

# 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):** 16 Assets

**MEDIUM RISK (YELLOW):** 0 Assets

**LOW RISK (GREEN):** 9 Assets

## Executive Summary

This report presents a comprehensive risk analysis of a portfolio containing 25 assets with a combined market capitalization of \$14699.3 billion. **Key Findings:** • 16 assets (64.0%) are rated as HIGH RISK (RED) • 0 assets (0.0%) are rated as MEDIUM RISK (YELLOW) • Average portfolio volatility: 33.3% • Maximum drawdown observed: -58.3% **Risk Concentration:** The analysis reveals significant risk concentration in 16 assets requiring immediate attention and potential portfolio rebalancing. **Sentiment Analysis:** • 8 RED-flagged assets show negative market sentiment • Average sentiment score for flagged assets: -0.297 • News coverage indicates heightened market concern for these positions

## Portfolio Overview

### Sector Allocation

| Sector                 | Assets | Market Cap (\$B) | Percentage |
|------------------------|--------|------------------|------------|
| Technology             | 6      | 5461.77          | 37.2%      |
| Communication Services | 2      | 4084.96          | 27.8%      |
| Consumer Cyclical      | 3      | 1780.13          | 12.1%      |
| Consumer Defensive     | 3      | 1059.38          | 7.2%       |
| Industrials            | 4      | 979.84           | 6.7%       |
| Healthcare             | 3      | 763.18           | 5.2%       |
| Financial Services     | 3      | 480.16           | 3.3%       |
| Real Estate            | 1      | 89.86            | 0.6%       |

## Risk Analysis Results

### Risk Distribution:

- HIGH RISK (RED): 16 assets
- MEDIUM RISK (YELLOW): 0 assets
- LOW RISK (GREEN): 9 assets

### High Risk Assets

| Symbol | Sector                 | Risk Rating | Volatility | Max Drawdown | Risk Score |
|--------|------------------------|-------------|------------|--------------|------------|
| PYPL   | Financial Services     | RED         | 40.9%      | -49.9%       | 6          |
| NOW    | Technology             | RED         | 42.5%      | -51.9%       | 6          |
| ORCL   | Technology             | RED         | 61.6%      | -58.3%       | 5          |
| NFLX   | Communication Services | RED         | 32.9%      | -43.4%       | 4          |
| IBM    | Technology             | RED         | 33.8%      | -28.7%       | 3          |
| MSFT   | Technology             | RED         | 26.4%      | -28.8%       | 3          |
| AVGO   | Technology             | RED         | 50.3%      | -31.1%       | 2          |

|      |                    |     |       |        |   |
|------|--------------------|-----|-------|--------|---|
| TSLA | Consumer Cyclical  | RED | 61.3% | -26.7% | 2 |
| GS   | Financial Services | RED | 32.0% | -25.7% | 1 |
| BA   | Industrials        | RED | 37.5% | -25.2% | 1 |
| PG   | Consumer Defensive | RED | 18.4% | -20.1% | 1 |
| ISRG | Healthcare         | RED | 35.6% | -26.1% | 1 |
| AMT  | Real Estate        | RED | 24.9% | -26.1% | 1 |
| GE   | Industrials        | RED | 31.4% | -21.4% | 1 |
| SBUX | Consumer Cyclical  | RED | 34.4% | -31.3% | 1 |
| ABBV | Healthcare         | RED | 26.5% | -20.7% | 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: 2
- High Risk Anomalies: 1
- 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

- 2 assets show critical anomalous behavior requiring immediate review
- Anomaly detection identified 4 assets with unusual patterns
- Key risk drivers: Max Drawdown, Volatility, Price Change 3M

## Critical Anomalies Detected

| Symbol | Sector             | Anomaly Score | Severity | Recommendation                              |
|--------|--------------------|---------------|----------|---|
| ORCL   | Technology         | 100.0         | CRITICAL | Critical anomaly - Consider immediate po... |
| NOW    | Technology         | 84.9          | CRITICAL | Critical anomaly - Consider immediate po... |
| PYPL   | Financial Services | 76.0          | HIGH     | Significant anomaly - Conduct thorough d... |

