

FROM TIME CONSISTENCY TO AGENT CONSISTENCY IN STOCHASTIC OPTIMIZATION

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Résumé. Consider a finite number of agents, each of them endowed with their own preference on their own decision set. A leader supervises the team of agents. He is endowed with his own preference over the product of agents decision sets. We extend the notion of time consistency ([1]) to one of agent consistency: when the agents, one by one, are indifferent between two decisions, so is the team leader with respect to the two collections of decisions.

When preferences are represented by objective functions, we prove that agent consistency is equivalent to a nested formula: the team leader objective function is a function (aggregator) of the agents objective functions. In other words, the team leader objective function can be factorized into the agents objective functions.

We also introduce a notion of strong agent consistency that goes beyond indifference, and prove that the aggregator function is monotone.

We discuss applications to risk measures ([2]).

Mots-clefs : Time consistency, Agent consistency, Nested Formula

Références

- [1] H. GÉRARD, M. DE LARA, J-P. CHANCELIER. *Equivalence between Time Consistency and Nested Formula*. arXiv preprint arXiv:1711.08633, 2017.
- [2] H. FÖLLMER, A. SCHIED. *Stochastic finance: an introduction in discrete time*. Walter de Gruyter, 2011.