

Structured Product Design for Token Treasury Protection

Introduction

When managing a treasury of cryptocurrency tokens, protecting their value against significant price volatility is crucial. This document outlines a comprehensive approach to designing structured products using options to safeguard token value over periods ranging from one month to 12 months. We'll progress from simple collar strategies to more sophisticated option portfolios, explaining the rationale, methodology, and best practices for each approach.

1. Simple Collar Strategy: The Foundation

A collar is a protective options strategy that involves:

- **Holding the underlying asset** (your treasury tokens)
- **Buying put options** to protect against downside
- **Selling call options** to generate premium to offset the cost of the puts

Design Structure

For a basic 1-month collar:

1. **Current Token Position:** Let's assume you hold 10,000 tokens currently valued at \$50 each (\$500,000 total)
2. **Downside Protection:** Buy 10,000 put options with a strike price of \$45 (90% of current price)
3. **Upside Cap:** Sell 10,000 call options with a strike price of \$55 (110% of current price)

Rationale

- The put options ensure you can sell your tokens at \$45 each, even if the market price drops below that level
- The call options generate premium to partially or fully offset the cost of the puts
- You maintain full protection against price drops below \$45
- You participate in price appreciation up to \$55

Payout Profile

- If price at expiry < \$45: You're protected, can sell at \$45
- If price at expiry between \$45-\$55: You retain the full value of your tokens

- If price at expiry > \$55: You cap your upside at \$55 per token

Cost Considerations

- The net cost of this strategy depends on the option premiums
- Ideally, the premium received from selling calls should offset most of the premium paid for puts
- The net cost represents the price of your protection

2. Advanced Multi-Expiry Collar Structure

For longer-term protection (up to 12 months), a single collar is insufficient due to time decay and changing market conditions. Instead, we can implement a ladder approach.

Design Structure

1. Divide protection into time segments:

- 25% of tokens protected with 3-month options
- 25% with 6-month options
- 25% with 9-month options
- 25% with 12-month options

2. For each time segment:

- Buy put options at 85-90% of current price
- Sell call options at 110-120% of current price (wider for longer expirations)

3. Rolling Strategy:

- As each segment expires, roll into a new 12-month protection
- This creates a continuous 12-month protection window that refreshes quarterly

Rationale

- Staggers protection to avoid single expiration point risk
- Allows for adjustment to changing market conditions
- Reduces the impact of time decay on longer-dated options
- Creates a more balanced cost structure over time

3. Tiered Strike Structure

Rather than protecting the entire position at a single strike price, we can create a tiered structure for more nuanced protection.

Design Structure

For each expiry period, divide protection into tiers:

1. **Core Protection Tier (50% of tokens):**

- Buy puts at 85% of current price
- Sell calls at 115% of current price

2. **Deep Protection Tier (25% of tokens):**

- Buy puts at 75% of current price (cheaper, but stronger protection)
- Sell calls at 125% of current price

3. **Minimal Protection Tier (25% of tokens):**

- Buy puts at 60% of current price (very cheap insurance against crashes)
- Sell calls at 140% of current price (allowing for more upside)

Rationale

- Provides layered protection at different price levels
- Optimizes the cost-protection tradeoff
- Allows for some upside participation even in strong bull markets
- Provides catastrophic protection for the entire position

4. Put Spread Collar

To optimize costs further, we can modify the basic collar by using put spreads instead of outright puts.

Design Structure

1. **Buy put options** at 90% of current price
2. **Sell put options** at 70% of current price
3. **Sell call options** at 110% of current price

Rationale

- Reduces the cost of protection by selling lower-strike puts
- Still provides protection against moderate price declines
- Accepts some risk in catastrophic scenarios (below 70% of current price)
- Can potentially create a zero-cost or even positive-yield structure

5. Dynamic Strike Adjustment Methodology

For longer-term protection, static strikes become less effective as the market moves. A dynamic approach adjusts strikes based on market conditions.

Design Methodology

1. **Initial Setup:** Standard collar with puts at 90% and calls at 110%
2. **Upward Price Adjustment Trigger:**
 - If token price increases by 15%, roll the entire structure up
 - New put strikes at 90% of new price
 - New call strikes at 110% of new price
3. **Downward Price Adjustment Trigger:**
 - If token price decreases by 15%, roll the structure down
 - New put strikes at 90% of new price
 - New call strikes at 110% of new price
4. **Partial Adjustments:**
 - For smaller price moves (5-10%), adjust only a portion of the protection

Rationale

- Maintains relevant protection levels as the market moves
- Prevents protection from becoming irrelevant after significant price moves
- Allows for capturing some gains in upward trends
- Provides fresh protection in downward trends

6. Expiry Structure Optimization

The timing of option expiries significantly impacts the effectiveness of the protection strategy.

Design Methodology

1. **Short-Term Tactical Layer (25% of protection):**
 - 1-month options, rolled monthly
 - More reactive to market conditions
 - Tighter strikes (puts at 92%, calls at 108%)

2. **Medium-Term Strategic Layer (50% of protection):**

- 3-6 month options, rolled quarterly
- Standard strikes (puts at 85%, calls at 115%)

3. **Long-Term Foundation Layer (25% of protection):**

- 12-month options, rolled semi-annually
- Wider strikes (puts at 75%, calls at 125%)

Rationale

- Creates a balanced protection profile across different time horizons
- Short-term options respond quickly to market changes
- Long-term options provide stable baseline protection
- Staggered expiries reduce timing risk and operational complexity

7. Enhanced Structures for Specific Market Views

If you have specific market views, you can enhance the basic structures.

