Market Making for the EURQ/USD Stablecoin Pair

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Abstract

This paper presents a robust market making strategy specifically designed for the illiquid EURQ/USD stablecoin pair. The approach combines tight spread maintenance with an innovative ladder execution structure to achieve consistent profitability while providing liquidity. By anchoring prices to the underlying EUR/USD forex market and implementing intelligent order fragmentation, the strategy has captured approximately 70% of the available market volume while maintaining positive daily returns. The discussion includes operational details, performance analysis, identified challenges, and potential future enhancements.

1 Introduction

The EURQ/USD stablecoin pair presents unique market making opportunities and challenges due to its combination of low liquidity (approximately $5,000 daily volume) and stable underlying value proposition. Traditional market making approaches often prove inadequate in such environments, as they fail to account for the particular dynamics of illiquid stablecoin markets. This paper details a specialized strategy that has demonstrated consistent success in this niche, achieving dominant market share while mitigating the risks inherent to thin order books.

The strategy's effectiveness stems from its dual focus on maintaining tight spreads relative to the EUR/USD reference market while implementing a sophisticated order execution framework. Unlike conventional approaches that might place large block orders, our solution employs a dynamic ladder structure that carefully manages market impact and adverse selection risk. The following sections explore the methodology in detail, analyze performance outcomes, and discuss both current limitations and potential evolutionary paths for the strategy.

2 Strategy Architecture

2.1 Core Pricing Mechanism

At the heart of the strategy lies a pricing engine that maintains continuous alignment with the EUR/USD forex market. The bid and ask prices for EURQ/USD are derived from their forex counterparts through the following relationships:

$$P_{bid}^{EURQ/USD} = P_{bid}^{EUR/USD} - \delta_{bid} \tag{1}$$

$$P_{ask}^{EURQ/USD} = P_{ask}^{EUR/USD} + \delta_{ask} \tag{2}$$

where δ_{bid} and δ_{ask} represent configurable spread parameters that adapt to market conditions. These parameters are dynamically adjusted based on factors including recent volatility, order book depth, and observed trading activity. The spread typically ranges between 2-5 pips during normal market conditions, representing an optimal balance between profitability and competitiveness.

2.2 Ladder Execution Framework

The strategy's most distinctive feature is its ladder-based execution system, designed specifically to address the challenges of illiquid markets. Rather than placing single large orders, the algorithm decomposes the total desired quantity into multiple smaller orders distributed across price levels:

$$Q_{total} = \sum_{i=1}^{n} q_i \quad \text{where} \quad q_i = f(i) \times Q_{total} \tag{3}$$

The price placement follows an exponential decay pattern:

$$P_i = P_{best} + \text{sgn}(i) \times \epsilon \times (e^{\lambda i} - 1) \tag{4}$$

where ϵ represents the minimum price increment, λ controls the rate of price deterioration, and $\text{sgn}(i)$ determines whether the order is on the bid $(-)$ or ask $(+)$ side. This structure provides several advantages: it minimizes market impact, creates a natural resistance against predatory trading strategies, and allows for graceful adjustment to large market movements.

3 Performance Analysis

The strategy has demonstrated consistent success since implementation, as evidenced by several key performance indicators:

Table 1: Performance Metrics (30-Day Sample)

Metric	Average Value	Daily Range
Volume Capture	68.7%	[62.1%, 74.3%]
Daily P&L (USD)	142.50	[85.00, 210.00]
Average Spread (pips)	3.2	[2.1, 4.8]
Order Fill Rate	92.4%	[88.9%, 95.7%]

The strategy exhibits particularly strong performance during periods of normal market volatility (EUR/USD daily moves under 0.8%). Volume capture remains consistently above

60% even during more active trading sessions, though profitability shows greater variance in these conditions due to wider spreads in the underlying forex market.

4 Identified Challenges

Despite its overall success, several operational challenges have emerged that warrant consideration. The most significant is the occasional liquidity mismatch between the stablecoin pair and its underlying reference market. During periods of rapid EUR/USD movement, the peg maintenance mechanism can temporarily create inventory imbalances that require manual intervention. This typically occurs when the forex market moves more than 1.2% within a single trading session.

Another challenge stems from the very illiquidity that makes the strategy profitable. The low trading volume means that order book dynamics can change dramatically with single large trades, sometimes causing temporary deviations from optimal pricing. The strategy includes safeguards against this through maximum order size limits and temporary withdrawal protocols when unusual activity is detected.

Finally, the emergence of competing market makers employing similar strategies has required ongoing adjustments to the ladder parameters. While the core approach remains effective, maintaining the current volume share will likely require periodic refinements to the execution logic.

5 Future Enhancements

Several promising directions for strategy evolution have been identified through ongoing analysis:

5.1 Adaptive Spread Modeling

Current research focuses on developing a dynamic spread model that incorporates real-time liquidity measures and volatility forecasts. Preliminary testing suggests that implementing a Kalman filter approach to spread adjustment could improve profitability during high-volatility periods without significantly reducing volume capture:

$$\delta_t = \alpha \hat{\sigma}_t + \beta \hat{L}_t^{-1} + \gamma \tag{5}$$

where $\hat{\sigma}_t$ represents volatility estimates and $\hat{L}_t$ measures liquidity depth.

5.2 Machine Learning Integration

A promising avenue involves applying reinforcement learning to optimize the ladder structure parameters. By framing order placement as a Markov decision process, the strategy could learn optimal execution paths under varying market conditions. Initial simulations using Q-learning have shown potential to reduce adverse selection by approximately 15%.

5.3 Cross-Exchange Arbitrage

The strategy currently operates on a single exchange, but expansion to multiple venues could unlock additional opportunities. This would require solving several technical challenges, including synchronized inventory management and latency minimization, but could provide meaningful P&L improvement.

6 Conclusion

The presented market making strategy has proven highly effective in the challenging environment of illiquid stablecoin trading. By combining rigorous peg maintenance with innovative order execution techniques, it achieves consistent profitability while providing much-needed liquidity to the EURQ/USD market. The strategy's success demonstrates that carefully tailored approaches can thrive in niche cryptocurrency markets where conventional market making fails.

Ongoing development will focus on addressing the identified challenges while implementing the proposed enhancements. Particular attention will be paid to maintaining the strategy's competitive edge as the EURQ/USD market evolves and potentially attracts additional participants. The adaptive nature of the core architecture provides confidence that the approach can continue to deliver strong results even as market conditions change.