Portfolio Risk Analysis Report

Report Date: October 15, 2025
Portfolio Size: 50 Assets
Analysis Period: 12 Months
Generated by: Automated Risk Analysis Pipeline

Risk Assessment Summary

HIGH RISK (RED): 39 Assets
MEDIUM RISK (YELLOW): 0 Assets
LOW RISK (GREEN): 11 Assets

Executive Summary

This report presents a comprehensive risk analysis of a portfolio containing 50 assets with a combined market capitalization of $5647.8 billion. **Key Findings:** • 39 assets (78.0%) are rated as HIGH RISK (RED) • 0 assets (0.0%) are rated as MEDIUM RISK (YELLOW) • Average portfolio volatility: 30.6% • Maximum drawdown observed: -57.3% **Risk Concentration:** The analysis reveals significant risk concentration in 39 assets requiring immediate attention and potential portfolio rebalancing. **Sentiment Analysis:** • 26 RED-flagged assets show negative market sentiment • Average sentiment score for flagged assets: -0.314 • News coverage indicates heightened market concern for these positions

Portfolio Overview

Sector Allocation

Sector	Assets	Market Cap ($B)	Percentage
Technology	4	1037.21	18.4%
Industrial	8	952.94	16.9%
Healthcare	7	899.06	15.9%
Real Estate	4	816.38	14.5%
Utilities	9	687.54	12.2%
Energy	5	391.29	6.9%
Consumer Discretionary	2	253.94	4.5%
Materials	4	234.69	4.2%
Consumer Staples	4	189.47	3.4%
Financial Services	3	185.25	3.3%

Risk Analysis Results

Risk Distribution:
• HIGH RISK (RED): 39 assets
• MEDIUM RISK (YELLOW): 0 assets
• LOW RISK (GREEN): 11 assets

High Risk Assets

Symbol	Sector	Risk Rating	Volatility	Max Drawdown	Risk Score
ZALE	Healthcare	RED	44.5%	-50.4%	6
DAU	Real Estate	RED	37.5%	-50.9%	5
ZI	Healthcare	RED	41.1%	-26.5%	4
BYF	Consumer Staples	RED	23.0%	-22.9%	3
PYL	Financial Services	RED	45.2%	-44.4%	3

BWR	Energy	RED	14.7%	-31.9%	3
VGUU	Energy	RED	28.9%	-38.8%	2
CNT	Consumer Discretionary	RED	15.6%	-33.3%	2
XJQ	Healthcare	RED	36.5%	-40.6%	2
GZD	Consumer Discretionary	RED	23.4%	-29.3%	2
CNR	Industrial	RED	47.0%	-35.9%	2
TNR	Utilities	RED	33.4%	-35.6%	2
SZA	Consumer Staples	RED	29.3%	-26.4%	2
TS	Energy	RED	26.5%	-21.9%	2
CJSC	Healthcare	RED	28.2%	-35.1%	2
ZFC	Materials	RED	17.3%	-20.8%	2
CJWH	Technology	RED	13.9%	-23.5%	2
MD	Industrial	RED	36.2%	-57.3%	2
BKMN	Energy	RED	28.8%	-34.5%	2
NO	Utilities	RED	27.7%	-30.6%	2
TZM	Energy	RED	36.7%	-45.4%	1
XON	Utilities	RED	31.6%	-27.2%	1
BX	Real Estate	RED	38.2%	-24.0%	1
NUH	Utilities	RED	39.7%	-30.3%	1
NN	Industrial	RED	24.6%	-20.1%	1
ZPH	Healthcare	RED	36.9%	-37.9%	1
SZC	Consumer Staples	RED	34.5%	-29.6%	1
COL	Consumer Staples	RED	25.1%	-22.8%	1
TFJ	Materials	RED	38.8%	-24.8%	1
ZF	Materials	RED	37.2%	-26.1%	1
MCHL	Industrial	RED	37.2%	-32.4%	1
NB	Industrial	RED	25.4%	-20.3%	1
PXI	Real Estate	RED	34.0%	-22.7%	1
CPE	Healthcare	RED	34.4%	-27.0%	1
NUX	Industrial	RED	24.3%	-24.0%	1
CUUU	Materials	RED	26.5%	-25.9%	1
PDC	Financial Services	RED	23.6%	-21.7%	1
VCDY	Industrial	RED	39.3%	-43.6%	1
BOG	Technology	RED	39.0%	-22.5%	1

