

Opponent report

Doctoral thesis

“Utility functions in portfolio optimization”

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THIS THESIS INCLUDES an impressive body of work. It addresses several fundamental problems in the area of choice theory (one of the micro-economic foundations of Economics). These problems are highly relevant for a proper understanding of expected utility theory and for applications of that theory in application areas as diverse as financial economics, welfare economics, agricultural economics and health economics. Kopa identifies several challenging problems, gives a rigorous analysis of those problems, finds original, creative and elegant solutions and shows how those solutions can be implemented. In addition, the work is well-written (at the level of native English) and generally a pleasure to read.

The thesis basically consist of two parts. After an introductory survey, the author first deals with issues of stability, risk premia and multi-period choice in the context of expected utility theory. The author then moves to stochastic dominance, which can be seen as a nonparametric (or robust) framework for expected utility, but is also meaningful outside that theory (e.g., first-order stochastic dominance is consistent with non-expected utility theories such as cumulative prospect theory). Throughout the study, the focus is on the application to investment portfolio selection, but the contributions carry directly to similar problems in economics, agricultural economics and health economics. The author addresses both conceptual problems and practical problems of robustness, stability and computation. At all time, the author is aware of the relevant existing literature and properly explains his contributions to this heritage.

All in all, the thesis represents an impressive body of work. For example, Chapter 4 and 5 develop several important contributions to the conceptual understanding of the first-order and second-order stochastic dominance criteria, as well as important contributions to computational algorithms for applying these criteria to problems where diversification across the choice alternatives is possible. I have little doubt that this thesis contains sufficient publishable material for 3-4 publications in international top-journals. Apart from the thesis, I have also had the privilege of seeing the candidate present his work in a successful manner to peers at international conferences and I have little doubt that the author will succeed to find its way in the international scientific community, should he wish to do so. The thesis convincingly proves the author's ability for independent, creative scientific work and to communicate the results to the scientific community.



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