Portfolio Risk Analysis Report

Report Date: February 24, 2026
Portfolio Size: 25 Assets
Analysis Period: 12 Months
Generated by: Automated Risk Analysis Pipeline

Risk Assessment Summary

HIGH RISK (RED): 10 Assets
MEDIUM RISK (YELLOW): 0 Assets
LOW RISK (GREEN): 15 Assets

Executive Summary

This report presents a comprehensive risk analysis of a portfolio containing 25 assets with a combined market capitalization of $18170.5 billion. **Key Findings:** • 10 assets (40.0%) are rated as HIGH RISK (RED) • 0 assets (0.0%) are rated as MEDIUM RISK (YELLOW) • Average portfolio volatility: 29.2% • Maximum drawdown observed: -48.5% **Risk Concentration:** The analysis reveals significant risk concentration in 10 assets requiring immediate attention and potential portfolio rebalancing. **Sentiment Analysis:** • 0 RED-flagged assets show negative market sentiment • Average sentiment score for flagged assets: 0.091 • News coverage indicates heightened market concern for these positions

Portfolio Overview

Sector Allocation

Sector	Assets	Market Cap ($B)	Percentage
Technology	5	7313.06	40.2%
Communication Services	2	5384.45	29.6%
Healthcare	5	1763.12	9.7%
Industrials	6	1430.84	7.9%
Consumer Defensive	1	1012.79	5.6%
Consumer Cyclical	2	495.28	2.7%
Financial Services	2	482.81	2.7%
Utilities	1	198.87	1.1%
Real Estate	1	89.31	0.5%

Risk Analysis Results

Risk Distribution:
• HIGH RISK (RED): 10 assets
• MEDIUM RISK (YELLOW): 0 assets
• LOW RISK (GREEN): 15 assets

High Risk Assets

Symbol	Sector	Risk Rating	Volatility	Max Drawdown	Risk Score
PYPL	Financial Services	RED	43.3%	-48.5%	6
ADBE	Technology	RED	30.7%	-32.9%	4
UNH	Healthcare	RED	40.6%	-26.9%	4
CRM	Technology	RED	36.0%	-33.1%	4
MSFT	Technology	RED	25.5%	-28.8%	4
TMO	Healthcare	RED	26.8%	-21.6%	3

META	Communication Services	RED	33.4%	-24.4%	2
BA	Industrials	RED	29.9%	-24.5%	1
HD	Consumer Cyclical	RED	22.1%	-21.5%	1
QCOM	Technology	RED	35.4%	-27.0%	1

Machine Learning Analysis

Advanced machine learning techniques were applied to identify anomalies and predict future risk ratings. **Anomaly Detection Summary:**
• Total Anomalies Detected: 4
• Critical Anomalies: 1
• High Risk Anomalies: 2
• Anomaly Rate: 16.0%
Risk Prediction Model:
• Model Accuracy: 100.0%
• Rating Changes Predicted: 0
• Assets Predicted to Deteriorate: 0
• Assets Predicted to Improve: 0

Key Machine Learning Insights

• 1 assets show critical anomalous behavior requiring immediate review
• Anomaly detection identified 4 assets with unusual patterns
• Key risk drivers: Max Drawdown, Sharpe Ratio, Price Change 1M

Critical Anomalies Detected

Symbol	Sector	Anomaly Score	Severity	Recommendation
PYPL	Financial Services	100.0	CRITICAL	Critical anomaly - Consider immediate po...
CAT	Industrials	65.1	HIGH	Significant anomaly - Conduct thorough d...
UNH	Healthcare	64.4	HIGH	Significant anomaly - Conduct thorough d...

Top Risk Factors (Feature Importance)

1. Max Drawdown: 43.4% importance
2. Sharpe Ratio: 17.3% importance
3. Price Change 1M: 8.6% importance
4. Rsi: 8.6% importance
5. Volatility: 8.3% importance

ML Validation Results

Overall Validation Status: WARNING
Checks Passed: 2 / 4

✓ **Anomaly Detection Validation:** PASS
total_assets: 25, anomalies_detected: 4, anomaly_rate: 16.0

■ **Risk Prediction Validation:** WARNING
model_accuracy: 100.0, predictions_made: 25, rating_changes: 0
■ **Feature Quality Validation:** WARNING
features_checked: 9, nan_features: 0, total_samples: 25
✓ **Feature Importance Validation:** PASS
total_importance: 100.0, top_feature: Max Drawdown, top_importance: 43.4

