

PORTFOLIO OPTIMIZATION AND OPTION PRICING PROBLEMS FOR LARGE INVESTORS

HYEJIN KU

ABSTRACT. We solve a portfolio optimization problem for a large investor who wishes to maximize the expected utility from terminal wealth. It is assumed the underlying asset price is affected by Markov-modulated drift and the action of the investor. The large investor may have complete information or partial information on the market price movements. In both cases, optimal investment strategies are obtained. In the second part of the talk, we solve the problem of pricing options for a large trader whose trading action has some lasting impact on the dynamics of underlying asset. The utility maximization approach to determine option prices leads to optimal control problems. Finally, some illustrative examples with explicit optimal solutions are presented.

DEPARTMENT OF MATHEMATICS AND STATISTICS, YORK UNIVERSITY
E-mail address: `hku@mathstat.yorku.ca`

Date: October 23, 2017.