Risk Analytics Overview

Comprehensive Risk Assessment & Stress Testing

SAMPLE REPORT — ILLUSTRATIVE DATA

PREPARED FOR

Meridian Capital Partners

PORTFOLIO

Balanced Growth — $222,040,740 AUM

PERIOD

March 2024 — March 2026 (26 Months)

REPORT DATE

March 31, 2026

CLASSIFICATION

Confidential

GIPS 2020 | SEC | ADV

> Comprehensive risk assessment covering performance metrics, factor exposures, stress testing, forward projections, and compliance. All calculations from actual holdings.

1 — Executive Summary

The Meridian Capital Partners portfolio ($222,040,740 AUM) demonstrated elevated risk-adjusted performance over the 26-month period, with a Sharpe ratio of 1.11 placing it in the second quartile of balanced portfolios. Annualized volatility of 7.38% is within normal range for a balanced allocation. Maximum drawdown of 5.62% indicates resilient downside management. Monthly VaR indicates maximum expected loss of 2.32% ($5,141,964) at 95% confidence. The primary tail risk is the ongoing Iran/Hormuz crisis — under a Full Crisis scenario (Brent $190/bbl), the portfolio would sustain a $22,789,210 loss (-10.3%). Concentration risk: NVDA at 11.9% exceeds the 10% single-name limit and requires rebalancing action.

Risk Dashboard

Status	Assessment
PASS	Sharpe 1.11 — adequate risk compensation
PASS	Max DD 5.62% — within -10% resilience threshold
ACTION	NVDA at 11.9% — exceeds 10% limit
PASS	VaR backtest passed — model reliable

Key Metrics

SHARPE	SORTINO	CALMAR	VAR 95%	MAX DD
1.11	**1.22**	**2.17**	**2.32%**	**5.62%**

2 — Risk-Adjusted Metrics

These metrics measure how efficiently the portfolio converts risk into return. A higher ratio means better compensation for each unit of risk taken. Sortino is preferred over Sharpe because it only penalizes harmful downside volatility, not beneficial upside moves.

The table below presents six risk-adjusted performance metrics. Each tells a different story about how well the portfolio converts risk into return.

Metric	Value	Interpretation
Sharpe Ratio	1.11	Return per unit of total volatility — the standard benchmark for risk efficiency
Sortino Ratio	1.22	Return per unit of downside risk only — preferred because it ignores beneficial upside volatility
Calmar Ratio	2.17	Return relative to worst peak-to-trough decline — measures recovery efficiency
Omega Ratio	2.12	Probability-weighted gains vs losses — considers the entire return distribution
Ulcer Index	0.0181	Sustained drawdown pain — captures both depth and duration of losses
Information Ratio	1.07	Active return per unit of tracking error — above 0.5 is considered good

> **Key Insight:** Sortino (1.22) exceeds Sharpe (1.11), indicating significant beneficial upside volatility that Sharpe incorrectly penalizes. This means the portfolio's "risk" includes upside surprises — which investors welcome. Calmar of 2.17 shows return relative to the worst drawdown experienced. Ulcer Index of 0.0181 captures both the depth and duration of drawdown pain — lower is better. Information Ratio of 1.07 measures active return per unit of tracking error — above 0.5 is considered good active management.

