QT410: Elementary Mid-Frequency Funding Arbitrage

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This document describes the details in contents and admittance to *Elementary Mid-Frequency Funding Arbitrage* lectures by HangukQuant.

1 About

As the title suggests, this is an elementary course to funding arbitrage; we cover zero-approximation heuristics to implementing a simple funding-arbitrage portfolio in Python. This is *not* a course

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[2]***2**: DISCLAIMER: the contents of this work are not intended as investment, legal, tax or any other advice, and is for informational purposes only. It is illegal to make unauthorized copies, forward to an unauthorized user or to post this article electronically without express written consent by HangukQuant.

in ‘elements of funding arbitrage‘, which would suggest a detailed, essential analysis of funding arbitrage as practice and theory. Rather, this series is focused on getting down a bare-bones implementation of the practice of funding arbitrage, which may then be further enhanced.

2 What

A very simple, multi-instrument, multi-exchange, mid-frequency, maker-taker, perpetual-perpetual funding arbitrage bot is built in Python. The multi-instrument part is demonstrated. The multi-exchange part is ‘multi’ in-so-far as the architectural design of the code is concerned, but not in implementation due to code manpower required for building an exchange connector. Our demonstration will be binance-hyperliquid. We go through and implement exchange connectors, picking funding pairs, multi-instruments, funding adjustments, choosing maker-taker, choosing order size, hedging, logging, and finally running it on a cloud tmux. One can consider it to be an enhanced, systematic implementation of the post here:
https://hangukquant.substack.com/p/crypto-arbitrage-1-week-setup. In case the title is not clear, that was my setup one-week into exploring crypto markets. That was in April, 2024. Do the math. Not everything inside the lectures are going to be pretty. I strongly encourage students who sign-up to have prerequisite experience of going through my other courses. I don’t think this one is going to be any worse, but don’t expect it to be whoppingly good. If you want *my* opinion on how valuable it is, just compare the relative pricing. Well, after that Substack post people seemed to really like it, and I got alot of requests to record lectures on it. For those who follow me, you know that the things I discuss most publicly about involve either infra or very well known strategies such as momentum. My take on QT410 is that it is also going to be a primarily, infra material.

3 Why

Since running the strategy live, *personal ballpark* (I could be way off) of my funding arbitrage portfolio is between APR of $10 \sim 30$, depending on assets picked, how well you handle leverage and so on. Say it is twenty. Maybe if you are generous and account mtm value of points generated, we can push upper echelons of the range, but let’s not be funny. The thing about crypto is that

everything has risk premiums baked in. In fact it should not be difficult to find zero-code projects that can yield similar APR, such as staking, insurance/mm vaults et cetera, so based on that ballpark, you could do as well with much less effort.

Here is what I dislike about funding arbitrage: it is capital intensive (cross-exchange hedge means twice capital requirements), low turnover (my experience is daily mean portfolio turnover slightly more than one). Here is what I like: it probably has decent capacity, (imo) is more risk premia than inefficiency (or both?) and is intuitive enough for a bag of nuts to understand.

So why am I releasing this? Well, based on the those cons I mentioned, and where I am at - while I am in fact running the strategy live, I have my sights set on hft arbitrage and more market-making operations. Besides, I think what I am running live needs *a lot* of enhancements - those heuristic approximations I make should be switched out with data-driven decisions, and I will point these out in the lectures. I don't have the time to do the quantitative research required to make those tweaks, and suppose I do have the answers based on research - I *would probably not share, because that is where I think the true alpha is* - why would I intentionally decrease my own returns for something I am running live? Essentially, i) I intend to migrate strategies, ii) and if I don't migrate you best be sure I will be enhancing it much more, iii) it is probably, mostly, premia.

So if you enjoy writing code, learning things from scratch, getting dirty and being slapped around by the market, come on board good ol' matey.

4 Admission

There are no prerequisites except for intermediate Python programming ability. There is simple, differentiated pricing. Considering the different commitments I have along with *trading, quantpylib repo, substack, thinkific* - I have decided to adopt pricing rounds. That is, I am going to have different rounds of pricing, each round I will post a price, and depending on the demand for the lectures, I *may choose to not publish QT410 at all*, by which of course, I will initiate a full refund. Each round, the price increases. If it is sufficiently attractive for me to go and record the lectures, then I will go and do so, and the rounds stop and lectures will be uploaded at some terminal price. To ensure you don't have to wait indefinitely for earlier round participants, the hard limit is 31 December 2024, after which all participants will be refunded if QT410 is not up by then. My target

is mid September to have it up.

Everyone gets the same product, but the differentiated price are as such: **i)** BASIC **ii)** those with existing QUANTPYLIB access and **iii)** THINKIFIC LIFETIME members. This is because a significant amount of the code required is *quantpylib*-involved. All enrolments come with access to *quantpylib*.

Preferred payment is in USDC or USDT, in case refunds need to be processed. Payments options involve both multi-currency fiat and crypto. Refunds (if course is unpublished) will be to the same account, that is your fiat account or sender address. I will accept crypto payments denominated in USDC, USDT, BTC, ETH, SOL at mark-to-market Binance-mid reference equivalent. All requests for admission to be sent to hangukquant@gmail.com - contents include (email, tier, github id, payment type) and I will probably respond within the day or the next.

4.1 Round 1

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BASIC: 680 USD
QUANTPYLIB: 480 USD
LIFETIME: 0 USD
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I will likely increase the cost of lifetime subscriptions between round 1 and round 2 to reflect QT203, QT410.