

# Portfolio Risk Analysis Report

**Report Date:** February 24, 2026  
**Portfolio Size:** 75 Assets  
**Analysis Period:** 12 Months  
**Generated by:** Automated Risk Analysis Pipeline

## Risk Assessment Summary

**HIGH RISK (RED):** 9 Assets  
**MEDIUM RISK (YELLOW):** 0 Assets  
**LOW RISK (GREEN):** 66 Assets

## Executive Summary

This report presents a comprehensive risk analysis of a portfolio containing 75 assets with a combined market capitalization of \$10224.5 billion. **Key Findings:** • 9 assets (12.0%) are rated as HIGH RISK (RED) • 0 assets (0.0%) are rated as MEDIUM RISK (YELLOW) • Average portfolio volatility: 44.6% • Maximum drawdown observed: -82.1% **Risk Concentration:** The analysis reveals significant risk concentration in 9 assets requiring immediate attention and potential portfolio rebalancing. **Sentiment Analysis:** • 3 RED-flagged assets show negative market sentiment • Average sentiment score for flagged assets: -0.247 • News coverage indicates heightened market concern for these positions

## Portfolio Overview

### Sector Allocation

Sector	Assets	Market Cap (\$B)	Percentage
Technology	7	2330.47	22.8%
Healthcare	7	2157.92	21.1%
Financial Services	13	1286.74	12.6%
Energy	13	1273.88	12.5%
Materials	9	786.22	7.7%
Consumer Discretionary	6	572.93	5.6%
Real Estate	6	562.05	5.5%
Industrial	5	511.27	5.0%
Consumer Staples	5	385.63	3.8%
Utilities	4	357.36	3.5%

## Risk Analysis Results

### Risk Distribution:

- HIGH RISK (RED): 9 assets
- MEDIUM RISK (YELLOW): 0 assets
- LOW RISK (GREEN): 66 assets

### High Risk Assets

Symbol	Sector	Risk Rating	Volatility	Max Drawdown	Risk Score
VDD	Utilities	RED	42.2%	-45.1%	4
MURL	Energy	RED	65.6%	-40.8%	4
MLN	Materials	RED	66.2%	-55.5%	4
XG	Energy	RED	66.8%	-69.4%	2
TG	Energy	RED	50.4%	-42.8%	2

SFO	Consumer Discretionary	RED	43.6%	-30.6%	2
NW	Consumer Staples	RED	161.8%	-67.6%	2
BT	Financial Services	RED	97.4%	-67.7%	2
NCR	Healthcare	RED	179.1%	-82.1%	2

## Machine Learning Analysis

Advanced machine learning techniques were applied to identify anomalies and predict future risk ratings. **Anomaly Detection Summary:**

- Total Anomalies Detected: 12
- Critical Anomalies: 5
- 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

- 5 assets show critical anomalous behavior requiring immediate review
- Anomaly detection identified 12 assets with unusual patterns
- Key risk drivers: Max Drawdown, Sharpe Ratio, Volatility

## Critical Anomalies Detected

Symbol	Sector	Anomaly Score	Severity	Recommendation
NCR	Healthcare	100.0	CRITICAL	Critical anomaly - Consider immediate po...
NW	Consumer Staples	89.0	CRITICAL	Critical anomaly - Consider immediate po...
XG	Energy	88.5	CRITICAL	Critical anomaly - Consider immediate po...
VDD	Utilities	84.8	CRITICAL	Critical anomaly - Consider immediate po...
BT	Financial Services	80.5	CRITICAL	Critical anomaly - Consider immediate po...
MURL	Energy	69.3	HIGH	Significant anomaly - Conduct thorough d...
MLN	Materials	69.2	HIGH	Significant anomaly - Conduct thorough d...