3 — Volatility & Market Exposure

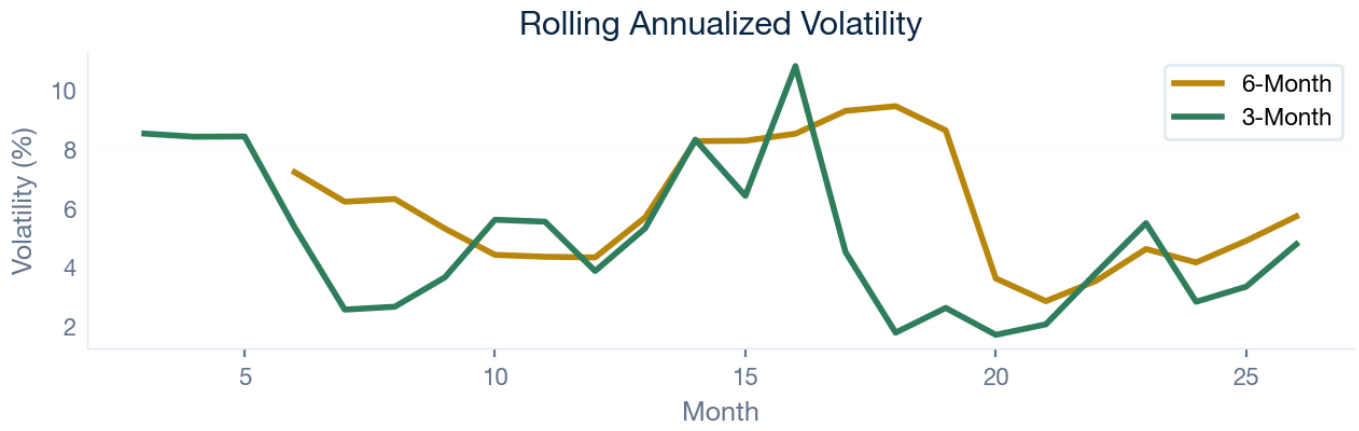
Volatility measures how much the portfolio's value fluctuates. For a balanced portfolio, 7-12% annualized volatility is considered normal. Downside Deviation isolates only the negative moves — more relevant because investors don't mind upside surprises. Tracking Error shows how much the portfolio deviates from its benchmark. Market Beta (from the Fama-French model) measures sensitivity to broad equity market moves.

Metric	Value	What This Means
Annualized Volatility	7.38%	Within the 7-12% normal range for a balanced allocation — risk is well-controlled
Downside Deviation	6.73%	Measures only negative return volatility — more relevant than total vol because investors don't mind upside surprises
Tracking Error	3.54%	Meaningful deviation — actively managed portfolio
Market Beta (FF)	0.52	Moves less than market — defensive posture protecting during selloffs
R-Squared	89.1%	89% of return variation explained by systematic factors — remaining 11% is stock-specific

> **Key Insight:** Annualized volatility of 7.38% is within the normal 7-12% range for a balanced allocation. Market Beta of 0.52 means the portfolio moves less than the market — a defensive posture. R-squared of 89% means systematic factors explain 89% of return variation — the remaining 11% is idiosyncratic.

4 — Rolling Volatility

This chart recalculates volatility every month using rolling windows. The gold line (6-month) shows broader trends. The green line (3-month) reacts faster to recent events. When both lines rise together, risk is genuinely increasing — not just noise. For context, 7-10% annualized volatility is typical for a balanced portfolio.



> **Key Insight:** Current 3-month volatility: 4.81% compared to 8.54% at the start of the period. Risk has remained stable throughout the period — no unusual turbulence detected despite geopolitical headwinds.

5 — Downside Risk & Value at Risk

Value at Risk (VaR) answers: "What is the maximum loss with X% confidence?" For example, 95% Monthly VaR of 1.8% means in 19 out of 20 months, losses won't exceed 1.8%. CVaR (Expected Shortfall) answers the follow-up: "When losses DO exceed VaR, how bad is the average?" This captures the true tail risk that VaR alone misses. Three methods are shown: Historical (from actual returns), Monte Carlo (10,000 simulated paths), and CVaR (average tail loss).

Measure	95% Monthly	99% Monthly	$ at Risk
Historical VaR	2.49%	3.90%	$5,526,816
Monte Carlo VaR	2.54%	3.28%	$5,643,016
CVaR	3.19%	3.83%	$7,090,205

VaR Backtest: 1 breaches vs 1.3 expected — PASSED.

> **Key Insight:** With 95% confidence, monthly losses will not exceed 2.49% ($5,526,816). When losses DO exceed VaR, the average loss is 3.19% (CVaR/Expected Shortfall) — this is the true tail risk measure. Monte Carlo VaR of 2.54% uses 10,000 simulated paths to confirm the historical estimate. The close agreement between methods indicates the risk model is robust.