Bullish Enhancement

1. **Call Spread Collar:**

- Hold the tokens
- Buy puts at 85% (protection)
- Sell calls at 115% (first upside cap)
- Buy calls at 130% (participate in strong upside)

2. **Ratio Collar (Sell more calls than puts):**

- Buy puts for 100% of position at 85%
- Sell calls for 120% of position at 110%
- Creates additional premium but increases risk if price rises sharply

Bearish Enhancement

1. **Put Spread Collar with Extra Puts:**

- Standard put spread collar
- Add extra puts at 70% for 25% of position
- Provides additional protection and potential profit in sharp downturns

2. Collar with Put Calendar Spread:

- Buy near-term puts at 85%
- Sell longer-dated puts at 85%
- Sell calls at 115%
- Takes advantage of steeper time decay in near-term options

8. Potential Payout Scenarios

Let's analyze potential payouts for a basic collar strategy at expiry:

Scenario 1: Significant Price Drop (50% decline)

- Initial token value: \$500,000 (10,000 tokens at \$50)
- Market value at expiry: \$250,000 (price dropped to \$25)
- Put option protection (at \$45): Exercise puts to sell at \$45
- Actual portfolio value: \$450,000
- Protection benefit: \$200,000

Scenario 2: Moderate Price Drop (15% decline)

- Market value at expiry: \$425,000 (price dropped to \$42.50)
- Put option protection (at \$45): Exercise puts to sell at \$45
- Actual portfolio value: \$450,000
- Protection benefit: \$25,000

Scenario 3: Price Within Range

- Market value at expiry: \$500,000 (price unchanged at \$50)
- Options expire worthless
- Actual portfolio value: \$500,000 minus net premium cost

Scenario 4: Moderate Price Increase (15% gain)

- Market value at expiry: \$575,000 (price increased to \$57.50)
- Call option cap (at \$55): Calls exercised against you
- Actual portfolio value: \$550,000 (capped at \$55 per token)
- Opportunity cost: \$25,000

Scenario 5: Significant Price Increase (50% gain)

- Market value at expiry: \$750,000 (price increased to \$75)
- Call option cap (at \$55): Calls exercised against you
- Actual portfolio value: \$550,000 (capped at \$55 per token)

- Opportunity cost: \$200,000

9. Hedging and Dynamic Adjustment Process

Initial Hedge Setup

1. Determine Protection Budget:

- Typically 1-3% of portfolio value annually
- Example: \$500,000 portfolio \times 2% = \$10,000 annual protection budget

2. Initial Position Sizing:

- Calculate option quantities based on token holdings
- Determine strike prices based on desired protection levels

3. Execution Process:

- Split orders across multiple exchanges to minimize slippage
- Consider OTC options for large positions
- Document all positions in a tracking system

Ongoing Hedge Management

1. Regular Monitoring Checkpoints:

- Daily: Check for significant price moves (>5%)
- Weekly: Evaluate overall protection effectiveness
- Monthly: Comprehensive strategy review

2. Delta Hedging Process (for advanced implementation):

- Calculate portfolio delta (sensitivity to price changes)
- Adjust option positions to maintain desired delta
- Example: If portfolio becomes too bearish after price drop, sell some puts to rebalance

3. Volatility Response Protocol:

- In high volatility: Widen strike ranges, shorten expiries
- In low volatility: Tighten strike ranges, extend expiries
- Opportunistically sell volatility when it spikes

4. **Expiry Management Process:**

- Begin rolling positions 1-2 weeks before expiry
- Evaluate market conditions before each roll
- Adjust strikes based on current price and volatility

10. Best Practices and Optimization Opportunities

Best Practices

1. **Consistent Protection Framework:**

- Maintain protection at all times
- Avoid gaps between expiries
- Document protection strategy and stick to it

2. **Cost Management:**

- Target zero-cost or low-cost structures when possible
- Track cumulative protection costs
- Balance protection level against costs

3. **Liquidity Considerations:**

- Ensure sufficient option liquidity at chosen strikes
- For less liquid tokens, widen strikes or use proxy hedging
- Consider exchange-specific liquidity differences

4. **Operational Discipline:**

- Set clear rules for adjustments
- Maintain detailed records of all positions
- Regularly stress-test the protection structure

Optimization Opportunities

1. **Volatility Surface Analysis:**

- Identify relative value across different strikes and expiries
- Exploit mispriced options when possible
- Consider volatility skew when selecting strikes

2. **Cross-Asset Optimization:**

- Use correlated assets for cheaper hedging when appropriate
- Example: Use ETH options to partially hedge an ETH-correlated token

3. **Premium Harvesting:**

- Systematically sell short-dated options against long-dated protection
- Capture time decay while maintaining protection

4. **Machine Learning Enhancement:**

- Develop models to optimize strike selection
- Use predictive analytics for timing adjustments
- Backtest strategies across different market regimes

11. Implementation Roadmap

Phase 1: Basic Protection (Months 1-3)

- Implement simple collar strategy
- Establish monitoring and tracking systems
- Build operational capabilities

Phase 2: Enhanced Protection (Months 4-6)

- Introduce tiered strike structure
- Implement expiry laddering
- Begin dynamic adjustments

Phase 3: Advanced Optimization (Months 7-12)

- Implement delta hedging
- Optimize based on volatility surface
- Introduce cross-asset hedging where appropriate

Phase 4: Continuous Improvement

- Regular strategy reviews
- Backtest and refine methodologies
- Explore new structured products as markets evolve