## Top Risk Factors (Feature Importance)

1. Max Drawdown: 36.8% importance
2. Sharpe Ratio: 25.8% importance
3. Volatility: 24.6% importance
4. Price Change 3M: 3.5% importance
5. Price Change 6M: 3.0% importance

## ML Validation Results

Overall Validation Status: **WARNING**  
Checks Passed: 3 / 4

✓ **Anomaly Detection Validation:** PASS  
total\_assets: 75, anomalies\_detected: 12, anomaly\_rate: 16.0  
■ **Risk Prediction Validation:** WARNING  
model\_accuracy: 100.0, predictions\_made: 75, rating\_changes: 0  
✓ **Feature Quality Validation:** PASS  
features\_checked: 9, nan\_features: 0, total\_samples: 75  
✓ **Feature Importance Validation:** PASS  
total\_importance: 100.0, top\_feature: Max Drawdown, top\_importance: 36.8

**Validation Warnings (1):**  
1. Suspiciously high accuracy: 100.0% (possible overfitting)

## Sentiment Analysis

Sentiment analysis was conducted on 9 RED-flagged assets using financial news from the past 12 months. **Key Findings:**

- Average sentiment score: -0.247
- Assets with negative sentiment: 3/9
- Total news articles analyzed: 213

## Sentiment Analysis Results

Symbol	Sentiment Score	Label	News Count	Trend	Key Themes
SFO	-0.350	NEGATIVE	21	STABLE	regulatory, financial_health, operations
BT	-0.337	NEGATIVE	29	IMPROVING	earnings, regulatory, financial_health
MURL	-0.326	NEGATIVE	26	DETERIORATING	earnings, regulatory, operations
NW	-0.296	NEUTRAL	23	DETERIORATING	earnings, operations, regulatory
MLN	-0.274	NEUTRAL	24	IMPROVING	earnings, financial_health, regulatory
XG	-0.268	NEUTRAL	26	IMPROVING	regulatory, financial_health, earnings
VDD	-0.182	NEUTRAL	22	DETERIORATING	regulatory, financial_health, earnings
TG	-0.137	NEUTRAL	23	IMPROVING	financial_health, regulatory, earnings
NCR	-0.055	NEUTRAL	19	DETERIORATING	earnings, financial_health, regulatory

## Detailed Asset Analysis

### Asset: VDD

**Sector:** Utilities  
**Current Price:** \$69.29  
**Market Cap:** \$124.30B  
**Risk Rating:** RED

**Risk Metrics:**

- Volatility: 42.2%
- Maximum Drawdown: -45.1%
- Beta: -0.07
- Sharpe Ratio: -0.60
- RSI: 38.3

**Performance:**

- 1-Month Return: -10.5%
- 3-Month Return: -23.8%
- 6-Month Return: -39.1%

**Risk Flags:**

- High Volatility, Extreme Drawdown, Poor Risk Return, Momentum Breakdown

**Market Sentiment:**

- Sentiment Score: -0.182 (NEUTRAL)
- News Articles: 22
- Trend: DETERIORATING

## Asset: MURL

**Sector:** Energy

**Current Price:** \$100.24

**Market Cap:** \$144.82B

**Risk Rating:** RED

**Risk Metrics:**

- Volatility: 65.6%
- Maximum Drawdown: -40.8%
- Beta: 0.02
- Sharpe Ratio: -0.01
- RSI: 22.9

**Performance:**

- 1-Month Return: -31.4%
- 3-Month Return: -19.0%
- 6-Month Return: -9.3%

**Risk Flags:**

- High Volatility, Extreme Drawdown, Severe Decline, Momentum Breakdown

**Market Sentiment:**

- Sentiment Score: -0.326 (NEGATIVE)
- News Articles: 26
- Trend: DETERIORATING

## Asset: MLN

**Sector:** Materials

**Current Price:** \$73.99

**Market Cap:** \$122.92B

**Risk Rating:** RED

**Risk Metrics:**

- Volatility: 66.2%
- Maximum Drawdown: -55.5%
- Beta: -0.13
- Sharpe Ratio: -0.02
- RSI: 59.4

