Andrew Papanicolaou* (ap1345@nyu.edu), NY, and Shiva Chandra. Singular perturbation expansion for utility maximization with order-$\epsilon$ quadratic transaction costs.

We present an expansion for portfolio optimization in the presence of small, instantaneous, quadratic transaction costs. Specifically, the magnitude of transaction costs has a coefficient that is of the order $\epsilon$ small, which leads to the optimization problem having an asymptotically singular Hamilton-Jacobi-Bellman equation, for which the solution can be expanded in powers of $\sqrt{\epsilon}$. In this paper we derive explicit formulae for the first two terms of this expansion. Analysis and simulation are provided to show the behavior of this approximate solution. (Received November 05, 2018)