## Top Risk Factors (Feature Importance)

1. Max Drawdown: 47.8% importance
2. Volatility: 18.5% importance
3. Price Change 3M: 12.7% importance
4. Price Change 1M: 5.7% importance
5. Price Change 6M: 5.2% importance

## ML Validation Results

Overall Validation Status: **WARNING**

Checks Passed: 3 / 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:** PASS

features\_checked: 9, nan\_features: 0, total\_samples: 25

✓ **Feature Importance Validation:** PASS

total\_importance: 100.0, top\_feature: Max Drawdown, top\_importance: 47.8

### Validation Warnings (1):

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

## Sentiment Analysis

Sentiment analysis was conducted on 16 RED-flagged assets using financial news from the past 12 months. **Key Findings:**

- Average sentiment score: -0.297
- Assets with negative sentiment: 8/16
- Total news articles analyzed: 349

## Sentiment Analysis Results

| Symbol | Sentiment Score | Label    | News Count | Trend         | Key Themes                                 |
|--------|-----------------|----------|------------|---------------|--|
| BA     | -0.402          | NEGATIVE | 19         | IMPROVING     | earnings, regulatory, financial_health     |
| AVGO   | -0.370          | NEGATIVE | 29         | DETERIORATING | regulatory, financial_health, earnings     |
| NFLX   | -0.369          | NEGATIVE | 20         | DETERIORATING | earnings, regulatory, financial_health     |
| TSLA   | -0.363          | NEGATIVE | 18         | DETERIORATING | operations, regulatory, management         |
| GS     | -0.349          | NEGATIVE | 30         | STABLE        | regulatory, financial_health, earnings     |
| MSFT   | -0.339          | NEGATIVE | 20         | DETERIORATING | regulatory, financial_health, operations   |
| PG     | -0.324          | NEGATIVE | 15         | IMPROVING     | financial_health, regulatory, market_share |
| GE     | -0.306          | NEGATIVE | 21         | DETERIORATING | regulatory, earnings, financial_health     |
| ORCL   | -0.280          | NEUTRAL  | 24         | IMPROVING     | regulatory, operations, earnings           |
| IBM    | -0.275          | NEUTRAL  | 25         | IMPROVING     | regulatory, management, financial_health   |
| ISRG   | -0.269          | NEUTRAL  | 22         | STABLE        | regulatory, earnings, financial_health     |
| PYPL   | -0.257          | NEUTRAL  | 20         | IMPROVING     | operations, regulatory, financial_health   |
| AMT    | -0.250          | NEUTRAL  | 22         | IMPROVING     | regulatory, earnings, management           |
| NOW    | -0.213          | NEUTRAL  | 27         | DETERIORATING | financial_health, regulatory, earnings     |
| ABBV   | -0.204          | NEUTRAL  | 20         | IMPROVING     | financial_health, regulatory, management   |
| SBUX   | -0.181          | NEUTRAL  | 17         | DETERIORATING | management, operations, earnings           |

## Detailed Asset Analysis

### Asset: PYPL

**Sector:** Financial Services

**Current Price:** \$43.44

**Market Cap:** \$40.66B

**Risk Rating:** RED

**Risk Metrics:**

- Volatility: 40.9%
- Maximum Drawdown: -49.9%
- Beta: -0.10
- Sharpe Ratio: -1.18
- RSI: 57.5

**Performance:**

- 1-Month Return: -23.3%
- 3-Month Return: -28.3%
- 6-Month Return: -37.3%

**Risk Flags:**

- High Volatility, Extreme Drawdown, Severe Decline, Extended Decline, Poor Risk Return, Momentum Breakdown

