

# Portfolio Risk Analysis Report

**Report Date:** February 23, 2026  
**Portfolio Size:** 84 Assets  
**Analysis Period:** 12 Months  
**Generated by:** Automated Risk Analysis Pipeline

## Risk Assessment Summary

**HIGH RISK (RED):** 4 Assets  
**MEDIUM RISK (YELLOW):** 0 Assets  
**LOW RISK (GREEN):** 80 Assets

## Executive Summary

This report presents a comprehensive risk analysis of a portfolio containing 84 assets with a combined market capitalization of \$10304.3 billion. **Key Findings:** • 4 assets (4.8%) are rated as HIGH RISK (RED) • 0 assets (0.0%) are rated as MEDIUM RISK (YELLOW) • Average portfolio volatility: 41.5% • Maximum drawdown observed: -75.7% **Risk Concentration:** The analysis reveals significant risk concentration in 4 assets requiring immediate attention and potential portfolio rebalancing. **Sentiment Analysis:** • 2 RED-flagged assets show negative market sentiment • Average sentiment score for flagged assets: -0.232 • News coverage indicates heightened market concern for these positions

## Portfolio Overview

### Sector Allocation

Sector	Assets	Market Cap (\$B)	Percentage
Healthcare	8	2025.76	19.7%
Technology	8	1560.59	15.1%
Real Estate	13	1405.94	13.6%
Utilities	12	985.32	9.6%
Consumer Discretionary	7	824.19	8.0%
Industrial	7	817.02	7.9%
Materials	7	800.68	7.8%
Consumer Staples	10	745.05	7.2%
Financial Services	7	716.36	7.0%
Energy	5	423.38	4.1%

## Risk Analysis Results

### Risk Distribution:

- HIGH RISK (RED): 4 assets
- MEDIUM RISK (YELLOW): 0 assets
- LOW RISK (GREEN): 80 assets

### High Risk Assets

Symbol	Sector	Risk Rating	Volatility	Max Drawdown	Risk Score
PH	Technology	RED	71.7%	-56.1%	5
GP	Utilities	RED	70.8%	-54.3%	5
AR	Utilities	RED	106.1%	-75.7%	2
TWI	Technology	RED	113.3%	-65.8%	2

# Machine Learning Analysis

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

- Total Anomalies Detected: 13
- Critical Anomalies: 4
- High Risk Anomalies: 0
- Anomaly Rate: 15.5%

**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

- 4 assets show critical anomalous behavior requiring immediate review
- Anomaly detection identified 13 assets with unusual patterns
- Key risk drivers: Max Drawdown, Volatility, Sharpe Ratio

## Critical Anomalies Detected

Symbol	Sector	Anomaly Score	Severity	Recommendation
AR	Utilities	100.0	CRITICAL	Critical anomaly - Consider immediate po...
PH	Technology	98.5	CRITICAL	Critical anomaly - Consider immediate po...
TWI	Technology	93.2	CRITICAL	Critical anomaly - Consider immediate po...
GP	Utilities	92.1	CRITICAL	Critical anomaly - Consider immediate po...

## Top Risk Factors (Feature Importance)

1. Max Drawdown: 29.2% importance
2. Volatility: 21.9% importance
3. Sharpe Ratio: 16.8% importance
4. Volume Decline: 8.3% importance
5. Rsi: 6.8% importance

## ML Validation Results

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

✓ **Anomaly Detection Validation:** PASS

total\_assets: 84, anomalies\_detected: 13, anomaly\_rate: 15.5

■ **Risk Prediction Validation:** WARNING

model\_accuracy: 100.0, predictions\_made: 84, rating\_changes: 0

✓ **Feature Quality Validation:** PASS

features\_checked: 9, nan\_features: 0, total\_samples: 84

✓ **Feature Importance Validation:** PASS

total\_importance: 100.0, top\_feature: Max Drawdown, top\_importance: 29.2

**Validation Warnings (1):**

- 1. Suspiciously high accuracy: 100.0% (possible overfitting)

**Sentiment Analysis**

Sentiment analysis was conducted on 4 RED-flagged assets using financial news from the past 12 months. **Key Findings:**

- Average sentiment score: -0.232
- Assets with negative sentiment: 2/4
- Total news articles analyzed: 99

**Sentiment Analysis Results**

Symbol	Sentiment Score	Label	News Count	Trend	Key Themes
TWI	-0.325	NEGATIVE	17	STABLE	regulatory, earnings, management
GP	-0.306	NEGATIVE	29	IMPROVING	earnings, regulatory, operations
AR	-0.240	NEUTRAL	29	IMPROVING	earnings, market_share, regulatory
PH	-0.058	NEUTRAL	24	IMPROVING	operations, growth, regulatory