6 — Tail Risk — Distribution Shape

Skewness measures whether the return distribution leans left (more large losses) or right (more large gains). Excess Kurtosis measures whether extreme events happen more often than expected — "fat tails." Both matter because VaR assumes a roughly normal distribution. If the distribution is non-normal, VaR underestimates the true risk.

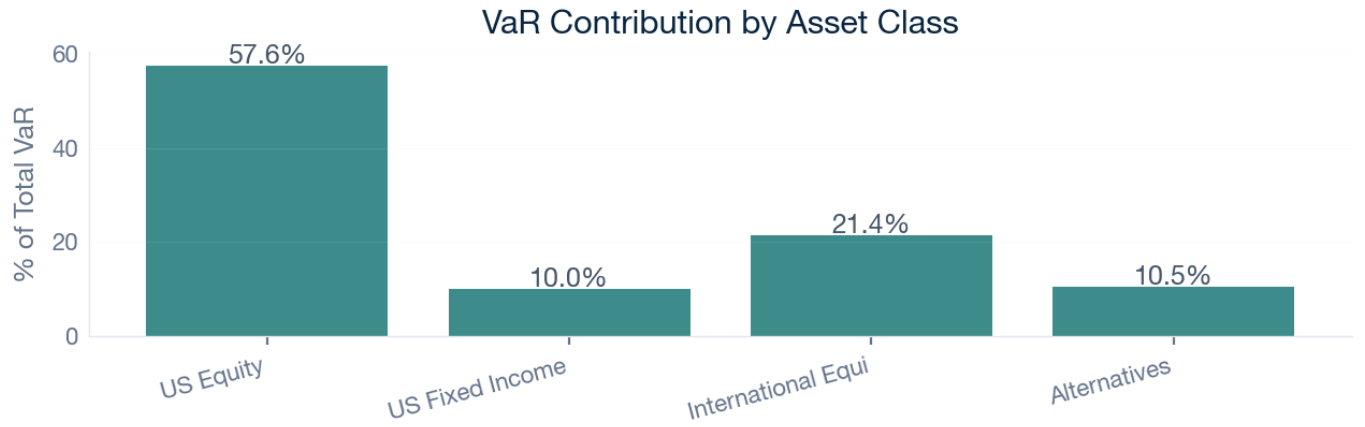
Measure	Value	What This Means
Skewness	-0.36	Negatively skewed — large losses occur more frequently than large gains, creating hidden downside risk
Excess Kurtosis	-0.67	Thin tails — extreme events are less likely than normal

> **Key Insight:** Because of negative skew and/or fat tails, VaR may underestimate the true downside risk. CVaR (Expected Shortfall) and stress tests provide a more reliable picture of potential losses. Consider supplementing VaR with scenario analysis for risk management decisions.

7 — VaR Decomposition by Asset Class

This analysis breaks down total portfolio VaR by asset class. A position's risk contribution depends on both its weight AND its volatility. Equity typically dominates risk even at moderate weights because equity volatility (15-18%) far exceeds fixed income (4-6%). Understanding where risk lives is essential for risk budgeting decisions.