**Performance:**

- 1-Month Return: -12.4%
- 3-Month Return: -33.2%
- 6-Month Return: -19.5%

**Risk Flags:**

- High Volatility, Extreme Drawdown, Extended Decline, Momentum Breakdown

**Market Sentiment:**

- Sentiment Score: -0.274 (NEUTRAL)
- News Articles: 24
- Trend: IMPROVING

**Asset: XG**

**Sector:** Energy

**Current Price:** \$67.36

**Market Cap:** \$134.59B

**Risk Rating:** RED

**Risk Metrics:**

- Volatility: 66.8%
- Maximum Drawdown: -69.4%
- Beta: -0.23
- Sharpe Ratio: 0.03
- RSI: 67.4

**Performance:**

- 1-Month Return: 35.0%
- 3-Month Return: 87.3%
- 6-Month Return: 102.9%

**Risk Flags:**

- High Volatility, Extreme Drawdown

**Market Sentiment:**

- Sentiment Score: -0.268 (NEUTRAL)
- News Articles: 26
- Trend: IMPROVING

**Asset: TG**

**Sector:** Energy

**Current Price:** \$141.14

**Market Cap:** \$250.46B

**Risk Rating:** RED

**Risk Metrics:**

- Volatility: 50.4%
- Maximum Drawdown: -42.8%
- Beta: 0.19
- Sharpe Ratio: -0.15
- RSI: 48.7

**Performance:**

- 1-Month Return: 5.9%
- 3-Month Return: 10.7%
- 6-Month Return: 3.5%

**Risk Flags:**

- High Volatility, Extreme Drawdown

**Market Sentiment:**

- Sentiment Score: -0.137 (NEUTRAL)
- News Articles: 23
- Trend: IMPROVING

**Recommendations**

Based on the comprehensive risk analysis, the following recommendations are provided:

**Immediate Actions (RED-flagged assets):**

1. Consider reducing position sizes for 9 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 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:  $-0.3 \leq \text{Score} \leq 0.3$

### Report Generation Details:

- Generated: 2026-02-24 14:36:35
- Analysis Period: 12 months
- Total Assets Analyzed: 75
- 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\_143635.csv

**Risk Analysis CSV:** risk\_analysis\_20260224\_143635.csv

The tables below provide summary information for quick reference.

### Performance Metrics Data

Symbol	1M Return	3M Return	6M Return	Vol Decline	Sharpe Ratio
AL	-0.8%	6.2%	9.8%	2.0%	0.58
AQO	4.1%	2.9%	6.2%	-0.1%	0.64
ATSQ	-0.2%	2.1%	10.0%	1.2%	0.80
AUR	-0.1%	5.0%	3.7%	0.7%	0.46
BAX	4.3%	4.4%	8.4%	-0.8%	0.57
BDI	2.8%	2.4%	7.2%	2.5%	0.74
BE	-0.9%	5.3%	8.5%	3.1%	0.68
BHJD	-0.1%	4.9%	8.8%	2.1%	0.48
BSS	-0.1%	7.0%	7.8%	-0.2%	0.58
BT	55.6%	28.2%	19.1%	16.4%	0.18
BX	-1.3%	1.0%	9.1%	2.4%	0.45
CDKN	3.3%	4.8%	8.7%	0.6%	0.48
CEG	1.1%	6.1%	11.4%	0.5%	0.66
CF	0.5%	8.6%	12.9%	-0.9%	0.73
CGR	0.3%	3.6%	7.9%	3.8%	0.73
CKF	1.8%	4.5%	9.0%	-1.6%	0.58
CKU	-0.9%	4.4%	4.3%	0.3%	0.48
CQ	-1.6%	4.9%	10.5%	-1.8%	0.58
CQY	0.1%	7.0%	10.2%	1.3%	0.69
CWW	4.0%	5.5%	12.5%	-0.6%	0.70
CXG	1.0%	5.9%	8.6%	-0.7%	0.62
CXS	-0.1%	5.5%	15.4%	-0.4%	0.81
DC	3.2%	4.8%	8.1%	-0.7%	0.69
DHUG	2.9%	2.9%	7.6%	0.8%	0.58
DWZ	2.7%	6.1%	6.8%	1.7%	0.67
GOH	1.5%	2.9%	13.6%	-0.6%	0.78
GQWW	-0.6%	2.6%	6.5%	2.2%	0.59
GVV	1.7%	6.3%	9.8%	1.9%	0.68
MF	1.1%	3.2%	5.8%	2.8%	0.49
MGWH	2.1%	4.6%	9.8%	1.0%	0.68

