

# TRADING STRATEGIES WITHIN THE EDGES OF NO-ARBITRAGE

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## Abstract

We develop a trading strategy which employs limit and market orders in a multi-asset economy where the assets are not only correlated, but can also be structurally dependent. To model the structural dependence, the midprice processes follow a multivariate reflected Brownian motion on the closure of a no-arbitrage region which is dictated by the assets' bid-ask spreads. We provide a formal framework for such an economy and solve for the value function and optimal control for an investor who takes positions in these assets. The optimal strategy exhibits two dominant features which depend on how far the vector of midprices is from the no-arbitrage bounds. When midprices are sufficiently far from the no-arbitrage edges, the strategy behaves as that of a market maker who posts buy and sell limit orders. And when the midprice vector is close to the edge of the no-arbitrage region, the strategy executes a combination of market orders and limit orders to profit from statistical arbitrages. Moreover, we discuss a numerical scheme to solve for the value function and optimal control, and perform a simulation study to discuss the main characteristics of the optimal strategy.