TIME OPTIMAL APPROACH TO PORTFOLIO SELECTION – BASIC RESULTS AND CHALLANGES

Thomas Burkhardt

Full Professor, Chair in Finance: Financing, Financial Services and e-Finance
Professorial member of the Faculty Council, Faculty 4: Computer Science
Deputy member of the Doctoral Committee, Department 4: Computer Science
Member of the Technical Committee for Studies and Teaching, Department 4: Computer Science

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Abstract:

Portfolio selection is a core subject in finance, which aims to find the optimal combination of risky financial assets for an investor with given preferences. Classic portfolio selection models, following the Nobel prize winning work of Markowitz, require typically that the investor can specify his investment horizon. As a consequence, the duration of the investment is fixed, and risk and return are characterized via the probability distribution of value of the investment portfolio at the given point in time. Time optimal portfolio selection takes an alternative approach, as many investors in real life have difficulty to specify an investment horizon, but can specify their goals in monetary terms, like to reach 200 000 Euro from an investment of 100000 Euro. In such a case, the essential question is how long it takes the investment to reach the set goal value. As a consequence, risk is not measured based on the probability distribution of value of the investment, but on the probability distribution of the time needed to reach the goal. For risky investments, this time is a random variable, and the resulting probability distribution a so called first passage time distribution. The talk surveys the concept as developed by the author, presents some key results, and hints at some interesting mathematical questions related to improvements of the existing models.

Thomas Burkhardt:

Graduated in Physics (1990) and Economics (1992). Doctorate (Ph.D.) (1994) Summa Cum Laude, all from the University of Göttingen. Habilitation 2000 Technical University of Freiberg. Since 2001, he has held the finance chair at Koblenz-Landau University, Campus Koblenz. The main research interests are financial decision-making, asset management, derivatives and long-term investment decisions, including forestry investments. Preferred methods include mathematical modelling and optimization, as well as economic experiments.