**Market Sentiment:**

- Sentiment Score: -0.257 (NEUTRAL)
- News Articles: 20
- Trend: IMPROVING

### Asset: NOW

**Sector:** Technology

**Current Price:** \$103.26

**Market Cap:** \$108.95B

**Risk Rating:** RED

**Risk Metrics:**

- Volatility: 42.5%
- Maximum Drawdown: -51.9%
- Beta: 0.04
- Sharpe Ratio: -1.22
- RSI: 42.3

**Performance:**

- 1-Month Return: -24.3%
- 3-Month Return: -36.5%
- 6-Month Return: -41.3%

**Risk Flags:**

- High Volatility, Extreme Drawdown, Severe Decline, Extended Decline, Poor Risk Return, Momentum Breakdown

**Market Sentiment:**

- Sentiment Score: -0.213 (NEUTRAL)
- News Articles: 27
- Trend: DETERIORATING

### Asset: ORCL

**Sector:** Technology

**Current Price:** \$144.51

**Market Cap:** \$415.33B

**Risk Rating:** RED

**Risk Metrics:**

- Volatility: 61.6%
- Maximum Drawdown: -58.3%
- Beta: -0.43
- Sharpe Ratio: 0.01
- RSI: 43.3

**Performance:**

- 1-Month Return: -20.8%
- 3-Month Return: -27.1%
- 6-Month Return: -38.3%

**Risk Flags:**

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

**Market Sentiment:**

- Sentiment Score: -0.280 (NEUTRAL)
- News Articles: 24
- Trend: IMPROVING

## Asset: NFLX

**Sector:** Communication Services

**Current Price:** \$76.57

**Market Cap:** \$324.97B

**Risk Rating:** RED

**Risk Metrics:**

- Volatility: 32.9%
- Maximum Drawdown: -43.4%
- Beta: -0.02
- Sharpe Ratio: -0.67
- RSI: 40.7

**Performance:**

- 1-Month Return: -10.7%
- 3-Month Return: -26.6%
- 6-Month Return: -37.1%

**Risk Flags:**

- Extreme Drawdown, Extended Decline, Poor Risk Return, Momentum Breakdown

**Market Sentiment:**

- Sentiment Score: -0.369 (NEGATIVE)
- News Articles: 20
- Trend: DETERIORATING

## Asset: IBM

**Sector:** Technology

**Current Price:** \$233.05

**Market Cap:** \$217.81B

**Risk Rating:** RED

**Risk Metrics:**

- Volatility: 33.8%
- Maximum Drawdown: -28.7%
- Beta: -0.01
- Sharpe Ratio: -0.16
- RSI: 23.2

**Performance:**

- 1-Month Return: -20.9%
- 3-Month Return: -21.2%
- 6-Month Return: -1.6%

**Risk Flags:**

- Extreme Drawdown, Severe Decline, Momentum Breakdown

**Market Sentiment:**

- Sentiment Score: -0.275 (NEUTRAL)
- News Articles: 25
- 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 16 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 8 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 16:20:13
- 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\_162013.csv

**Risk Analysis CSV:** risk\_analysis\_20260224\_162013.csv

The tables below provide summary information for quick reference.

