

# Some asymptotic results for probability maximizing/minimizing portfolios

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In a complete market situation, large deviations probability maximizing/minimizing portfolios with long horizon are re-derived, starting with quantile hedging results and utilizing Gartner-Ellis's theorem for the family of random variables  $(L_T; T > 0)$  with respect to the physical probability  $P$  and the risk-neutral probability  $Q$ , where  $L_T := \log(dQ/dP)/T$  is the (time-averaged) log-likelihood restricted to the horizon  $T$ . This provides a different solution method to the above large deviations control problems, which have been studied by Pham (2003), Hata-Nagai-Sheu (2007) and Nagai (2008), etc. Also, exact asymptotics of the optimized probabilities are computed.