

Economic axiomatics on stochastic processes for temporal consistency

Scientific training period proposal

November 10, 2017

1 Organism, supervision and material conditions

Organism

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Supervision and material conditions

Address:

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Number of students: 1

Material conditions: a financial gratification is offered

Dates: to be discussed

2 Proposal

Research domain

Mathematics, stochastic optimization, economics.

Subject

The economic literature raised early the question of the consistency of choices as time goes on, and as new decision problems are reformulated at each stage [4]. The student will make such literature close to that of time consistency for dynamic risk measures [3] and for stochastic optimal control problems [1]. He will propose an axiomatic framework that expresses time consistency, and he will identify classes of decision problems that display it [2].

Expected work

The proposals on stochastic dynamic programming and temporal consistency are rather theoretical.

References

- [1] P. Carpentier, J.-P. Chancelier, G. Cohen, M. De Lara, and P. Girardeau. Dynamic consistency for stochastic optimal control problems. *Annals of Operation Research*, 200(1):247–263, 2012.
- [2] M. De Lara and V. Leclère. Building up time-consistency for risk measures and dynamic optimization. *European Journal of Operations Research*, 249(1):177–187, 2016.
- [3] A. Shapiro. On a time consistency concept in risk averse multistage stochastic programming. *Operations Research Letters*, 37(3):143–147, 2009.
- [4] R. H. Strotz. Myopia and inconsistency in dynamic utility maximization. *The Review of Economic Studies*, 23(3):165–180, 1955-1956.