

*Founder  
FinYX and Algoz  
Ra'anana, Israel*

**S**tarting programming at the age of 13, Yariv Eisenberg always dreamed of opening a tech company engaged in the capital markets. After serving in the IDF (Israeli Defence Force) elite intelligence unit, 8200, and completing his studies in maths, engineering and bioinformatics, he launched Fingenom (now renamed FinYX) in 2011 and the crypto unit, Algoz, in 2017.

The first five years at FinYX were focused on developing algorithms in the high frequency trading space, before developing algorithms to manage external capital for medium frequency strategies. Eisenberg, who is now CTO, maintains a hands-on oversight, working closely with a team of 25 developers and researchers, and has a deep knowledge of the algorithms: "I personally wrote the code for the first two strategies and then taught the DNA to the team. This cannot be learned from a textbook, we invented it ourselves and do things differently. I did not code the crypto strategies but was closely involved in the design of every detail."

The FinYX platform has already spawned five strategies in ten years: two high frequency, two medium frequency and one low frequency, but all are based on common principles forming a gauntlet that future strategies must also pass.

#### **The strategy gauntlet**

"Overfitting is the cardinal sin in our line of work; hence, we put our strategy through rigorous overfitting tests. After controlling for overfitting biases, the strategy must have a Z-Score, which is similar to a Sharpe Ratio above 3. Other than performance, there are other parameters we assess. The basic financial pattern that the strategy is based on needs to be explainable and understandable. Without this, the strategy is hard to improve. The strategy needs to be generically applicable across multiple markets and products; if it only works in some, we will reject it. Last of all, the strategy needs to be scalable up to reasonable capacity," explains Eisenberg.

#### **Practical and innovative researchers**

Strategies are developed by people, and our growing team should satisfy special criteria: "Firstly, they might have studied to an advanced theoretical level, but they do not need a PhD. It is not just about degrees or IQ. We also look at EQ. We believe people with an optimistic attitude get better results. In a culture where anyone can say anything to anyone, they should be confident enough to hear hard criticism. They need to be down to earth and practical. Second of all, they need to think outside the box. Nobody teaches us how to run our strategies in many new areas.

# Yariv Eisenberg

FinTech platform for systematic equity and crypto strategies



Thirdly, people need to be efficient in every manner, from meetings to automated processes and in the way they build the code. Last of all, being responsible for other people's money, they need integrity in the right place," says Eisenberg.

#### **MFT equity indices**

The MFT futures equity indices strategy, Lumos Fund SPC – 4Cast received *The Hedge Fund Journal's* CTA Performance Award 2022 in the Medium Frequency Trader – Equity Indices category. It has realized a stupendous Sharpe around 3 since going live in 2019, which was very close to its simulated performance between 2015 and 2019. It started with Nasdaq futures before adding other products from the US and Asia, which have also worked well. "The realized execution slippage has also been lower than the backtest," confirms Roey Kosover, Lumos Fund's manager.

The opportunistic intraday model uses technical price data across asset classes. "The model does not predict price as such, but rather predicts whether

or not there is intraday momentum by using lots of inputs from other asset classes. It is a rule-based statistical algorithm and has a limited number of parameters used as inputs for the trading signal. We understand why the model works, and why it works in different markets," says Kosover.

Its hit rate is nowhere near the 99% that might be sought after from HFT but is above 50%. It is the win/loss ratio that generates the exceptional returns, by cutting losers and running winners. The average daily gain is about 1.5 times the average daily loss.

#### **MFT scalability**

The mid frequency strategies focus on trading time frames between hours and days and are more scalable than the HFT market. For instance, stress and sensitivity tests suggest that the MFT futures equity index strategy could run \$400-450 million, before leverage. "It will however be soft closed before that level to allow for organic growth from performance. Meanwhile, research is underway

about entering into new markets that may expand capacity. We think it could also be profitable for other asset classes such as commodities," says Kosover. Meanwhile, the crypto strategies, which are not leveraged, can manage \$1-3 billion.

### HFT and MFT synergies

"A HFT infrastructure and proprietary technology (which was never part of the Ultra HFT arms race) is not normally necessary for our current speed of execution. However, HFT market data vendors and servers in the US and Asia create the potential to execute very fast, which might be useful for risk management. Moreover, the library of millisecond tick data is helpful for rapidly processing robust simulations based on 11 years of data. Our live performance matches our simulations with a 90-95% accuracy, which is testament to our proprietary testing environment. The objective is to have robust and repeatable performance," says Kosover.

### Covid drawdown and potential recalibration

Risk management rules can sometimes have unintended effects. The strategy's largest drawdown occurred during the Covid crisis in April 2020, which saw extreme volatility in the markets. "On the one hand, closing March with -4.2% and April with 11.7% net return is something that we are satisfied with. However, during March-April, we faced the maximum drawdown of 18.8% net," says Kosover. This was mainly a function of our mechanical risk management stop losses being repeatedly hit, though some discretion was also exercised to reduce volatility. There were a few days in March 2020 where the program did not trade at all because we judged that the volatility levels were in uncharted territory. With the benefit of hindsight, performance could have been better without the risk management: "We ran a simulation of March without stop losses. The strategy would have gained over 25%, instead of losing 4.2%; however, running without stop losses would have also resulted in a drastically larger drawdown. As important as it is to maximise returns, it is just as, if not more, important to minimize risks, especially when working with external capital. Given another chance, we would still run the strategy with our risk management models and stop-loss mechanism in place," says Kosover.

