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## Ultra-High-Frequency Pairs Trading in Gold ETFs

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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[Suggested Citation](#) >[Show Contact Information](#) >[Download This Paper \(Delivery.cfm/SSRN\\_ID2981717\\_code2198228.pdf?abstractid=2981717&mirid=1\)](https://papers.ssrn.com/sol3/cf_dev/AbsByAuth.cfm?per_id=2721046)[Open PDF in Browser \(Delivery.cfm/SSRN\\_ID2981717\\_code2198228.pdf?abstractid=2981717&mirid=1&type=2\)](https://papers.ssrn.com/sol3/cf_dev/AbsByAuth.cfm?per_id=2721046)

## 47 References

1. D Abreu , M K Brunnermeier  
Synchronization risk and delayed arbitrage  
Journal of Financial Economics , volume 66 , p. 341 - 360 Posted: 2002  
Crossref ([https://doi.org/10.1016/s0304-405x\(02\)00227-1](https://doi.org/10.1016/s0304-405x(02)00227-1))
2. L F Ackert , Y S Tian  
Arbitrage and Valuation in the Market for Standard and Poor's Depository Receipts  
Financial Management , volume 29 , p. 71 - 87 Posted: 2000  
Crossref (<https://doi.org/10.2307/3666236>)

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Journal of Banking and Finance , volume 33 , p. 1741 - 1754 Posted: 2009

Crossref (<https://doi.org/10.1016/j.jbankfin.2008.10.017>)[Cookie Settings](#)[Accept all cookies](#)

3. O F Akram , D Rime , L Sarno  
Does the law of one price hold in international financial markets? Evidence from tick data  
Journal of Banking and Finance , volume 33 , p. 1741 - 1754 Posted: 2009

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