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Drift dependence of optimal order execution strategies under transient price impact

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We give a complete solution to the problem of minimizing the expected liquidity costs in presence of a general drift when the underlying market impact model has linear transient price impact with exponential resilience. It turns out that this problem is well-posed only if the drift is absolutely continuous. Optimal strategies often do not exist, and when they do, they depend strongly on the derivative of the drift. Our approach uses elements from singular stochastic control, even though the problem is essentially non-Markovian due to the transience of price impact and the lack in Markovian structure of the underlying price process. As a corollary, we give a complete solution to the minimization of a certain cost-risk criterion in our setting.

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