Portfolio Risk Analysis Report

Report Date: October 23, 2025
Portfolio Size: 20 Assets
Analysis Period: 12 Months
Generated by: Automated Risk Analysis Pipeline

Risk Assessment Summary

HIGH RISK (RED): 3 Assets
MEDIUM RISK (YELLOW): 3 Assets
LOW RISK (GREEN): 14 Assets

Executive Summary

This report presents a comprehensive risk analysis of a portfolio containing 20 assets with a combined market capitalization of $4494.6 billion. **Key Findings:** • 3 assets (15.0%) are rated as HIGH RISK (RED) • 3 assets (15.0%) are rated as MEDIUM RISK (YELLOW) • Average portfolio volatility: 56.0% • Maximum drawdown observed: -40.7% **Risk Concentration:** The analysis reveals significant risk concentration in 6 assets requiring immediate attention and potential portfolio rebalancing. **Sentiment Analysis:** • 3 RED-flagged assets show negative market sentiment • Average sentiment score for flagged assets: -0.331 • News coverage indicates heightened market concern for these positions

Portfolio Overview

Sector Allocation

Sector	Assets	Market Cap ($B)	Percentage
Technology	10	3068.43	68.3%
Healthcare	3	797.62	17.7%
Consumer Discretionary	2	380.57	8.5%
Energy	2	153.45	3.4%
Financial Services	1	80.71	1.8%
Industrial	1	12.31	0.3%
Materials	1	1.53	0.0%

Risk Analysis Results

Risk Distribution:
• HIGH RISK (RED): 3 assets
• MEDIUM RISK (YELLOW): 3 assets
• LOW RISK (GREEN): 14 assets

High Risk Assets

Symbol	Sector	Risk Rating	Volatility	Max Drawdown	Risk Score
QUBT	Technology	RED	129.0%	-40.7%	4
OKLO	Energy	RED	131.9%	-34.2%	3
SERV	Technology	RED	158.1%	-28.0%	2
EVGO	Energy	YELLOW	67.1%	-17.2%	2
TDUP	Consumer Discretionary	YELLOW	58.3%	-9.6%	2
AEVA	Technology	YELLOW	102.8%	-16.9%	2

Machine Learning Analysis

Advanced machine learning techniques were applied to identify anomalies and predict future risk ratings. **Anomaly Detection Summary:**
• Total Anomalies Detected: 3
• Critical Anomalies: 1
• High Risk Anomalies: 3
• Anomaly Rate: 15.0%
Risk Prediction Model:
• Model Accuracy: 66.7%
• Rating Changes Predicted: 2
• Assets Predicted to Deteriorate: 0
• Assets Predicted to Improve: 2

Key Machine Learning Insights

• 1 assets show critical anomalous behavior requiring immediate review
• Anomaly detection identified 3 assets with unusual patterns
• Key risk drivers: Volatility, Max Drawdown, Price Change 1M

Critical Anomalies Detected

Symbol	Sector	Anomaly Score	Severity	Recommendation
CTRX	Healthcare	100.0	CRITICAL	Critical anomaly - Consider immediate po...
JNJ	Healthcare	70.9	HIGH	Significant anomaly - Conduct thorough d...
QUBT	Technology	69.0	HIGH	Significant anomaly - Conduct thorough d...
USAS	Materials	65.5	HIGH	Normal behavior pattern - Continue monit...

Predicted Risk Rating Changes

Symbol	Current Rating	Predicted Rating	Confidence	Trend
AEVA	YELLOW	GREEN	58.0%	IMPROVING
SERV	RED	GREEN	46.0%	IMPROVING

Top Risk Factors (Feature Importance)

1. Volatility: 23.9% importance
2. Max Drawdown: 23.9% importance
3. Price Change 1M: 20.1% importance
4. Sharpe Ratio: 15.0% importance
5. Rsi: 9.6% importance

ML Validation Results

Overall Validation Status: WARNING
Checks Passed: 3 / 4

✓ **Anomaly Detection Validation:** PASS
total_assets: 20, anomalies_detected: 3, anomaly_rate: 15.0
✓ **Risk Prediction Validation:** PASS
model_accuracy: 66.7, predictions_made: 20, rating_changes: 2
■ **Feature Quality Validation:** WARNING
features_checked: 9, nan_features: 0, total_samples: 20
✓ **Feature Importance Validation:** PASS
total_importance: 100.0, top_feature: Volatility, top_importance: 23.9

Validation Warnings (2):
1. Feature 'price_change_3m' has very low variance (0.000040)
2. Feature 'price_change_6m' has very low variance (0.000035)

Sentiment Analysis

Sentiment analysis was conducted on 3 RED-flagged assets using financial news from the past 12 months. **Key Findings:**
• Average sentiment score: -0.331
• Assets with negative sentiment: 3/3
• Total news articles analyzed: 72

