

# **AI-Powered ETF Arbitrage Trading Strategies**

Utilizing AI to Capitalize on Market Inefficiencies at Scale

CTT Advisors

# Overview

## Problem Statement

- ETFs frequently experience temporary mispricings due to liquidity imbalances and market inefficiencies.
- Traditional arbitrage strategies fail to capture fleeting opportunities at scale.
- Existing models lack the speed and precision needed to execute in real time.

## Solution Overview

- **AI-Driven Arbitrage Model** that scans **tens of thousands of trades per second**.
- **Real-Time Execution Engine** identifies and capitalizes on pricing inefficiencies instantly.
- **Scalable, Automated System** minimizes latency and maximizes profits.

# Capturing Edge through AI

## Competitive Advantage

- ✓ **Ultra-Low Latency** – AI-powered decision-making executes in milliseconds.
- ✓ **Massive Data Processing** – Analyzes price deviations across thousands of ETFs simultaneously.
- ✓ **Neural Network**– Analyzes and executes on market patterns and anomalies on a delta-neutral basis.
- ✓ **Fully Automated Execution** – Eliminates human intervention for seamless trade execution.

## Technology Stack

- **AI Model:** Deep reinforcement analytics + statistical arbitrage techniques.
- **Data Processing:** High-frequency tick data analysis.
- **Infrastructure:** Cloud virtual servers, low-latency APIs, redundancy, scale.
- **Risk Management:** Real-time, tick data risk analytics reducing exposure and maintaining delta-neutral book.

# AI Model

The trading models deploy proprietary, AI-based algorithms encapsulating trader logic in technical objects, executing across all components of the targeted ETFs with no human touch.

Technical objects are written in Python, are fed by a SQL database, and price/execute all components in milliseconds, scalable to nanoseconds with the appropriate compute.

Logical processes include the following components (captured in technical objects):

- Rating
- Structure
- Curve
- Liquidity
- Risk/exposure
- Flow/momentum
- Relative strength
- Financial fundamentals
- Limits (position, capital, maximum loss, profit target, stop loss)

- Hedging/hedge composition (ETF, futures, options, swaps, swaptions)
- Spread capture
- Securities lending
- Corporate actions
- Maximum holding period
- Create/redeem/baskets/market making/flow trading/relative value/stat arb
- Housed in Cloud VMs

# The Opportunity

## Market Opportunity

- LQD ETF component market size: **\$10+ trillion, \$40+ billion notional trades per day, ~50% electronic** and growing.
- IWM ETF component market size: **\$10+ trillion, \$14+ billion shares trade per day** and growing.
- AI-driven trading projected to dominate financial markets.
- Increased market volatility = greater arbitrage opportunities.
- Allocation of 70%/30% fixed income to equity strategies optimizes performance while protecting capital.
- Many more ETFs to trade using these models, processes and approach.

## Roadmap & Next Steps

- Phase 1:** AI Model Development & Back testing
- Phase 2:** Beta Launch with Seed Capital (USD 2.0MM), move to Cloud environment in preparation for scale
- Phase 3:** Scaling Operations & Institutional Partnerships
- Phase 4:** Expansion into Global Markets and other ETFs

# Live Trading Results – YTD 2025

Year-to-date 2025 results reflect a **38.1% return on capital** in the **equity arbitrage strategy** and a **3.82% return** in the **fixed income arbitrage strategy**. Over the same period, the respective benchmarks returned **8.67% (IWM)** and **11.57% (LQD)**, with a blended benchmark portfolio return of **9.39%** (weighted 75% FI / 25% EQ, inclusive of dividends).

Peer hedge fund performance in 2025 was strong overall with meaningful dispersion (HFR reported **top-decile hedge funds returned +62.7%**). Against this backdrop, **CTT's equity strategy (38.1%) ranks in the upper tier under current margin constraints and is top-decile comparable on a target-margin basis**. Importantly, while the fixed income sleeve produced **3.82% at 1.5x leverage**, it equates to approximately **25.45% ROI at 10:1 target margin**, which would be **highly competitive versus fixed income relative value peers** and more reflective of CTT's expected performance under institutional prime brokerage terms.

