

Trading Strategies Fact Sheet

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Background and summary:

- Some degree of lead-lag relationships between the main exchange (i.e. the more popular ones, here we use Bitstamp and Kraken for example) and the Luno's prices, especially on crypto-sovereign currency pairs. This is mainly due to the lack of liquidity on Luno's exchange.
- There exists arbitrage opportunities both in a crypto-sovereign-crypto currency route and a crypto-sovereign-sovereign route.
- Traditional financial strategies are functional, subject to trading costs, which is zero for limit orders but 0.25% for filling the limit orders or market orders.
- We designed two Market Making Strategies (M1 & M2) which can facilitate potential liquidity provision in Luno's exchange and make low-risk profits.
- We designed two Speculative Strategies (S1 & S2) which are the applications of traditional trading strategies that can make profits with controllable risks.

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1 Market Making Strategy 1 (M1)

Profitability	\$
Risk	⚡
Liquidity provision	△△

This is a classic market-making strategy where we buy from low and sell from high the difference on the same asset.

At time t , write y_t as the LUNO price of an asset and z_t as the main exchange price. Let C_1 be the threshold of equal, whereby we judge $|y_t - z_t| < C_1$ as “equal state”.

- If we start from being equal to a state where $y_t > z_t + C_1$, then we initiate a trade by shorting LUNO and longing from the main exchange and aim at a price level near $z_t + C_1$ as we believe y_t will fall to such a level soon.
- If we start from being equal to a state where $y_t < z_t - C_1$, then we initiate a trade by longing LUNO and shorting from the main exchange and aim at a price level near $z_t - C_1$ as we believe y_t will raise to such a level soon.

Note on execution: We execute them in a Fill-or-Kill limit order manner on LUNO, i.e. we provide one-sided liquidity to LUNO and only trigger the strategy if our limit order gets filled. The execution on main exchange is of no concern, benefited from its liquidity.

Note on LUNO’s asset: The simple asset can be BTC/GBP and BTC/EUR while we may extend this definition to a chained asset. For example, while y_t being BTC/GBP, we may have z_t being BTC/EUR \times EUR/GBP.

2 Market Making Strategy 2 (M2)

Profitability	\$
Risk	⚡
Liquidity provision	△ △ △

This is a Limit-Order-Book (LOB) based market-making strategy in which we aim to provide liquidity on both side of the order book and hedge our position from the main exchange.

At time t , write P_t^{bid} and P_t^{ask} as the best bid and ask prices for an asset on LUNO's exchange (i.e. LUNO's LOB). Write z_t as the mid price of the same asset on the main exchange.

Consider the spread $S_t := P_t^{ask} - P_t^{bid}$. We aim to provide liquidity by shrinking the spread by $S'_t > 0$, thus start by putting a limit sell order at $P_t^{ask} - \frac{S'_t}{2}$ and a limit buy order at $P_t^{bid} + \frac{S'_t}{2}$.

Upon triggering any of the order, we enter a risk management — exit state, where:

- If z_t moves in the adverse direction,¹ we stop loss at an appropriate level and execute at the main exchange to secure the price. Full exit happens when we close our current position on LUNO via limit order and the hedged position on the main exchange.
- If z_t moves in the favourable direction,² we keep offering the best side of the book to be filled, that is, if we are long we keep posting a limit sell order at $P_t^{ask} - \varepsilon$ with a small $\varepsilon > 0$, and vice versa for the case if we are short.

¹E.g. if we are long the asset and the price moves down.

²E.g. if we are long the asset and the price moves up.

3 Speculative Strategy 1 (S1)

Profitability	\$\$\$
Risk	▲▲▲▲
Liquidity provision	△

In this strategy we chase the break-out / momentum via traditional statistical indicators on the main exchange.

At time t , write z_t as the mid price of the same asset on the main exchange. We wait for a trigger, either up- or down-side of break-out on z_t , this can be, for example, a penetration of a Bollinger Band or other time series evaluators.

We buy or sell via market order first to obtain the entry³, then place limit order at the associate target price. E.g. if we use an upper 2σ Bollinger as the break-out signal, we buy via market order as the price penetrates the upper Bollinger, then wait until, say the 4σ Bollinger or higher for an exit via limit order.

Risk management is done by setting an associated exit handle, whereas if z_t drops below such level, a stop-market order to close the position is entered at the main exchange with a transfer back to LUNO at an appropriate time.

4 Speculative Strategy 2 (S2)

Profitability	\$\$
Risk	▲▲▲
Liquidity provision	△△

This is a more rewarding — thus more risky version of M2, where we do not execute on the main exchange.

We inherit the same notation as in M2 and use z_t as a signal feed-in. But, when we execute the exit, we always do it in a limit sell order at $P_t^{ask} - \varepsilon$. This decreases the trading complexity thus cost, but is more risky in chaotic market conditions.

An additional option is we exit by stages — this reduces the risk while ensures the liquidity provision on one side to be longer. Another variation is that we do multiple stages of entry — this can be achieved by having, say, multiple pairs of $\{(P_t^{ask} - \frac{S'_t}{2}, P_t^{bid} + \frac{S'_t}{2}) | S'_t \in X\}$ for a set of spread improvements X and wait for execution and its associated staggered exit strategies.

³If the LUNO's spread is too wide, this would have to be done in the main exchange with the possibility to transfer it back to LUNO at an appropriate time.