Sentiment Analysis Results

Symbol	Sentiment Score	Label	News Count	Trend	Key Themes
SERV	-0.342	NEGATIVE	23	STABLE	earnings, market_share, regulatory
OKLO	-0.339	NEGATIVE	22	DETERIORATING	market_share, earnings, regulatory
QUBT	-0.313	NEGATIVE	27	DETERIORATING	earnings, market_share, regulatory

Detailed Asset Analysis

Asset: QUBT

Sector: Technology
Current Price: $14.72
Market Cap: $25.03B
Risk Rating: RED
Risk Metrics:
• Volatility: 129.0%
• Maximum Drawdown: -40.7%
• Beta: 1.00
• Sharpe Ratio: -2.81
• RSI: 36.8
Performance:
• 1-Month Return: -30.1%
• 3-Month Return: 0.0%
• 6-Month Return: 0.0%

Risk Flags:
• High Volatility, Extreme Drawdown, Severe Decline, Poor Risk Return
Market Sentiment:
• Sentiment Score: -0.313 (NEGATIVE)
• News Articles: 27
• Trend: DETERIORATING

Asset: OKLO

Sector: Energy
Current Price: $116.66
Market Cap: $146.33B
Risk Rating: RED
Risk Metrics:
• Volatility: 131.9%
• Maximum Drawdown: -34.2%
• Beta: 1.00
• Sharpe Ratio: -1.14
• RSI: 45.9
Performance:
• 1-Month Return: -10.4%
• 3-Month Return: 0.0%
• 6-Month Return: 0.0%
Risk Flags:
• High Volatility, Extreme Drawdown, Poor Risk Return
Market Sentiment:
• Sentiment Score: -0.339 (NEGATIVE)
• News Articles: 22
• Trend: DETERIORATING

Asset: SERV

Sector: Technology
Current Price: $12.94
Market Cap: $9.53B
Risk Rating: RED
Risk Metrics:
• Volatility: 158.1%
• Maximum Drawdown: -28.0%
• Beta: 1.00
• Sharpe Ratio: 0.60
• RSI: 50.5
Performance:
• 1-Month Return: -0.8%
• 3-Month Return: 0.0%
• 6-Month Return: 0.0%
Risk Flags:
• High Volatility, Extreme Drawdown
Market Sentiment:
• Sentiment Score: -0.342 (NEGATIVE)
• News Articles: 23
• Trend: STABLE

Asset: EVGO

Sector: Energy
Current Price: $4.19
Market Cap: $7.12B
Risk Rating: YELLOW
Risk Metrics:
• Volatility: 67.1%
• Maximum Drawdown: -17.2%
• Beta: 1.00
• Sharpe Ratio: -1.29
• RSI: 33.0
Performance:
• 1-Month Return: -10.9%
• 3-Month Return: 0.0%
• 6-Month Return: 0.0%
Risk Flags:
• High Volatility, Poor Risk Return

Asset: TDUP

Sector: Consumer Discretionary
Current Price: $8.79
Market Cap: $2.55B
Risk Rating: YELLOW
Risk Metrics:
• Volatility: 58.3%
• Maximum Drawdown: -9.6%
• Beta: 1.00
• Sharpe Ratio: -1.97
• RSI: 44.3
Performance:
• 1-Month Return: -7.3%
• 3-Month Return: 0.0%
• 6-Month Return: 0.0%
Risk Flags:
• High Volatility, Poor Risk Return

Recommendations

Based on the comprehensive risk analysis, the following recommendations are provided:
Immediate Actions (RED-flagged assets):
1. Consider reducing position sizes for 3 high-risk assets
2. Implement stop-loss orders to limit further downside exposure
3. Review fundamental analysis for potential divestiture candidates
4. Monitor daily price movements and news flow closely
Medium-term Actions (YELLOW-flagged assets):
1. Conduct deeper due diligence on 3 medium-risk assets
2. Consider hedging strategies for positions with high volatility
3. Review correlation with overall portfolio risk
4. Set up enhanced monitoring and alerts
Portfolio-level Recommendations:
1. Diversify across sectors to reduce concentration risk
2. Consider alternative investments to reduce correlation
3. Implement systematic risk management framework
4. Schedule monthly portfolio risk reviews
Sentiment-based Actions:
1. Monitor news flow for 3 assets with negative sentiment
2. Consider contrarian opportunities if fundamentals remain strong