YTD 2025	FI	EQ	Portfolio	10:1 Target	2025 Benchmarks	LQD	IWM	Portfolio
Capital	1,110,420	367,550	1,477,970	1,477,970	Close Px Dec 31 2024	107.12	222.93	
Net PnL	1,152,866	507,581	1,660,447	2,452,208	Close Px Dec 31 2025	111.47	246.16	
Net ROI	3.82%	38.10%	12.35%	65.92%	Gross ROI	8.67%	11.57%	9.39%
Leverage	1.50	3.00	1.87	10.00	Leverage	1.00	1.00	1.00
Weight	0.75	0.25	0.60		Capital Allocation	75%	25%	

# Back Test Results – FI ETF Arbitrage

Results of the fixed income trading strategy deploying the AI model registered 207% gross ROI for the period.

YTD

Capital (Avg)	# Trades	% Winners	% Losers	Gross PnL	Net PnL	ROI Gross (%)	ROI Net (%)
150,000	892	86.21	13.79	262,633	209,719	207	166

MTD

Month	# Trades	% Winners	% Losers	Gross PnL	Net PnL	Capital (Avg)	ROI Gross (%)	ROI Net (%)
Nov	18	67	33	(362)	(842)	150,000	-0.24	-0.56
Oct	142	82	18	23,175	18,976	150,000	15.45	12.65
Sep	33	94	6	8,921	7,700	150,000	5.95	5.13
Aug	100	96	4	38,883	23,274	150,000	25.92	15.52
Jul	101	84	16	27,367	25,852	150,000	18.24	17.23
Jun	97	77	23	24,445	22,298	150,000	16.30	14.87
May	189	87	13	57,053	38,845	150,000	38.04	25.90
Apr	62	94	6	22,837	19,393	150,000	15.22	12.93
Mar	150	87	13	60,316	54,223	150,000	40.21	36.15

Bond Trader Sharpe

Sharpe **17.03**

2023

Time	AI Bond ROI	Risk Free	Excess Return
Mar	40.21	0.40	39.81
Apr	15.22	0.40	14.83
May	38.04	0.42	37.62
Jun	16.30	0.42	15.88
Jul	18.24	0.44	17.81
Aug	25.92	0.44	25.48
Sep	5.95	0.44	5.51
Oct	15.45	0.44	15.01
Nov	-0.24	0.44	-0.68

# Back Test Results – EQ ETF Arbitrage

Results of the equity trading strategy deploying the AI model registered 292% gross ROI for the period.

## YTD

Capital (Avg)	# Trades	% Winners	% Losers	Gross PnL	Net PnL	ROI Gross (%)	ROI Net (%)
50,000	811	62	38	78,313	75,952	292	283

## MTD

Month	# Trades	% Winners	% Losers	Gross PnL	Net PnL	Capital (Avg)	ROI Gross (%)	ROI Net (%)
Nov	93	65	35	16,825	16,545	50,000	33.65	33.09
Oct	173	62	38	21,360	20,848	50,000	42.72	41.70
Sep	199	64	36	5,143	4,579	50,000	10.29	9.16
Aug	258	57	43	27,026	26,288	50,000	54.05	52.58
Jul	80	68	33	4,293	4,051	50,000	8.59	8.10
Jun	8	75	25	3,666	3,641	50,000	7.33	7.28

## AI Stock Trader Sharpe

Sharpe	17.89
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## 2023

Month	AI Stock ROI	Risk Free	Excess Return
Jul	8.59	0.44	8.15
Aug	54.05	0.44	53.62
Sep	10.29	0.44	9.85
Oct	42.72	0.44	42.28
Nov	33.65	0.44	33.21

# Closing & Contact

## Investment Ask

- **Seeking: Private fund interest** to scale trading, enhance infrastructure, expand AI capabilities, capture market share.
- **Use of Funds:**
  - 98% Deployed in Markets
  - 2% Technology, Operations, Research

## Team & Contact

PM: **Paul Constantino**

Cloud: **V2 Cloud**

US Contact: **+1-704-321-4930**

[paulc@cttadvisors.com](mailto:paulc@cttadvisors.com)

[www.cttadvisors.com](http://www.cttadvisors.com)