Machine Learning Analysis

Advanced machine learning techniques were applied to identify anomalies and predict future risk ratings. **Anomaly Detection Summary:**
• Total Anomalies Detected: 8
• Critical Anomalies: 1

- High Risk Anomalies: 3
- 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 8 assets with unusual patterns
- Key risk drivers: Max Drawdown, Price Change 6M, Sharpe Ratio

Critical Anomalies Detected

Symbol	Sector	Anomaly Score	Severity	Recommendation
ZALE	Healthcare	100.0	CRITICAL	Critical anomaly - Consider immediate po...
BWR	Energy	69.2	HIGH	Significant anomaly - Conduct thorough d...
DAU	Real Estate	67.5	HIGH	Significant anomaly - Conduct thorough d...
TFJ	Materials	67.2	HIGH	Significant anomaly - Conduct thorough d...

Top Risk Factors (Feature Importance)

1. Max Drawdown: 58.5% importance
2. Price Change 6M: 10.5% importance
3. Sharpe Ratio: 9.1% importance
4. Price Change 3M: 8.7% importance
5. Beta: 3.7% importance

ML Validation Results

Overall Validation Status: WARNING
Checks Passed: 3 / 4

✓ **Anomaly Detection Validation:** PASS
total_assets: 50, anomalies_detected: 8, anomaly_rate: 16.0
■ **Risk Prediction Validation:** WARNING
model_accuracy: 100.0, predictions_made: 50, rating_changes: 0
✓ **Feature Quality Validation:** PASS
features_checked: 9, nan_features: 0, total_samples: 50
✓ **Feature Importance Validation:** PASS
total_importance: 100.0, top_feature: Max Drawdown, top_importance: 58.5

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

Sentiment Analysis

Sentiment analysis was conducted on 39 RED-flagged assets using financial news from the past 12 months. **Key Findings:**
• Average sentiment score: -0.314
• Assets with negative sentiment: 26/39
• Total news articles analyzed: 895

Sentiment Analysis Results

Symbol	Sentiment Score	Label	News Count	Trend	Key Themes
NB	-0.444	NEGATIVE	28	DETERIORATING	regulatory, earnings, financial_health
SZA	-0.404	NEGATIVE	22	DETERIORATING	earnings, regulatory, financial_health
TFJ	-0.404	NEGATIVE	25	STABLE	regulatory, management, financial_health
NUX	-0.398	NEGATIVE	20	IMPROVING	regulatory, market_share, financial_health
ZI	-0.392	NEGATIVE	16	IMPROVING	operations, regulatory, earnings
XJQ	-0.391	NEGATIVE	22	IMPROVING	earnings, financial_health, regulatory
NO	-0.379	NEGATIVE	17	DETERIORATING	management, earnings, regulatory
BOG	-0.377	NEGATIVE	22	DETERIORATING	earnings, regulatory, operations
CUUU	-0.368	NEGATIVE	28	IMPROVING	financial_health, operations, regulatory
MCHL	-0.363	NEGATIVE	16	STABLE	operations, regulatory, market_share
TNR	-0.357	NEGATIVE	22	STABLE	earnings, operations, regulatory
CNR	-0.354	NEGATIVE	24	IMPROVING	earnings, financial_health, operations
BYF	-0.354	NEGATIVE	15	IMPROVING	earnings, regulatory, market_share
BX	-0.347	NEGATIVE	25	STABLE	regulatory, earnings, operations
ZF	-0.342	NEGATIVE	17	IMPROVING	regulatory, management, earnings
CJSC	-0.341	NEGATIVE	23	IMPROVING	regulatory, financial_health, earnings
SZC	-0.341	NEGATIVE	29	DETERIORATING	earnings, regulatory, management
PXI	-0.331	NEGATIVE	27	IMPROVING	earnings, operations, regulatory
CPE	-0.330	NEGATIVE	23	STABLE	earnings, regulatory, financial_health
VCDY	-0.329	NEGATIVE	20	STABLE	regulatory, earnings, operations
NN	-0.320	NEGATIVE	18	IMPROVING	financial_health, earnings, regulatory
NUH	-0.319	NEGATIVE	22	STABLE	regulatory, earnings, financial_health
COL	-0.317	NEGATIVE	29	STABLE	earnings, regulatory, operations
MD	-0.314	NEGATIVE	22	IMPROVING	regulatory, financial_health, earnings
ZALE	-0.307	NEGATIVE	19	IMPROVING	earnings, regulatory, market_share
VGUU	-0.302	NEGATIVE	24	DETERIORATING	earnings, regulatory, market_share
ZPH	-0.290	NEUTRAL	19	DETERIORATING	financial_health, earnings, regulatory
TZM	-0.286	NEUTRAL	25	DETERIORATING	earnings, financial_health, operations
CNT	-0.261	NEUTRAL	30	DETERIORATING	financial_health, regulatory, earnings
ZFC	-0.260	NEUTRAL	30	IMPROVING	earnings, regulatory, financial_health
GZD	-0.257	NEUTRAL	17	IMPROVING	regulatory, earnings, financial_health