Validation Warnings (2):
1. Suspiciously high accuracy: 100.0% (possible overfitting)
2. Feature 'price_change_6m' has very low variance (0.000000)

Sentiment Analysis

Sentiment analysis was conducted on 10 RED-flagged assets using financial news from the past 12 months. **Key Findings:**
• Average sentiment score: 0.091
• Assets with negative sentiment: 0/10
• Total news articles analyzed: 86

Sentiment Analysis Results

Symbol	Sentiment Score	Label	News Count	Trend	Key Themes
TMO	-0.111	NEUTRAL	5	IMPROVING	earnings, growth
PYPL	0.006	NEUTRAL	10	STABLE	management, market_share
BA	0.018	NEUTRAL	10	DETERIORATING	earnings, technology, macro
UNH	0.086	NEUTRAL	4	IMPROVING	earnings
MSFT	0.098	NEUTRAL	10	STABLE	technology, earnings, growth
QCOM	0.100	NEUTRAL	10	STABLE	technology, earnings
CRM	0.127	NEUTRAL	10	IMPROVING	technology, earnings, operations
HD	0.168	NEUTRAL	10	IMPROVING	earnings, macro, technology
ADBE	0.202	NEUTRAL	7	DETERIORATING	technology, macro, earnings
META	0.216	NEUTRAL	10	IMPROVING	technology, growth, earnings

Detailed Asset Analysis

Asset: PYPL

Sector: Financial Services
Current Price: $43.69
Market Cap: $40.88B
Risk Rating: RED
Risk Metrics:
• Volatility: 43.3%
• Maximum Drawdown: -48.5%

• Beta: 0.21
• Sharpe Ratio: -2.05
• RSI: 58.8

Performance:
• 1-Month Return: -22.8%
• 3-Month Return: -27.9%
• 6-Month Return: 0.0%

Risk Flags:
• High Volatility, Extreme Drawdown, Severe Decline, Extended Decline, Poor Risk Return, Momentum Breakdown

Market Sentiment:
• Sentiment Score: 0.006 (NEUTRAL)
• News Articles: 10
• Trend: STABLE

Asset: ADBE

Sector: Technology
Current Price: $255.36
Market Cap: $106.89B
Risk Rating: RED

Risk Metrics:
• Volatility: 30.7%
• Maximum Drawdown: -32.9%
• Beta: -0.10
• Sharpe Ratio: -2.10
• RSI: 37.9

Performance:
• 1-Month Return: -16.2%
• 3-Month Return: -21.2%
• 6-Month Return: 0.0%

Risk Flags:
• Extreme Drawdown, Severe Decline, Poor Risk Return, Momentum Breakdown

Market Sentiment:
• Sentiment Score: 0.202 (NEUTRAL)
• News Articles: 7
• Trend: DETERIORATING

Asset: UNH

Sector: Healthcare
Current Price: $274.11
Market Cap: $248.29B
Risk Rating: RED

Risk Metrics:
• Volatility: 40.6%
• Maximum Drawdown: -26.9%
• Beta: 0.38
• Sharpe Ratio: -0.26
• RSI: 42.8

Performance:
• 1-Month Return: -22.0%
• 3-Month Return: -13.8%
• 6-Month Return: 0.0%

Risk Flags:
• High Volatility, Extreme Drawdown, Severe Decline, Momentum Breakdown

Market Sentiment:
• Sentiment Score: 0.086 (NEUTRAL)
• News Articles: 4
• Trend: IMPROVING

Asset: CRM

Sector: Technology
Current Price: $185.37
Market Cap: $176.47B
Risk Rating: RED
Risk Metrics:
• Volatility: 36.0%
• Maximum Drawdown: -33.1%
• Beta: 0.12
• Sharpe Ratio: -1.67
• RSI: 40.2
Performance:
• 1-Month Return: -19.2%
• 3-Month Return: -18.2%
• 6-Month Return: 0.0%
Risk Flags:
• Extreme Drawdown, Severe Decline, Poor Risk Return, Momentum Breakdown
Market Sentiment:
• Sentiment Score: 0.127 (NEUTRAL)
• News Articles: 10
• Trend: IMPROVING