MH	-0.2%	4.4%	8.7%	0.4%	0.59
MHR	1.4%	2.8%	11.4%	1.9%	0.71
MLK	3.8%	5.7%	14.9%	0.9%	0.75
MLN	-12.4%	-33.2%	-19.5%	-6.7%	-0.02
MURL	-31.4%	-19.0%	-9.3%	-0.7%	-0.01
NCR	256.9%	124.6%	24.5%	13.9%	0.30
NJN	-0.8%	4.3%	6.6%	2.3%	0.48
NJNZ	-0.6%	5.3%	10.3%	0.3%	0.80
NQR	0.0%	0.7%	6.0%	5.3%	0.48
NUH	1.2%	5.3%	14.1%	-0.4%	0.83
NW	167.0%	63.7%	47.4%	5.9%	0.38
PCSK	3.2%	4.8%	3.7%	-0.0%	0.46
PFOM	1.9%	6.2%	9.4%	2.7%	0.47
PJI	-0.9%	6.1%	5.9%	0.7%	0.56
RTOW	3.7%	6.3%	7.0%	-0.1%	0.48
RY	-1.4%	5.9%	8.3%	1.9%	0.51
RZO	4.4%	2.4%	13.0%	0.3%	0.60
SCNZ	0.3%	2.6%	13.7%	0.9%	0.69
SFO	-4.8%	-7.7%	3.5%	3.1%	-0.08
SHO	2.9%	2.8%	9.2%	2.4%	0.61
SMM	3.6%	1.4%	6.9%	-0.5%	0.43
SNA	-0.3%	5.3%	6.2%	2.9%	0.58
SPI	1.3%	7.2%	12.0%	0.4%	0.74
SPM	0.3%	4.8%	9.9%	1.7%	0.76
SQ	3.3%	1.9%	8.8%	2.1%	0.62
TBP	2.2%	5.1%	7.5%	0.9%	0.61
TCUM	3.8%	0.7%	2.8%	-0.6%	0.48
TG	5.9%	10.7%	3.5%	-1.1%	-0.15
TGLO	0.4%	2.6%	11.8%	-0.2%	0.76
TQJ	2.8%	6.4%	10.1%	1.7%	0.75
TUH	4.7%	7.2%	12.7%	1.0%	0.60
TY	0.9%	4.0%	8.1%	1.3%	0.57
VAKT	1.4%	6.5%	12.8%	2.4%	0.80
VBZ	2.3%	1.1%	5.9%	0.2%	0.52
VDD	-10.5%	-23.8%	-39.1%	-17.9%	-0.60
VE	3.7%	1.6%	10.9%	2.7%	0.60
VHN	0.5%	8.6%	8.4%	0.8%	0.80
VYM	0.5%	4.4%	7.4%	-0.4%	0.55
XAG	1.1%	3.5%	8.8%	0.3%	0.57
XB	-1.5%	4.7%	11.4%	-2.2%	0.64
XG	35.0%	87.3%	102.9%	-9.2%	0.03

XIAG	0.9%	3.9%	10.1%	-1.4%	0.79
ZDA	1.2%	0.6%	5.1%	1.7%	0.48
ZNI	3.3%	5.3%	7.2%	1.6%	0.41
ZQSA	1.3%	7.7%	11.3%	-1.8%	0.77

