Ultra-High-Frequency Pairs Trading in Gold ETFs

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Thong Dao (https://papers.ssrn.com/sol3/cf_dev/AbsByAuth.cfm?per_id=2721046)
Nottingham Trent University

Frank McGroarty (https://papers.ssrn.com/sol3/cf_dev/AbsByAuth.cfm?per_id=484354)
University of Southampton - Southampton Business School

Andrew Urquhart (https://papers.ssrn.com/sol3/cf_dev/AbsByAuth.cfm?per_id=2198228)
University of Reading - ICMA Centre; ICMA Centre, Henley Business School

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Abstract

Based on a large dataset of gold ETFs, we find arbitrage opportunities in the gold ETF market which can be exploited by high-frequency traders. To our knowledge, this is the first paper to study pairs trading of gold ETFs using tick data. Able to execute their orders with minimal delay and take advantage of potentially short-lived opportunities, high-frequency traders can make an excess return of 2.1% p.a. after including transaction costs. Consistent with Grossman and Stiglitz (1976) and Grossman and Stiglitz (1980), this profitability may be compensation for arbitrage efforts and incentivise arbitrageurs to eliminate mispricing. We also explain why the trade exit rule of full convergence used in previous studies may not be optimal and propose a rule based on partial convergence which outperforms the standard full-convergence rule. Specifically, changing the exit rule from full convergence to partial convergence can increase pairs trading returns to 3.38% p.a. and also enhance the risk-adjusted performance based on different risk adjustment methods. More importantly, the outperformance of partial convergence is consistent in both the whole sample and the sub-samples with the optimal convergence target being around 40%. Therefore, partial convergence enables better exploitation of arbitrage opportunities than full convergence. Finally, the pairs trading returns exceed compensation for risks, which suggests that the gold ETF market may be inefficient at ultra-high frequency.

Keywords: pairs trading, statistical arbitrage, high frequency, gold ETFs

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