PDC	-0.256	NEUTRAL	28	IMPROVING	earnings, regulatory, financial_health
TS	-0.247	NEUTRAL	30	DETERIORATING	regulatory, financial_health, earnings
BKMN	-0.233	NEUTRAL	26	STABLE	regulatory, earnings, operations
DAU	-0.226	NEUTRAL	20	DETERIORATING	regulatory, financial_health, operations
XON	-0.194	NEUTRAL	25	STABLE	operations, earnings, regulatory
CJWH	-0.181	NEUTRAL	26	IMPROVING	operations, earnings, regulatory
PYL	-0.180	NEUTRAL	28	DETERIORATING	regulatory, operations, earnings
BWR	-0.144	NEUTRAL	16	DETERIORATING	operations, growth, financial_health

Detailed Asset Analysis

Asset: ZALE

Sector: Healthcare
Current Price: $186.03
Market Cap: $20.90B
Risk Rating: RED
Risk Metrics:
• Volatility: 44.5%
• Maximum Drawdown: -50.4%
• Beta: 0.08
• Sharpe Ratio: -0.71
• RSI: 1.1
Performance:
• 1-Month Return: -41.0%
• 3-Month Return: -45.0%
• 6-Month Return: -46.3%
Risk Flags:
• High Volatility, Extreme Drawdown, Severe Decline, Extended Decline, Poor Risk Return, Momentum Breakdown
Market Sentiment:
• Sentiment Score: -0.307 (NEGATIVE)
• News Articles: 19
• Trend: IMPROVING

Asset: DAU

Sector: Real Estate
Current Price: $128.73
Market Cap: $198.30B
Risk Rating: RED
Risk Metrics:
• Volatility: 37.5%
• Maximum Drawdown: -50.9%
• Beta: -0.05
• Sharpe Ratio: -0.76
• RSI: 32.3
Performance:
• 1-Month Return: -25.5%
• 3-Month Return: -41.8%
• 6-Month Return: -49.5%

Risk Flags:
• Extreme Drawdown, Severe Decline, Extended Decline, Poor Risk Return, Momentum Breakdown
Market Sentiment:
• Sentiment Score: -0.226 (NEUTRAL)
• News Articles: 20
• Trend: DETERIORATING

Asset: ZI

Sector: Healthcare
Current Price: $293.15
Market Cap: $27.01B
Risk Rating: RED
Risk Metrics:
• Volatility: 41.1%
• Maximum Drawdown: -26.5%
• Beta: 0.04
• Sharpe Ratio: 0.58
• RSI: 42.1
Performance:
• 1-Month Return: -16.4%
• 3-Month Return: -14.1%
• 6-Month Return: -11.3%
Risk Flags:
• High Volatility, Extreme Drawdown, Severe Decline, Momentum Breakdown
Market Sentiment:
• Sentiment Score: -0.392 (NEGATIVE)
• News Articles: 16
• Trend: IMPROVING

Asset: BYF

Sector: Consumer Staples
Current Price: $97.39
Market Cap: $5.68B
Risk Rating: RED
Risk Metrics:
• Volatility: 23.0%
• Maximum Drawdown: -22.9%
• Beta: 0.06
• Sharpe Ratio: -0.63
• RSI: 26.2
Performance:
• 1-Month Return: -10.6%
• 3-Month Return: -19.0%
• 6-Month Return: -4.9%
Risk Flags:
• Extreme Drawdown, Poor Risk Return, Momentum Breakdown
Market Sentiment:
• Sentiment Score: -0.354 (NEGATIVE)
• News Articles: 15
• Trend: IMPROVING