3. Assess impact of market sentiment on price movements
4. Review analyst coverage and institutional positioning

Appendix

Methodology

This risk analysis employs a four-stage pipeline methodology: **Stage 1 - Data Ingestion:** • Historical price data (252 trading days) • Trading volume information • Market capitalization data • Sector classifications **Stage 2 - Core Analysis:** • Volatility calculation (annualized) • Maximum drawdown analysis • Beta coefficient estimation • Risk-adjusted return metrics (Sharpe ratio) • Technical indicators (RSI) • Rule-based risk flagging system **Stage 3 - Sentiment Analysis:** • News article collection (12-month lookback) • Natural language processing for sentiment scoring • Trend analysis and confidence metrics • Key theme extraction **Stage 4 - Report Generation:** • Comprehensive risk assessment compilation • Visual data presentation • Actionable recommendations • Professional PDF report output

Risk Assessment Thresholds

RED Flag Thresholds: • Volatility > 40% (annualized) • Maximum drawdown < -20% • Volume decline > 50% • 1-month price decline > 15% **YELLOW Flag Thresholds:** • Volatility > 25% (annualized) • Maximum drawdown < -10% • Volume decline > 30% • Multiple warning indicators present **Sentiment Thresholds:** • Negative sentiment: Score < -0.3 • Positive sentiment: Score > 0.3 • Neutral sentiment: -0.3 ≤ Score ≤ 0.3

Report Generation Details:
• Generated: 2025-10-23 06:30:25
• Analysis Period: 12 months
• Total Assets Analyzed: 20
• Pipeline Version: 1.0

Test Data - Portfolio Details

Complete portfolio and risk analysis data has been exported to CSV files for further analysis:

Portfolio Data CSV: portfolio_data_20251023_063025.csv
Risk Analysis CSV: risk_analysis_20251023_063025.csv

The tables below provide summary information for quick reference.

Performance Metrics Data

Symbol	1M Return	3M Return	6M Return	Vol Decline	Sharpe Ratio
AAPL	2.6%	0.0%	0.0%	-1.3%	0.94
AEVA	-2.2%	0.0%	0.0%	0.2%	-0.86
AMZN	-1.2%	0.0%	0.0%	-2.8%	-0.66
ATRO	13.3%	0.0%	0.0%	2.2%	3.79
CTRX	-0.6%	2.8%	-2.7%	-1.1%	-0.14
EVGO	-10.9%	0.0%	0.0%	0.5%	-1.29
GOOGL	1.7%	0.0%	0.0%	0.4%	-0.05
IBM	0.4%	0.0%	0.0%	1.8%	-0.37
IKT	-7.0%	0.0%	0.0%	-4.5%	0.13
JNJ	9.6%	0.0%	0.0%	0.6%	10.59
JPM	-5.8%	0.0%	0.0%	-1.6%	-2.84
META	-3.6%	0.0%	0.0%	1.5%	-1.54
MSFT	2.1%	0.0%	0.0%	0.2%	1.86
NVDA	1.8%	0.0%	0.0%	0.1%	0.48
OKLO	-10.4%	0.0%	0.0%	-0.7%	-1.14
QUBT	-30.1%	0.0%	0.0%	1.1%	-2.81
SERV	-0.8%	0.0%	0.0%	-0.3%	0.60
TDUP	-7.3%	0.0%	0.0%	-3.5%	-1.97
TSM	2.5%	0.0%	0.0%	-0.5%	0.69
USAS	29.8%	0.0%	0.0%	4.4%	3.95

Risk Flags Details

Symbol	High Vol	Ext. DD	Vol Collapse	Severe Dec	Ext. Dec	Poor Sharpe	Mom. Break
QUBT	✓	✓	✗	✓	✗	✓	✗
OKLO	✓	✓	✗	✗	✗	✓	✗
SERV	✓	✓	✗	✗	✗	✗	✗
EVGO	✓	✗	✗	✗	✗	✓	✗
TDUP	✓	✗	✗	✗	✗	✓	✗

AEVA	✓	✗	✗	✗	✗	✓	✗
AMZN	✗	✗	✗	✗	✗	✓	✗
META	✗	✗	✗	✗	✗	✓	✗
TSM	✓	✗	✗	✗	✗	✗	✗
JPM	✗	✗	✗	✗	✗	✓	✗
USAS	✓	✗	✗	✗	✗	✗	✗
ATRO	✓	✗	✗	✗	✗	✗	✗
IKT	✓	✗	✗	✗	✗	✗	✗
AAPL	✗	✗	✗	✗	✗	✗	✗
MSFT	✗	✗	✗	✗	✗	✗	✗
NVDA	✗	✗	✗	✗	✗	✗	✗
GOOGL	✗	✗	✗	✗	✗	✗	✗
IBM	✗	✗	✗	✗	✗	✗	✗
JNJ	✗	✗	✗	✗	✗	✗	✗
CTRX	✗	✗	✗	✗	✗	✗	✗

Data Summary:
- Total Assets: 20
- Data Generated: 2025-10-23 06:30:25
- Note: This test data is provided for further analysis, validation, and detailed review purposes.
- All metrics are calculated from 252 trading days of historical data.