

Optimal Portfolio Selection

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Abstract / Resumo:

A strategy is cost-efficient if any other strategy that generates the same terminal wealth distribution costs at least as much. "Cost-efficiency" is desirable for many investors (including expected utility maximizers or investors who minimize a risk measure, such as the Value-at-Risk). In fact we show that it is optimal for profit-seeking investors with a fixed investment horizon and law invariant preferences to invest exclusively in "cost-efficient" strategies. In the Black and Scholes market, such strategies are always path independent and increasing with the stock price. Given a dynamic strategy (such as CPPI: Constant Proportion Portfolio Insurance, Stop Loss strategy,...) we show how to construct explicitly a strictly cheaper static strategy that produces the same wealth distribution at maturity as the original strategy.

In reality investors are subject to uncertainty on the distribution of final wealth and on the pricing operator in the financial market. In addition investors do not only care of the distribution of final wealth but also on the states of the economy where the outcomes of the strategy are received (for example to get protection when the market falls, to hedge liabilities). In such situations, "cost-efficient" strategies can also be derived explicitly. In the Black and Scholes market, such optimal strategies may be path-dependent, and may not be non-decreasing in the stock price.

This is based on joint work with Prof. Phelim Boyle (Wilfrid Laurier University, Waterloo, Canada) and Prof. Steven Vanduffel (Vrije Universiteit Brussels, Belgium)