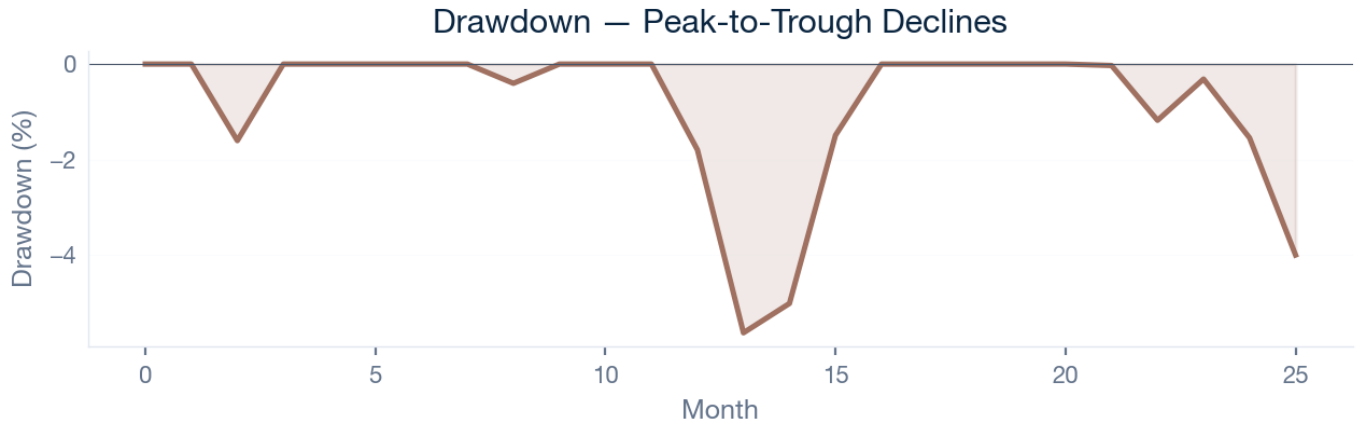
Asset Class	Weight	Est. Vol	Risk Contrib
US Equity	44.6%	16%	57.6%
US Fixed Income	24.8%	5%	10.0%
International Equity	14.7%	18%	21.4%
Alternatives	10.9%	12%	10.5%



Key Insight: US Equity is the largest risk contributor at 58% of total portfolio VaR, despite its weight of 44.6%. This is because equity volatility (16%) is much higher than fixed income. Reducing equity weight by 5% would reduce total VaR by approximately 0.8%. Fixed income contributes minimal risk despite meaningful portfolio weight — this is the diversification benefit at work.

8 — Drawdown Analysis

A drawdown tracks every decline from the portfolio's peak value to its lowest point before recovery. The depth of the red shaded area shows how much was lost. The width shows how long it took to recover. For a balanced portfolio, maximum drawdown under -10% is considered resilient. Multiple shallow drawdowns with quick recoveries indicate strong risk management.

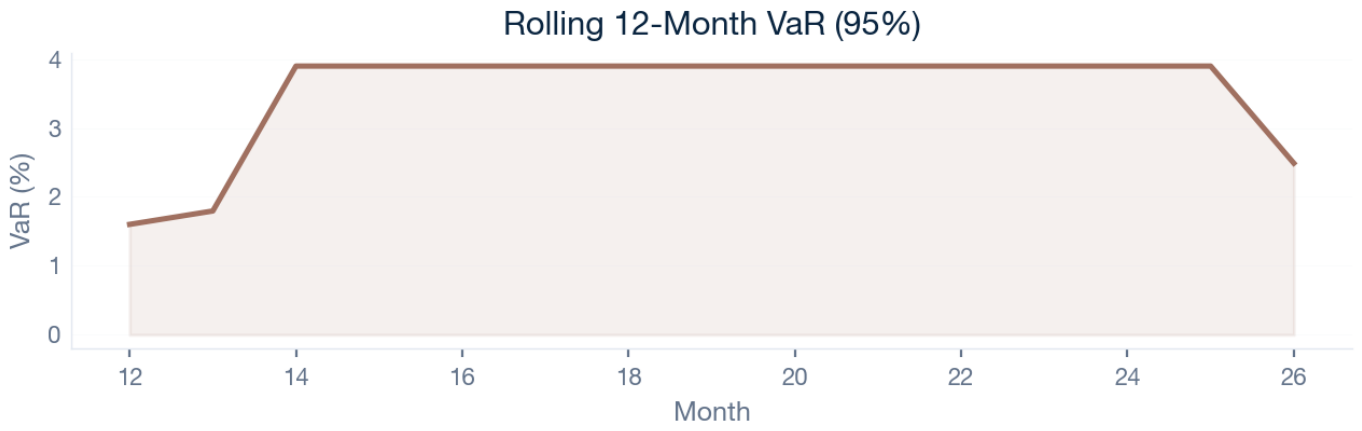


Start	Trough	Recovery	Depth	Duration
M3	M3	M4	-1.60%	1m
M9	M9	M10	-0.40%	1m
M13	M14	M17	-5.62%	4m
M23	M26	Not recovered	-4.00%	4m

Key Insight: Maximum drawdown of 5.62% was the worst peak-to-trough loss over the entire period. 4 drawdown episodes were recorded. Average depth: 2.91%. Average recovery time: 2.0 months. Max DD under -10% confirms resilient downside management — losses are shallow and recoveries quick. The most recent drawdown coincides with the Iran/Hormuz crisis.