The core algorithm has had minimal change since going live in April 2019. Following the Covid market volatility, the firm will soon implement a dynamic stop loss mechanism, which will use wider stop losses and lower leverage in higher volatility regimes.

### Crypto strategies

Whereas the MFT futures equity index strategy could be (up to) 5 times leveraged long or short, the long/short cryptocurrency strategy (dubbed multi-strategy) uses no leverage at all and keeps exposure in a range between 35% short and up to 75% long. The market neutral strategy maintains

net exposure around zero and avoids using any leverage.

The multi-strategy has realized a live Sharpe above 2.5 in line with its backtest, and the market neutral has generated a Sharpe of 1.25. Both are highly ranked by databases.

During the crypto rout seen in May, which continued into June, market neutral made 2.9% and multi-strategy made 4.1%, net of fees. "Our models have seen these pullbacks before, 4 and 8 years ago. The headlines today are different, but the market behaviour is still the same," says Shivani Mehta, Business Development Associate.

Since inception, the crypto multi-strategy has shown a moderately positive correlation to Bitcoin and Ethereum as it started out by trading only those two currencies and was somewhat long biased given the bull market. Today, it trades over 20 assets, while the market neutral strategy trades 15 assets (as of June). Both strategies' aims are all weather returns: "The multi strategy is a directional strategy, long or short, even though we are personally quite constructive on the long-term outlook of crypto. The fund aims to deliver uncorrelated absolute returns, regardless of market direction. We recognize that in rangebound markets with no momentum, the strategy may get chopped around," says Alon Karniel, Algoz fund manager.

Unlike crypto arbitrage strategies, the market neutral strategy is not trading arbitrages between venues, or between cash and futures markets. It is instead expressing relative value views on cryptocurrencies, based mainly on correlation analysis between various pairs of cryptocurrencies, which may be traded versus Bitcoin or Ethereum as a numeraire.

The genesis of the crypto strategies was Eisenberg's personal interest in crypto and desire to do something different: "I realized that not many companies had the opportunity to become a market leader in this space. The ambition, when entering crypto, was to do things that people never did before, with unique algorithms, in contrast to other funds that are very correlated to BTC and therefore also between themselves. Accurate data collection is another challenge in crypto, which is very different from financial markets".

### Trading and execution

The crypto strategies' trading timeframe of one to three days is also longer than some arbitrage strategies, and the equity strategy, and helps to increase strategy capacity: "Though on a like for like basis, cryptocurrencies have more slippage than equity indices, the longer timeframe for signals and execution means that slippage is a marginal factor. The crypto strategy trades 24/7 and may take hours to execute," says Karniel. Assets in the crypto strategies are currently managing tens of \$ millions and capacity is estimated at \$1-3 billion, given that the crypto market is worth \$1.3 trillion as of June 2022, even after the recent rout.

### Signals

Whereas the futures equity index MFT strategy draws insights from other asset classes, the crypto strategies are currently based only on historical cryptocurrency price data, though this may broaden out: "The crypto programs may, in the future, enrich their signals with other data sources, including sentiment, social media and on-chain data, which reveals all occurred transactions on the certain blockchain network," says Karniel.

### Venues and counterparties

Having started trading only spot markets, and shorting through margin, Algoz's strategies have migrated onto futures. Algoz have a broad understanding of crypto markets, having been market makers between 2017 and 2021. They still maintain connectivity to 15 venues, including 9 of the largest 11 exchanges by market capitalization. Currently they trade on only three exchanges (Kraken, Binance and FTX) but could instantly re-activate other lines if necessary.

Exchanges are selected on a range of criteria, including size, liquidity, and quality of execution. "We know that Binance can be controversial, but we rank it as number one in liquidity; moreover, clients were reimbursed in the past for cyber events. In contrast, Coinbase might superficially seem to be a safer choice, but its fees would eat into returns," says Karniel.

### Service providers for crypto funds

For the crypto funds, AK Jensen (AKJ) is providing the legal infrastructure. "As a leading hedge fund platform, AKJ provides all components necessary for the set up and day-to-day operation of a regulated, tier-one hedge fund trading digital assets," says Karniel.

Margin in the crypto funds operated on the AKJ platform sits with exchanges. In its new crypto fund, about to launch this September, prime broker Hidden Road will handle margin. The new fund will include a sleeve for US investors: a Cayman mini-master with a feeder that can accommodate both exempt and taxable US investors. The structure can also accept subscriptions in kind, in cryptocurrencies, as well as in cash. Legal counsel is Seward & Kissel in New York, and Mourant Ozannes in Cayman. Investors will include family offices, funds of funds and high net worth individuals, mainly in the US.

### Crypto and DeFi outlook

"There will be a battle between centralized and decentralized finance, and we expect that the crypto market will benefit from smart centralized regulation. We are long term believers in the crypto markets, and we expect that crypto will be the next big innovation in finance. We are not likely to launch a long only strategy, because our expertise is in absolute return," concludes Eisenberg.