## Risk Flags Details

Symbol	High Vol	Ext. DD	Vol Collapse	Severe Dec	Ext. Dec	Poor Sharpe	Mom. Break
VDD	✓	✓	✗	✗	✗	✓	✓
MURL	✓	✓	✗	✓	✗	✗	✓
MLN	✓	✓	✗	✗	✓	✗	✓
XG	✓	✓	✗	✗	✗	✗	✗
TG	✓	✓	✗	✗	✗	✗	✗
SFO	✓	✓	✗	✗	✗	✗	✗
NW	✓	✓	✗	✗	✗	✗	✗
BT	✓	✓	✗	✗	✗	✗	✗
NCR	✓	✓	✗	✗	✗	✗	✗
VBZ	✓	✗	✗	✗	✗	✗	✗
SCNZ	✓	✗	✗	✗	✗	✗	✗
ZNI	✓	✗	✗	✗	✗	✗	✗
TUH	✓	✗	✗	✗	✗	✗	✗
TBP	✓	✗	✗	✗	✗	✗	✗
AL	✓	✗	✗	✗	✗	✗	✗
XB	✓	✗	✗	✗	✗	✗	✗
BX	✓	✗	✗	✗	✗	✗	✗
SPI	✓	✗	✗	✗	✗	✗	✗
ZDA	✓	✗	✗	✗	✗	✗	✗
CDKN	✓	✗	✗	✗	✗	✗	✗
GVV	✓	✗	✗	✗	✗	✗	✗
CEG	✓	✗	✗	✗	✗	✗	✗
MH	✓	✗	✗	✗	✗	✗	✗
BAX	✓	✗	✗	✗	✗	✗	✗
CXG	✓	✗	✗	✗	✗	✗	✗
NQR	✗	✗	✗	✗	✗	✗	✗
XIAG	✗	✗	✗	✗	✗	✗	✗
RY	✗	✗	✗	✗	✗	✗	✗
AUR	✗	✗	✗	✗	✗	✗	✗
MF	✗	✗	✗	✗	✗	✗	✗
GOH	✗	✗	✗	✗	✗	✗	✗
DC	✗	✗	✗	✗	✗	✗	✗

CF	X	X	X	X	X	X	X
PCSK	X	X	X	X	X	X	X
VAKT	X	X	X	X	X	X	X
PFOM	X	X	X	X	X	X	X
BE	X	X	X	X	X	X	X
NUH	X	X	X	X	X	X	X
TGLO	X	X	X	X	X	X	X
CGR	X	X	X	X	X	X	X
RZO	X	X	X	X	X	X	X
NJNZ	X	X	X	X	X	X	X
NJN	X	X	X	X	X	X	X
TQJ	X	X	X	X	X	X	X
CKF	X	X	X	X	X	X	X
SMM	X	X	X	X	X	X	X
BSS	X	X	X	X	X	X	X
TY	X	X	X	X	X	X	X
CQY	X	X	X	X	X	X	X
TCUM	X	X	X	X	X	X	X
BHJD	X	X	X	X	X	X	X
MHR	X	X	X	X	X	X	X
ZQSA	X	X	X	X	X	X	X
RTOW	X	X	X	X	X	X	X
SPM	X	X	X	X	X	X	X
AQO	X	X	X	X	X	X	X
CKU	X	X	X	X	X	X	X
VHN	X	X	X	X	X	X	X
GQWW	X	X	X	X	X	X	X
CXS	X	X	X	X	X	X	X
VYM	X	X	X	X	X	X	X
SHO	X	X	X	X	X	X	X
DWZ	X	X	X	X	X	X	X
SNA	X	X	X	X	X	X	X
ATSQ	X	X	X	X	X	X	X
PJI	X	X	X	X	X	X	X
VE	X	X	X	X	X	X	X
CWW	X	X	X	X	X	X	X
MLK	X	X	X	X	X	X	X
XAG	X	X	X	X	X	X	X
CQ	X	X	X	X	X	X	X
MGWH	X	X	X	X	X	X	X
SQ	X	X	X	X	X	X	X

BDI	X	X	X	X	X	X	X
DHUG	X	X	X	X	X	X	X

**Data Summary:**

- Total Assets: 75
- Data Generated: 2026-02-24 14:36:35
- 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.