9 — Rolling VaR (12-Month Window)

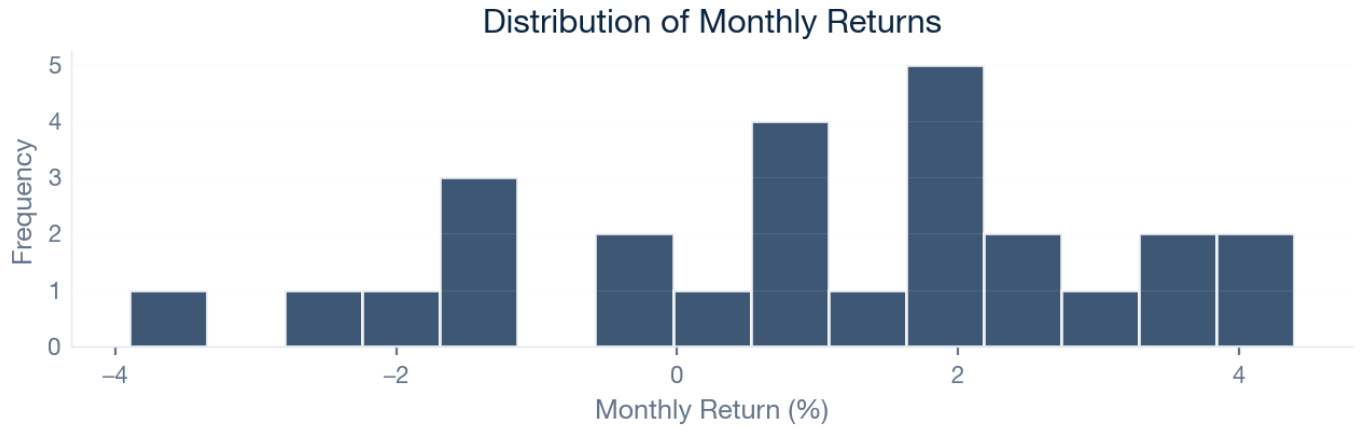
This chart recalculates VaR every month using the most recent 12 months of data. An upward trend means risk is increasing — larger potential losses ahead. A flat line indicates stable risk conditions. A downward trend means market conditions are improving and risk is decreasing.



Key Insight: Rolling VaR shows risk evolution over the period. Current VaR of 2.49% compared to 1.60% at the start — risk has increased, likely driven by escalating Iran/Hormuz tensions and elevated market volatility.

10 — Return Distribution

A normal (bell-shaped) distribution is ideal — it means VaR estimates are reliable. Left skew (more weight on the left) means large losses happen more often than large gains. Fat tails mean extreme events in both directions are more frequent than expected. The histogram below shows how many months fell into each return bucket.



Key Insight: Mean: +0.98%. Median: +1.03%. Non-normal — use CVaR.