Asset: MSFT

Sector: Technology
Current Price: $386.61
Market Cap: $2873.43B
Risk Rating: RED
Risk Metrics:
• Volatility: 25.5%
• Maximum Drawdown: -28.8%
• Beta: -0.17
• Sharpe Ratio: -2.15
• RSI: 35.1
Performance:
• 1-Month Return: -17.6%
• 3-Month Return: -17.9%
• 6-Month Return: 0.0%
Risk Flags:
• Extreme Drawdown, Severe Decline, Poor Risk Return, Momentum Breakdown
Market Sentiment:
• Sentiment Score: 0.098 (NEUTRAL)
• News Articles: 10
• Trend: STABLE

Recommendations

Based on the comprehensive risk analysis, the following recommendations are provided:
Immediate Actions (RED-flagged assets):

1. Consider reducing position sizes for 10 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 0 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 0 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: 2026-02-24 17:49:05
• Analysis Period: 12 months
• Total Assets Analyzed: 25
• 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_20260224_174905.csv
Risk Analysis CSV: risk_analysis_20260224_174905.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	6.7%	0.4%	0.0%	13.6%	1.47
ADBE	-16.2%	-21.2%	0.0%	21.5%	-2.10
AMT	6.3%	7.3%	0.0%	-1.4%	-0.35
BA	-6.1%	29.9%	0.0%	-10.4%	-0.00
CAT	20.9%	40.0%	0.0%	23.8%	3.52
CRM	-19.2%	-18.2%	0.0%	35.3%	-1.67
DE	24.2%	32.1%	0.0%	21.7%	1.98
GE	15.8%	19.0%	0.0%	4.1%	1.66
GOOGL	-6.6%	4.0%	0.0%	17.1%	2.83
HD	0.4%	13.8%	0.0%	-9.9%	-0.32
ISRG	-6.7%	-12.1%	0.0%	12.2%	0.35
LLY	-1.0%	-0.8%	0.0%	14.0%	2.23
MA	-6.1%	-8.2%	0.0%	16.4%	-1.62
META	-4.8%	7.7%	0.0%	7.0%	-0.87
MMM	5.2%	-0.2%	0.0%	20.4%	0.57
MSFT	-17.6%	-17.9%	0.0%	45.2%	-2.15
NEE	11.7%	14.3%	0.0%	-1.3%	2.98
PFE	5.5%	10.9%	0.0%	3.6%	1.15
PYPL	-22.8%	-27.9%	0.0%	60.4%	-2.05
QCOM	-6.6%	-11.2%	0.0%	23.1%	-0.45
RTX	2.3%	17.0%	0.0%	22.7%	1.91
SBUX	-0.2%	12.6%	0.0%	1.1%	0.76
TMO	-17.7%	-12.1%	0.0%	19.5%	0.47
UNH	-22.0%	-13.8%	0.0%	47.7%	-0.26
WMT	8.0%	20.9%	0.0%	-11.9%	2.50

Risk Flags Details

Symbol	High Vol	Ext. DD	Vol Collapse	Severe Dec	Ext. Dec	Poor Sharpe	Mom. Break

PYPL	✓	✓	✗	✓	✓	✓	✓
ADBE	✗	✓	✗	✓	✗	✓	✓
UNH	✓	✓	✗	✓	✗	✗	✓
CRM	✗	✓	✗	✓	✗	✓	✓
MSFT	✗	✓	✗	✓	✗	✓	✓
TMO	✗	✓	✗	✓	✗	✗	✓
META	✗	✓	✗	✗	✗	✓	✗
BA	✗	✓	✗	✗	✗	✗	✗
HD	✗	✓	✗	✗	✗	✗	✗
MA	✗	✗	✗	✗	✗	✓	✗
QCOM	✗	✓	✗	✗	✗	✗	✗
LLY	✗	✗	✗	✗	✗	✗	✗
RTX	✗	✗	✗	✗	✗	✗	✗
AMT	✗	✗	✗	✗	✗	✗	✗
CAT	✗	✗	✗	✗	✗	✗	✗
ISRG	✗	✗	✗	✗	✗	✗	✗
GE	✗	✗	✗	✗	✗	✗	✗
WMT	✗	✗	✗	✗	✗	✗	✗
SBUX	✗	✗	✗	✗	✗	✗	✗
DE	✗	✗	✗	✗	✗	✗	✗
MMM	✗	✗	✗	✗	✗	✗	✗
PFE	✗	✗	✗	✗	✗	✗	✗
NEE	✗	✗	✗	✗	✗	✗	✗
AAPL	✗	✗	✗	✗	✗	✗	✗
GOOGL	✗	✗	✗	✗	✗	✗	✗

Data Summary:
• Total Assets: 25
• Data Generated: 2026-02-24 17:49:05
• 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.