structure combining mean-variance portfolio theory with the mental accounting feature of behavioral portfolio theory. Our study introduces two major elements, which can be considered more consistent with behavioral portfolio theory: i) in alternative to the standard deviation, the use of different risk measures which take into account the real behavior of loss-averse investors; ii) in a context of adaptive expectations, the way in which hyperbolic discounting affects mental sub-portfolios which are characterized by different time horizons.

The aim of the paper is threefold. Firstly, to identify risk measures which take into account the real behavior of investors in practice. In particular, it analyzes proxies related to potential loss less than or equal to a threshold return, as well as related to the duration of loss situations. Secondly, to estimate the impacts that hyperbolic discounting has on portfolio choices. Finally, to jointly evaluate the two effects, in order to identify a portfolio model consistent with the real preferences of individual investors.

To achieve the above goals, different methodological approaches need to be used. In particular, we compare the effects of different optimization models in the risk-return space. As a risk indicator we use measures which take into account the loss perception such as the maximum drawdown, the time required to recover the loss under the "*high water mark*" and how often adverse events occur. We also propose a decay factor in order to take into account the time of manifestation of adverse events in the historical series: past events have less weight compared to more recent ones. Moreover, the use of hyperbolic discounting instead of the traditional compound interests, allows the identification of target returns consistent with the real investor preferences. The analysis is thus developed on a plurality of possible investment views, simulating investors with different risk aversions. Finally, we compare the results with those obtained by Das, Markowitz, Scheid, and Statman through the traditional mean-variance approach. Preliminary results show that optimal portfolios differ significantly from previous results. This is mainly due to the fact that our models try to take into account the real perception of risk and return as formulated by investors and described in the behavioral portfolio theory.