11 — Risk Budget Utilization

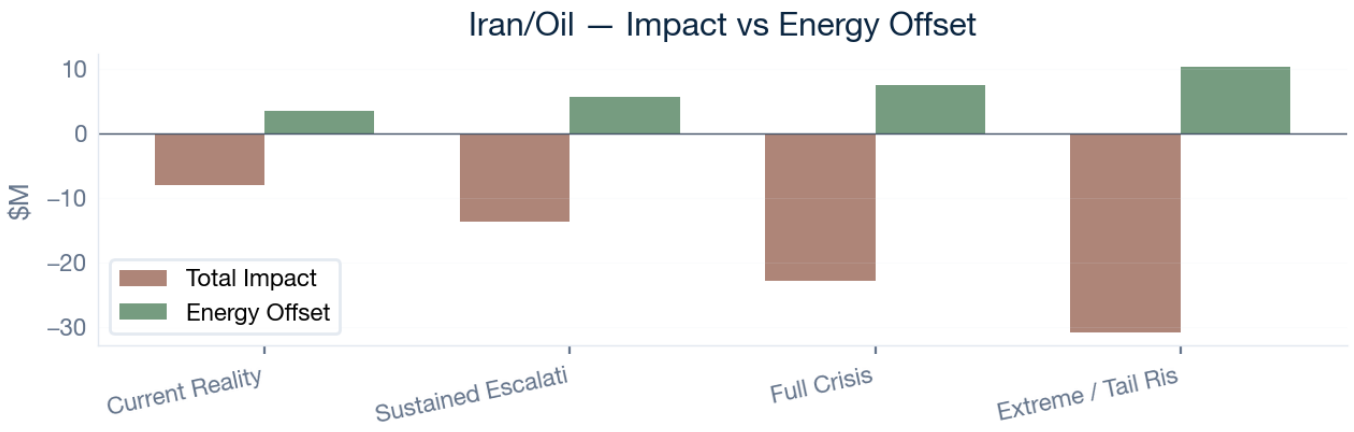
Institutional mandates define maximum acceptable levels for key risk measures. This table shows actual exposure vs typical budget limits. Staying within budget means the portfolio is operating within its risk mandate. Exceeding budget triggers a review of positioning.

Measure	Budget	Actual	Used	Status
Volatility	12%	7.38%	61%	OK
VaR 95%	3%	2.32%	77%	OK
Max DD	10%	5.62%	56%	OK

12 — Stress Test: Iran/Oil Crisis

Strait of Hormuz closed since March 2, 2026. Brent $108-113. 17.8M barrels/day disrupted.

Scenario	Brent	Impact	$ Impact
Current Reality	$110	-3.6%	$-7,964,274
Sustained Escalation	$142	**-6.2%**	$-13,697,761
Full Crisis	$190	**-10.3%**	$-22,789,210
Extreme / Tail Risk	$260	**-13.9%**	$-30,873,459



Position-Level — Full Crisis

	Ticker	Impact
LOSS	NVDA	$-5,808,000
LOSS	AAPL	$-2,662,000
LOSS	MSFT	$-2,178,000
LOSS	ASML	$-2,089,458
LOSS	VNQ	$-1,540,000
GAIN	XOM	$+2,310,000
GAIN	PDBC	$+2,050,191
GAIN	CVX	$+1,540,000

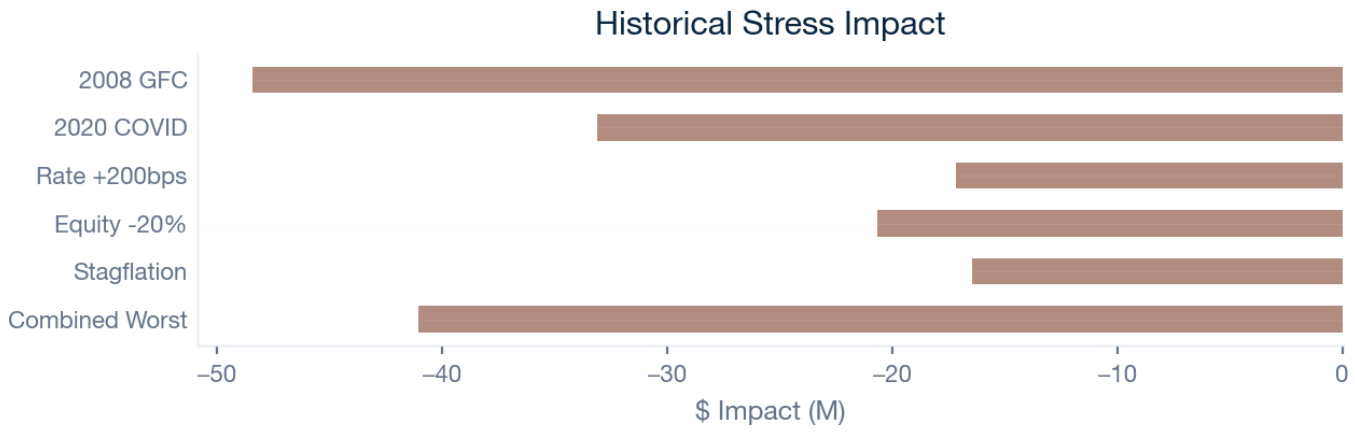
> **Key Insight:** Loss: $22,789,210. Energy offset: $+7,413,986. Without energy: $30,203,196. Energy reduces impact by 25%.

