Market Making Strategy Report:
Exploration and Final Design

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1. Overview

This short report explains how I explored the given datasets and step-by-step built up the final strategy I submitted. I wanted a strategy that could make steady profits across all three products (`ABRA`, `DROWZEE`, `SUDOWOODO`) without relying on any unrealistic prediction tricks.

2. What I found in the data

I started by plotting the price and trade CSVs for each product. Here are the main points I noticed:

- The price series for `ABRA` and `DROWZEE` look very similar most of the time — they move up and down together, which suggests they are somewhat linked.

- `SUDOWOODO` has a different price level but seemed more stable and mean-reverting.

- There is usually a clear spread between the best bid and best ask, which is perfect for a passive market making style.

- Sometimes there are sudden big jumps which can cause large unrealized PnL swings if you hold too much inventory for too long.

From this, it looked clear that:

1. Quoting bids and asks passively should always earn something because of the spread.

2. Watching the price difference (spread) between `ABRA` and `DROWZEE` could give extra trading ideas since they often revert to each other.

3. Adding `SUDOWOODO` in the mix could help form a triangle hedge if one product drifts too far.

3. First strategy attempts

At first, I tested a simple ladder market maker: placing a few bids and asks at multiple levels around the mid-price. This alone made consistent profit but capped out around 20–25k.

Next, I added a basic bias to the quotes: if the recent trades showed more aggressive buying or a clear short-term trend, I shifted my quotes slightly in that direction. This improved fills but didn't move the needle much.

I then added a single pair trade (ABRA minus DROWZEE) — betting on the spread mean-reverting. This sometimes gave big profits if I held large inventory during a price drift, but it was inconsistent alone.

4. Final combined approach: double pairs + ladder

To squeeze out more consistent profit, I combined all ideas:

- **Base ladder maker:** Quoting multiple bid/ask levels for all products at once to earn the spread.

- **Flow and trend skew:** Adjusting the quotes slightly to favour the current short-term flow direction or trend slope.

- **Double pairs:** Watching two spreads — ABRA minus DROWZEE and DROWZEE minus SUDOWOODO. When either spread moves too far from its average, I open a hedged pair position, expecting it to revert.

- **Triangle flattening:** If both spreads normalize, I close all pair legs together to lock in profit and avoid getting stuck with unwanted exposure.

- **Profit stop:** If the total PnL crosses a threshold, the bot stops trading and closes everything.

This combined setup is inspired by how real prop firms do passive market making and simple statistical arbitrage at the same time.

5. Why I chose this

This approach works because:

- Spread capture is very reliable in this market, so the base ladder is always earning small profit.

- The pairs part adds extra alpha without needing any external signal.

- Using both pairs plus the triangle check makes sure I don't accidentally drift too far on one product.

- The strategy adjusts to short-term flow and trend but doesn't overreact.

6. Results and generalization

With this setup, my backtests consistently produce around 28k profit. Pushing it much higher with only the given data seems unrealistic because there is no hidden source of extra alpha.

Because the strategy relies on general patterns like the spread and pair co-movement, it should work similarly on unseen data unless the market changes a lot (for example, if the spread vanishes or the pairs stop moving together).

7. Final thoughts

Overall, the final bot is robust, easy to adjust, and matches what a simple prop desk market maker might run. It balances passive spread profit with a pairs hedge and manages risk using a clear flattening rule.

Code and plots: Included in my notebook and backtester files.