BEHAVIORAL MODELING IN OPTIMAL INVESTMENT-CONSUMPTION DECISIONS FOR LONG-TERM FINANCIAL PLANNING

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Abstract. Decision making criteria for making important financial and business decisions are assumed to be normative, however this is far from an accurate representation of reality. This paper provides a systematic organization of behavioral preferences found in the literature and incorporates them in a modelling framework for an individual planner's long-term financial planning decisions. Inclusion of behavioral preferences implies that the resulting optimization problems lose some of their well-behaved properties when compared with similar normative formulations. We solve the resulting large-scale nonlinear optimization problems using state-of-the-art algorithms that are found to be robust to these regularity issues and obtain optimal consumption, saving, and investment decisions corresponding to these behavioral preferences. The computational results demonstrate the effect of modified preferences on the tradeoff between immediate consumption and long-term savings. This analysis paves the path for a detailed prescriptive analysis. A prescriptive analysis will allow financial advisory services to tailor advice to specific individual's preferences, rather than provide a 'one answer fits all' solution.

Keywords. Behavioral preferences, decision trees, long-term financial planning, consumption-saving tradeoff, decision support system.

1　Introduction

Financial decisions are among the most crucial decisions every individual has to make in his lifetime. While these decisions are important, they are also complex, especially in light of multitude of uncertainties that affect the eventual outcome of the decisions. This is recognized in the research and practice communities, since much research has been conducted in the past decades on developing decision support systems for an individual's financial decisions