

Double Optimal Stopping in Fishing Problem

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Abstract

The solution of double optimal stopping problem, in so called "fishing problem", will be presented. One of the first author who considered the basic version of this problem was Starr [3] and further generalizations were done by Starr and Woodroffe [5], Starr, Wardrop and Woodroffe, [4], Kramer and Starr [2]. The detailed review of the papers connected with "fishing problem" was presented by Ferguson [1]. The simple formulation is following. The angler goes to fishing. He buys fishing ticket for a fixed time. There are two places for fishing at the lake. The fishes are caught according to renewal processes which are different at both places. The fishes' weights and the inter-arrival times are given by the sequences of i.i.d. random variables with known distribution functions. These distributions are different for the first and second fishing place. The angler's satisfaction measure is given by difference between the utility function dependent on size of the caught fishes and the cost function connected with time. On each place the angler has another utility functions and another cost functions. In this way, the angler's relative opinion about these two places is modeled. For example, on the one place better sort of fish can be caught with bigger probability or one of the places is more comfortable. Obviously our angler wants to have as much satisfaction as possible and additionally he have to leave the lake before the fixed moment. Therefore his goal is to find two optimal stopping times in order to maximize his satisfaction. The first time corresponds to the moment, when he eventually should change the place and the second time, when he should stop fishing. These stopping times have to be less than the fixed time of fishing. The value of the problem and the optimal stopping times are derived.

References

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