**Detailed Asset Analysis**

**Asset: PH**

**Sector:** Technology

**Current Price:** \$172.82

**Market Cap:** \$296.29B

**Risk Rating:** RED

**Risk Metrics:**

- Volatility: 71.7%
- Maximum Drawdown: -56.1%
- Beta: 0.08
- Sharpe Ratio: 0.26
- RSI: 28.6

**Performance:**

- 1-Month Return: -46.7%
- 3-Month Return: -52.6%
- 6-Month Return: -14.8%

**Risk Flags:**

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

**Market Sentiment:**

- Sentiment Score: -0.058 (NEUTRAL)
- News Articles: 24
- Trend: IMPROVING

**Asset: GP**

**Sector:** Utilities

**Current Price:** \$44.64

**Market Cap:** \$79.73B

**Risk Rating:** RED

**Risk Metrics:**

- Volatility: 70.8%
- Maximum Drawdown: -54.3%
- Beta: 0.08
- Sharpe Ratio: -0.10
- RSI: 30.2

**Performance:**

- 1-Month Return: -31.2%
- 3-Month Return: -49.0%
- 6-Month Return: -42.6%

**Risk Flags:**

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

**Market Sentiment:**

- Sentiment Score: -0.306 (NEGATIVE)
- News Articles: 29
- Trend: IMPROVING

## Asset: AR

**Sector:** Utilities

**Current Price:** \$103.63

**Market Cap:** \$195.83B

**Risk Rating:** RED

**Risk Metrics:**

- Volatility: 106.1%
- Maximum Drawdown: -75.7%
- Beta: -0.29
- Sharpe Ratio: -0.11
- RSI: 92.2

**Performance:**

- 1-Month Return: 101.0%
- 3-Month Return: 78.4%
- 6-Month Return: 0.6%

**Risk Flags:**

- High Volatility, Extreme Drawdown

**Market Sentiment:**

- Sentiment Score: -0.240 (NEUTRAL)
- News Articles: 29
- Trend: IMPROVING

## Asset: TWI

**Sector:** Technology

**Current Price:** \$51.32

**Market Cap:** \$100.56B

**Risk Rating:** RED

**Risk Metrics:**

- Volatility: 113.3%
- Maximum Drawdown: -65.8%
- Beta: -0.16
- Sharpe Ratio: 0.10
- RSI: 82.4

**Performance:**

- 1-Month Return: 70.4%

- 3-Month Return: 91.0%

- 6-Month Return: 9.9%

**Risk Flags:**

- High Volatility, Extreme Drawdown

**Market Sentiment:**

- Sentiment Score: -0.325 (NEGATIVE)

- News Articles: 17

- 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 4 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 2 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: 2026-02-23 21:26:24
- Analysis Period: 12 months
- Total Assets Analyzed: 84
- 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\_20260223\_212624.csv

**Risk Analysis CSV:** risk\_analysis\_20260223\_212624.csv

The tables below provide summary information for quick reference.

### Performance Metrics Data

Symbol	1M Return	3M Return	6M Return	Vol Decline	Sharpe Ratio
AAW	4.0%	3.5%	10.5%	1.0%	0.81
AKSJ	3.8%	3.3%	9.1%	2.2%	0.82
AO	2.0%	2.3%	9.6%	2.5%	0.67
AR	101.0%	78.4%	0.6%	-2.0%	-0.11
AUA	1.7%	7.0%	13.4%	2.5%	0.68
AUY	-0.2%	8.3%	9.4%	0.5%	0.70
AXQ	0.3%	2.4%	12.7%	0.8%	0.67
AXZ	3.1%	2.4%	8.7%	-1.0%	0.48
BAT	-0.6%	7.0%	11.0%	1.5%	0.75
BI	-0.6%	4.0%	12.8%	3.4%	0.63
BM	2.7%	5.3%	7.2%	0.6%	0.58
BU	1.5%	4.5%	8.6%	-0.2%	0.48
BWQ	-1.0%	2.8%	13.3%	0.4%	0.78
CAD	-1.3%	5.6%	7.1%	-0.6%	0.40
CCB	1.9%	8.1%	12.2%	1.1%	0.77
CKU	1.8%	7.1%	10.3%	0.1%	0.55
CKX	2.1%	8.2%	9.4%	-0.0%	0.81
CLTS	1.7%	4.5%	7.0%	3.5%	0.60
CMT	1.9%	4.9%	11.3%	1.7%	0.71
CPIK	3.2%	7.7%	10.4%	2.0%	0.68
CWGX	-0.9%	7.2%	8.5%	2.3%	0.66
CY	3.7%	5.1%	7.2%	-1.7%	0.55
CZND	-0.1%	0.6%	8.6%	0.9%	0.45
DCJC	-0.1%	2.9%	8.5%	0.9%	0.68
DG	-0.5%	6.7%	5.9%	0.5%	0.62
DZK	3.3%	4.1%	9.6%	1.6%	0.59
GDH	0.2%	4.9%	12.7%	0.6%	0.80
GJN	3.9%	7.2%	11.0%	4.6%	0.56
GP	-31.2%	-49.0%	-42.6%	3.5%	-0.10
GPQ	4.1%	3.5%	11.1%	3.1%	0.62



