A high-frequency trader takes a view on the market, and then acts accordingly: buys an asset if she predicts an upward trend in asset’s mid-price, or sells the asset if she predicts a downward trend. However, if she is not fully confident in her prediction, how can she optimally trade?

In the present paper we develop a framework to address this problem. We model the mid-price by a randomized Brownian bridge. At terminal time it is a pre-specified random variable that encodes the trader’s prior estimate of the asset’s future mid-price distribution, e.g. a discrete random variable taking two values corresponding to upward/downward trends. In the latter case the optimal trading strategy ‘learns’ from the dynamics of the mid-price whose trend is being realized on the market.

We analyze various features of trader’s optimal strategy, dynamics of her inventory and book value, risk-return profiles. We also compare the performance of optimal strategies of three traders who differ in accuracy of their predictions of the real world distribution of the mid-price. (Received September 17, 2013)