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Trend-Following Trading under a Regime Switching Model

This paper is concerned with the optimality of a trend-following trading rule. The idea is to catch a bull market at its early stage, ride the trend, and liquidate the position at the first evidence of the subsequent bear market. We characterize the bull and bear phases of the markets mathematically using the conditional probabilities of the bull market given the up-to-date stock prices. A dynamic programming approach is used to analyze the problem. The optimal buying and selling times are given in terms of a sequence of stopping times determined by two threshold curves. Numerical experiments are conducted to validate the theoretical results and demonstrate how they perform in a marketplace. How to handle nonsmooth optimal value functions is an interesting challenge to variational analysts.

This is a joint work with D. Min (National University of Singapore, Singapore) and Q. Zhang (The University of Georgia, Athens, Georgia, USA).