GTG	4.4%	7.7%	12.6%	1.2%	0.73
GVL	1.3%	6.1%	8.9%	1.1%	0.50
MCBC	3.9%	2.5%	4.2%	-0.9%	0.51
MEV	1.8%	0.5%	6.5%	1.8%	0.46
MLF	0.0%	3.9%	8.8%	2.1%	0.61
MM	2.5%	2.7%	11.1%	0.9%	0.60
MXS	-0.2%	6.6%	12.7%	2.5%	0.67
MYC	-0.3%	5.3%	10.6%	0.1%	0.55
MYGX	3.3%	3.8%	8.9%	-1.5%	0.54
NDR	-0.3%	2.5%	8.1%	1.5%	0.53
NLW	2.1%	3.3%	8.9%	1.4%	0.65
NMK	-1.4%	1.0%	6.3%	2.3%	0.38
NRPX	2.8%	4.5%	9.1%	0.6%	0.63
NSAR	4.0%	7.9%	12.5%	-0.6%	0.78
NVSU	-1.2%	3.0%	6.4%	0.4%	0.39
PH	-46.7%	-52.6%	-14.8%	-8.8%	0.26
PKI	0.5%	3.9%	14.2%	0.4%	0.83
PKRO	1.4%	6.3%	4.5%	1.0%	0.45
PRW	1.9%	5.7%	13.1%	1.9%	0.65
PSSY	3.2%	3.2%	11.6%	1.0%	0.62
RAVN	0.9%	4.9%	12.0%	2.5%	0.58
RKNT	-1.2%	7.2%	11.4%	0.7%	0.76
RNXG	2.4%	2.2%	4.8%	0.1%	0.51
RQWU	4.1%	1.6%	9.0%	4.3%	0.56
SCO	-1.0%	6.5%	8.1%	-0.7%	0.63
SLL	2.3%	2.5%	7.6%	1.8%	0.62
TBD	-0.2%	3.4%	9.5%	0.3%	0.64
TEOQ	1.2%	7.7%	11.7%	0.2%	0.67
TIJ	-0.2%	2.8%	9.1%	2.4%	0.44
TJI	1.7%	4.1%	11.3%	0.9%	0.68
TKNP	2.0%	1.6%	11.8%	0.5%	0.62
TKT	0.0%	6.1%	11.4%	1.7%	0.68
TPTI	-0.4%	6.9%	8.7%	2.4%	0.71
TTZY	-0.8%	5.5%	11.3%	2.8%	0.60
TVV	2.7%	5.2%	9.6%	2.0%	0.65
TWI	70.4%	91.0%	9.9%	3.7%	0.10
TXJR	1.6%	2.4%	6.4%	1.0%	0.65
TZV	-0.2%	2.6%	11.7%	0.8%	0.59
VI	-0.5%	6.8%	8.6%	1.1%	0.65
VK	2.8%	5.8%	12.7%	0.8%	0.78
VPJ	0.1%	4.2%	9.0%	-2.3%	0.53

VVNH	2.9%	2.7%	10.8%	3.3%	0.51
VYKH	0.6%	4.5%	8.9%	0.5%	0.63
XAP	1.5%	4.6%	5.7%	1.3%	0.49
XFP	1.1%	7.0%	8.2%	0.3%	0.69
XM	-0.8%	2.4%	10.0%	1.6%	0.51
XP	1.1%	3.5%	13.6%	1.0%	0.77
XYTA	2.8%	3.7%	5.9%	1.7%	0.64
XZB	1.1%	6.4%	11.1%	-0.5%	0.77
XZX	3.7%	2.0%	11.3%	1.7%	0.68
ZJJX	2.2%	1.9%	10.4%	2.0%	0.61
ZKE	2.7%	2.9%	5.8%	1.7%	0.48
ZRW	-0.4%	6.0%	10.1%	2.2%	0.50
ZS	1.5%	2.9%	6.4%	-0.3%	0.64

