

## Expected duration in multilateral selection problems

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This paper treats the decision problem related to the observation of a Markov process by decision makers. The information delivered to the players is based on the aggregation of the high-frequency data by some functions. Admissible strategies are stopping moments related to the available information. The payments are defined by the state at the time of stopping. The players' decision to stop has various effects which depend on the decision makers' type (v. [3]). The knowledge about the type of the players is not public and in this way, the payers have also different information. The details of the description allow to formulate the problem as a Bayesian game with sets of strategies based on the stopping times. It is an extension of the Dynkin's game related to the observation of a Markov process with the random assignment mechanism of states to the players. The main question considered now is the expected duration of each DM in the game (v. [1]). Some examples related to the best choice problem (BCP) are analyzed (cf. [4] and [2]).

## References

- [1] S. Demers. Expected duration of the no-information minimum rank problem. *Statist. Probab. Lett.*, 168:108950, 5, 2021. ISSN 0167-7152. doi:10.1016/j.spl.2020.108950.
- [2] T. S. Ferguson, J. P. Hardwick, and M. Tamaki. Maximizing the duration of owning a relatively best object. In *Strategies for sequential search and selection in real time (Amherst, MA, 1990)*, volume 125 of *Contemp. Math.*, pages 37–57. Amer. Math. Soc., Providence, RI, 1992. doi:10.1090/conm/125/1160608.
- [3] K. Szajowski and M. Skarupski. On multilateral incomplete information decision models. *High Frequency*, 2(3-4):158–168, 2019. ISSN 2470-6981. doi:10.1002/hf2.10047.
- [4] G. F. Yeo. Duration of a secretary problem. *J. Appl. Probab.*, 34(2): 556–558, 1997. ISSN 0021-9002. doi:10.1017/s0021900200101184.