Asset: PYL

Sector: Financial Services
Current Price: $117.71
Market Cap: $49.79B
Risk Rating: RED
Risk Metrics:
• Volatility: 45.2%
• Maximum Drawdown: -44.4%
• Beta: -0.04
• Sharpe Ratio: -0.93
• RSI: 50.0
Performance:
• 1-Month Return: -0.1%
• 3-Month Return: -24.4%
• 6-Month Return: -15.0%
Risk Flags:
• High Volatility, Extreme Drawdown, Poor Risk Return
Market Sentiment:
• Sentiment Score: -0.180 (NEUTRAL)
• News Articles: 28
• Trend: DETERIORATING

Recommendations

Based on the comprehensive risk analysis, the following recommendations are provided:
Immediate Actions (RED-flagged assets):
1. Consider reducing position sizes for 39 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 26 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: 2025-10-15 14:58:18
• Analysis Period: 12 months
• Total Assets Analyzed: 50
• 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_20251015_145818.csv
Risk Analysis CSV: risk_analysis_20251015_145818.csv

The tables below provide summary information for quick reference.

Performance Metrics Data

Symbol	1M Return	3M Return	6M Return	Vol Decline	Sharpe Ratio
BKMN	-11.5%	-20.3%	-23.3%	4.2%	-0.40
BOG	-7.7%	1.7%	2.3%	-6.0%	0.43
BWR	-11.1%	-14.1%	-18.0%	12.6%	-2.78
BX	4.6%	-13.0%	19.8%	-6.6%	0.26
BYF	-10.6%	-19.0%	-4.9%	1.5%	-0.63
CJSC	5.5%	-9.3%	-8.8%	-2.0%	-0.94
CJWH	-0.5%	-9.4%	-7.4%	0.6%	-1.58
CNR	-7.3%	12.2%	74.7%	2.7%	1.06
CNT	2.2%	-2.8%	-15.3%	-2.9%	-2.41
COL	10.3%	-9.1%	4.6%	-8.1%	-0.15
CPE	-2.7%	-2.4%	0.9%	-3.0%	0.21
CUUU	-6.8%	-17.2%	-22.3%	0.2%	-0.22
DAU	-25.5%	-41.8%	-49.5%	-1.2%	-0.76
DGP	-4.6%	5.0%	-5.9%	1.8%	0.27
DKS	4.1%	2.5%	23.0%	-6.5%	1.50
GZD	-1.0%	1.6%	-4.9%	-7.3%	-0.89
MCHL	5.8%	-21.1%	-9.2%	14.3%	1.33
MD	6.1%	-16.7%	-39.4%	-7.3%	-0.58
NB	9.2%	8.3%	-6.0%	5.5%	0.85
NC	-12.0%	-6.6%	7.2%	1.1%	0.62
NFBK	3.3%	-4.6%	-0.1%	-4.2%	1.25
NG	-0.3%	-0.6%	5.9%	-3.2%	1.48
NLY	3.1%	-5.2%	0.6%	-2.9%	0.80
NN	-2.1%	10.9%	5.1%	3.8%	0.70
NO	-0.6%	-4.7%	-10.0%	8.1%	-0.65
NSL	-3.1%	8.7%	11.4%	8.0%	0.10
NUH	2.7%	19.5%	32.6%	5.4%	0.54
NUX	10.3%	20.9%	11.7%	-12.7%	0.71
PDC	-5.1%	-7.5%	-4.9%	-1.3%	-0.11
PN	8.5%	11.0%	16.6%	13.7%	0.62