## Risk Flags Details

Symbol	High Vol	Ext. DD	Vol Collapse	Severe Dec	Ext. Dec	Poor Sharpe	Mom. Break
PH	✓	✓	✗	✓	✓	✗	✓
GP	✓	✓	✗	✓	✓	✗	✓
AR	✓	✓	✗	✗	✗	✗	✗
TWI	✓	✓	✗	✗	✗	✗	✗
TTZY	✓	✗	✗	✗	✗	✗	✗
MLF	✓	✗	✗	✗	✗	✗	✗
XAP	✓	✗	✗	✗	✗	✗	✗
PRW	✓	✗	✗	✗	✗	✗	✗
ZJJX	✓	✗	✗	✗	✗	✗	✗
TVV	✓	✗	✗	✗	✗	✗	✗
TXJR	✓	✗	✗	✗	✗	✗	✗
AO	✓	✗	✗	✗	✗	✗	✗
AXZ	✓	✗	✗	✗	✗	✗	✗
TBD	✓	✗	✗	✗	✗	✗	✗
CPIK	✓	✗	✗	✗	✗	✗	✗
NVSU	✓	✗	✗	✗	✗	✗	✗
GJN	✓	✗	✗	✗	✗	✗	✗
TEOQ	✓	✗	✗	✗	✗	✗	✗
XM	✓	✗	✗	✗	✗	✗	✗
AUY	✓	✗	✗	✗	✗	✗	✗
XZX	✓	✗	✗	✗	✗	✗	✗
MM	✓	✗	✗	✗	✗	✗	✗
PKRO	✓	✗	✗	✗	✗	✗	✗

AUA	✓	X	X	X	X	X	X
XYTA	✓	X	X	X	X	X	X
MYGX	✓	X	X	X	X	X	X
ZRW	✓	X	X	X	X	X	X
DG	✓	X	X	X	X	X	X
BM	✓	X	X	X	X	X	X
NMK	X	X	X	X	X	X	X
MCBC	X	X	X	X	X	X	X
GPQ	X	X	X	X	X	X	X
XZB	X	X	X	X	X	X	X
SCO	X	X	X	X	X	X	X
RNXG	X	X	X	X	X	X	X
TIJ	X	X	X	X	X	X	X
PKI	X	X	X	X	X	X	X
CKX	X	X	X	X	X	X	X
GTG	X	X	X	X	X	X	X
TKT	X	X	X	X	X	X	X
DCJC	X	X	X	X	X	X	X
BU	X	X	X	X	X	X	X
CKU	X	X	X	X	X	X	X
TKNP	X	X	X	X	X	X	X
XFP	X	X	X	X	X	X	X
SLL	X	X	X	X	X	X	X
ZKE	X	X	X	X	X	X	X
XP	X	X	X	X	X	X	X
CAD	X	X	X	X	X	X	X
CLTS	X	X	X	X	X	X	X
RQWU	X	X	X	X	X	X	X
AAW	X	X	X	X	X	X	X
RKNT	X	X	X	X	X	X	X
BI	X	X	X	X	X	X	X
GVL	X	X	X	X	X	X	X
TPTI	X	X	X	X	X	X	X
CZND	X	X	X	X	X	X	X
MXS	X	X	X	X	X	X	X
GDH	X	X	X	X	X	X	X
ZS	X	X	X	X	X	X	X
VYKH	X	X	X	X	X	X	X
TZV	X	X	X	X	X	X	X
BAT	X	X	X	X	X	X	X
BWQ	X	X	X	X	X	X	X

NRPX	X	X	X	X	X	X	X
VPJ	X	X	X	X	X	X	X
NDR	X	X	X	X	X	X	X
VK	X	X	X	X	X	X	X
CWGX	X	X	X	X	X	X	X
CCB	X	X	X	X	X	X	X
DZK	X	X	X	X	X	X	X
CMT	X	X	X	X	X	X	X
VI	X	X	X	X	X	X	X
NSAR	X	X	X	X	X	X	X
MYC	X	X	X	X	X	X	X
AKSJ	X	X	X	X	X	X	X
TJI	X	X	X	X	X	X	X
VVNH	X	X	X	X	X	X	X
AXQ	X	X	X	X	X	X	X
MEV	X	X	X	X	X	X	X
RAVN	X	X	X	X	X	X	X
NLW	X	X	X	X	X	X	X
CY	X	X	X	X	X	X	X
PSSY	X	X	X	X	X	X	X

**Data Summary:**

- Total Assets: 84
- Data Generated: 2026-02-23 21:26:24
- 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.