### Performance Metrics Data

| Symbol | 1M Return | 3M Return | 6M Return | Vol Decline | Sharpe Ratio |
|--------|-----------|-----------|-----------|-------------|--------------|
| ABBV   | 3.5%      | -2.5%     | 11.8%     | 10.5%       | 0.61         |
| AMT    | 6.9%      | 7.9%      | -7.4%     | -1.8%       | 0.18         |
| AVGO   | 0.0%      | -4.3%     | 10.8%     | -22.0%      | 1.12         |
| BA     | -6.0%     | 30.0%     | 3.0%      | -10.6%      | 0.83         |
| BLK    | -4.2%     | 6.4%      | -4.6%     | 11.1%       | 0.57         |
| COST   | 1.9%      | 10.8%     | 6.0%      | -18.8%      | -0.14        |
| CSCO   | 1.8%      | 3.6%      | 18.1%     | 27.8%       | 0.94         |
| DE     | 23.3%     | 31.2%     | 31.5%     | 21.4%       | 1.03         |
| GE     | 14.7%     | 17.9%     | 27.3%     | 3.7%        | 1.82         |
| GILD   | 7.6%      | 17.9%     | 31.7%     | 7.2%        | 1.19         |
| GOOGL  | -6.7%     | 3.8%      | 49.3%     | 16.8%       | 1.88         |
| GS     | -3.3%     | 17.0%     | 23.3%     | 2.4%        | 1.31         |
| IBM    | -20.9%    | -21.2%    | -1.6%     | 44.1%       | -0.16        |
| ISRG   | -6.7%     | -12.2%    | 5.3%      | 11.9%       | -0.39        |
| LOW    | 1.0%      | 20.3%     | 9.5%      | -3.7%       | 0.80         |
| MSFT   | -17.7%    | -18.0%    | -23.1%    | 44.9%       | -0.09        |
| NFLX   | -10.7%    | -26.6%    | -37.1%    | -10.8%      | -0.67        |
| NOW    | -24.3%    | -36.5%    | -41.3%    | 61.7%       | -1.22        |
| ORCL   | -20.8%    | -27.1%    | -38.3%    | 8.6%        | 0.01         |
| PEP    | 15.5%     | 16.3%     | 15.9%     | 11.5%       | 0.60         |
| PG     | 10.7%     | 10.4%     | 7.4%      | 0.4%        | -0.03        |
| PYPL   | -23.3%    | -28.3%    | -37.3%    | 59.9%       | -1.18        |
| RTX    | 2.6%      | 17.4%     | 28.0%     | 22.4%       | 1.82         |
| SBUX   | -0.4%     | 12.4%     | 12.6%     | 0.9%        | -0.31        |
| TSLA   | -7.3%     | 3.2%      | 16.4%     | -10.1%      | 0.60         |

### Risk Flags Details

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

|       |   |   |   |   |   |   |   |
|-------|---|---|---|---|---|---|---|
| PYPL  | ✓ | ✓ | ✗ | ✓ | ✓ | ✓ | ✓ |
| NOW   | ✓ | ✓ | ✗ | ✓ | ✓ | ✓ | ✓ |
| ORCL  | ✓ | ✓ | ✗ | ✓ | ✓ | ✗ | ✓ |
| NFLX  | ✗ | ✓ | ✗ | ✗ | ✓ | ✓ | ✓ |
| IBM   | ✗ | ✓ | ✗ | ✓ | ✗ | ✗ | ✓ |
| MSFT  | ✗ | ✓ | ✗ | ✓ | ✗ | ✗ | ✓ |
| AVGO  | ✓ | ✓ | ✗ | ✗ | ✗ | ✗ | ✗ |
| TSLA  | ✓ | ✓ | ✗ | ✗ | ✗ | ✗ | ✗ |
| GS    | ✗ | ✓ | ✗ | ✗ | ✗ | ✗ | ✗ |
| BA    | ✗ | ✓ | ✗ | ✗ | ✗ | ✗ | ✗ |
| PG    | ✗ | ✓ | ✗ | ✗ | ✗ | ✗ | ✗ |
| ISRG  | ✗ | ✓ | ✗ | ✗ | ✗ | ✗ | ✗ |
| AMT   | ✗ | ✓ | ✗ | ✗ | ✗ | ✗ | ✗ |
| GE    | ✗ | ✓ | ✗ | ✗ | ✗ | ✗ | ✗ |
| SBUX  | ✗ | ✓ | ✗ | ✗ | ✗ | ✗ | ✗ |
| ABBV  | ✗ | ✓ | ✗ | ✗ | ✗ | ✗ | ✗ |
| COST  | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ |
| DE    | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ |
| BLK   | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ |
| GILD  | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ |
| CSCO  | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ |
| PEP   | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ |
| LOW   | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ |
| RTX   | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ |
| GOOGL | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ |

#### Data Summary:

- Total Assets: 25
- Data Generated: 2026-02-24 16:20:13
- 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.