PXI	3.7%	-7.3%	0.7%	-3.9%	0.38
PYL	-0.1%	-24.4%	-15.0%	-3.0%	-0.93
RG	3.6%	9.2%	6.7%	1.3%	0.33
SZA	-0.3%	2.8%	2.7%	-4.0%	-0.52
SZC	-1.1%	-5.5%	-7.0%	-6.0%	0.71
TFJ	8.0%	36.7%	70.3%	-5.0%	1.92
TNR	-3.0%	-16.4%	-25.4%	-3.7%	-0.85
TS	-13.7%	-0.5%	0.9%	-8.6%	-0.51
TZM	11.1%	21.7%	43.8%	3.7%	0.37
VCDY	0.9%	-7.7%	-10.6%	4.1%	-0.08
VGUU	0.4%	-12.5%	-5.7%	2.2%	-1.13
XJQ	-10.2%	-12.6%	-28.5%	7.7%	-0.01
XMU	1.9%	7.1%	16.5%	-0.9%	1.68
XON	7.9%	-8.6%	2.3%	-3.0%	0.05
ZALE	-41.0%	-45.0%	-46.3%	2.3%	-0.71
ZCG	0.1%	-9.1%	15.1%	-7.5%	0.84
ZF	-0.0%	27.5%	6.6%	-4.7%	0.83
ZFC	-2.0%	6.0%	6.9%	2.7%	-0.66
ZI	-16.4%	-14.1%	-11.3%	5.8%	0.58
ZPH	4.8%	-12.8%	-20.9%	0.0%	-0.06

Risk Flags Details

Symbol	High Vol	Ext. DD	Vol Collapse	Severe Dec	Ext. Dec	Poor Sharpe	Mom. Break
ZALE	✓	✓	✗	✓	✓	✓	✓
DAU	✗	✓	✗	✓	✓	✓	✓
ZI	✓	✓	✗	✓	✗	✗	✓
BYF	✗	✓	✗	✗	✗	✓	✓
PYL	✓	✓	✗	✗	✗	✓	✗
BWR	✗	✓	✗	✗	✗	✓	✓
VGUU	✗	✓	✗	✗	✗	✓	✗
CNT	✗	✓	✗	✗	✗	✓	✗
XJQ	✗	✓	✗	✗	✗	✗	✓
GZD	✗	✓	✗	✗	✗	✓	✗
CNR	✓	✓	✗	✗	✗	✗	✗
TNR	✗	✓	✗	✗	✗	✓	✗
SZA	✗	✓	✗	✗	✗	✓	✗
TS	✗	✓	✗	✗	✗	✓	✗
CJSC	✗	✓	✗	✗	✗	✓	✗
ZFC	✗	✓	✗	✗	✗	✓	✗

CJWH	✗	✓	✗	✗	✗	✓	✗
MD	✗	✓	✗	✗	✗	✓	✗
BKMN	✗	✓	✗	✗	✗	✗	✓
NO	✗	✓	✗	✗	✗	✓	✗
TZM	✗	✓	✗	✗	✗	✗	✗
XON	✗	✓	✗	✗	✗	✗	✗
BX	✗	✓	✗	✗	✗	✗	✗
NUH	✗	✓	✗	✗	✗	✗	✗
NN	✗	✓	✗	✗	✗	✗	✗
ZPH	✗	✓	✗	✗	✗	✗	✗
SZC	✗	✓	✗	✗	✗	✗	✗
COL	✗	✓	✗	✗	✗	✗	✗
TFJ	✗	✓	✗	✗	✗	✗	✗
ZF	✗	✓	✗	✗	✗	✗	✗
MCHL	✗	✓	✗	✗	✗	✗	✗
NB	✗	✓	✗	✗	✗	✗	✗
PXI	✗	✓	✗	✗	✗	✗	✗
CPE	✗	✓	✗	✗	✗	✗	✗
NUX	✗	✓	✗	✗	✗	✗	✗
CUUU	✗	✓	✗	✗	✗	✗	✗
PDC	✗	✓	✗	✗	✗	✗	✗
VCDY	✗	✓	✗	✗	✗	✗	✗
BOG	✗	✓	✗	✗	✗	✗	✗
XMU	✗	✗	✗	✗	✗	✗	✗
DKS	✗	✗	✗	✗	✗	✗	✗
NC	✗	✗	✗	✗	✗	✗	✗
DGP	✗	✗	✗	✗	✗	✗	✗
NG	✗	✗	✗	✗	✗	✗	✗
RG	✗	✗	✗	✗	✗	✗	✗
NLY	✗	✗	✗	✗	✗	✗	✗
ZCG	✗	✗	✗	✗	✗	✗	✗
NSL	✗	✗	✗	✗	✗	✗	✗
PN	✗	✗	✗	✗	✗	✗	✗
NFBK	✗	✗	✗	✗	✗	✗	✗

Data Summary:
• Total Assets: 50
• Data Generated: 2025-10-15 14:58:18
• 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.