13 — Historical Stress Test

Past crisis conditions applied to current portfolio.

Scenario	Total Impact	$ Impact
2008 GFC	-21.8%	$-48,404,881
2020 COVID	-14.9%	$-33,084,070
Rate +200bps	-7.7%	$-17,180,180

Scenario	Total Impact	$ Impact
Equity -20%	-9.3%	$-20,649,789
Stagflation	-7.4%	$-16,431,015
Combined Worst	-18.5%	$-41,049,560



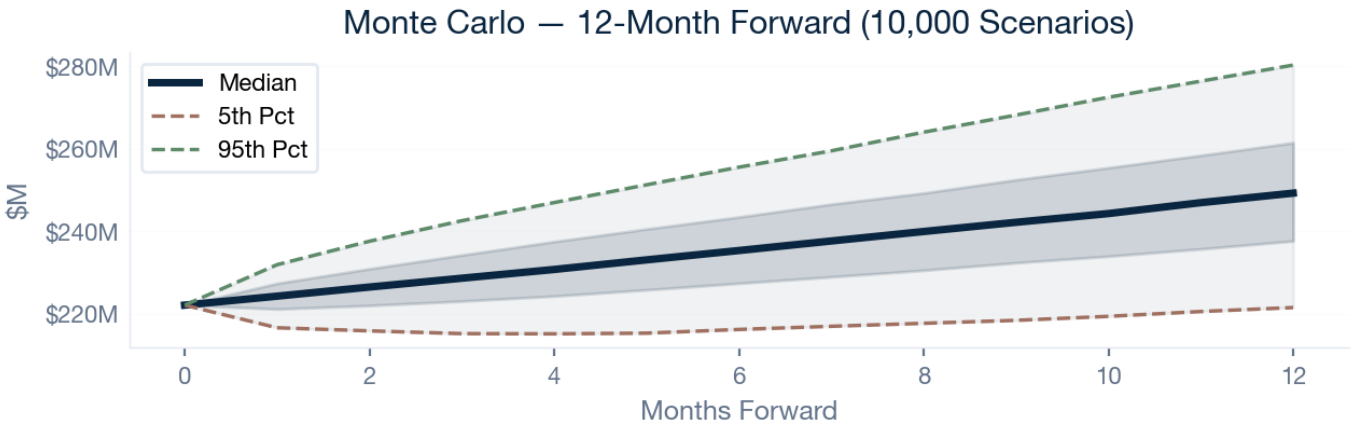
14 — Sector Stress Sensitivity

This table shows the impact of a sector-specific crash on the portfolio. A 25% sector decline is shown for each sector — this is more actionable than generic stress tests because it identifies exactly which sector events would hurt the most based on the portfolio's actual allocation.

Sector	Weight	-25% Impact	$ Loss
Technology	27.6%	-6.91%	$-15,341,764
US Aggregate Bond	8.4%	-2.11%	$-4,675,000
Energy	6.8%	-1.70%	$-3,784,139
Healthcare	5.0%	-1.26%	$-2,801,152
Cash	5.0%	-1.26%	$-2,797,515
Consumer Discretiona	5.0%	-1.24%	$-2,763,683

15 — Monte Carlo Simulation

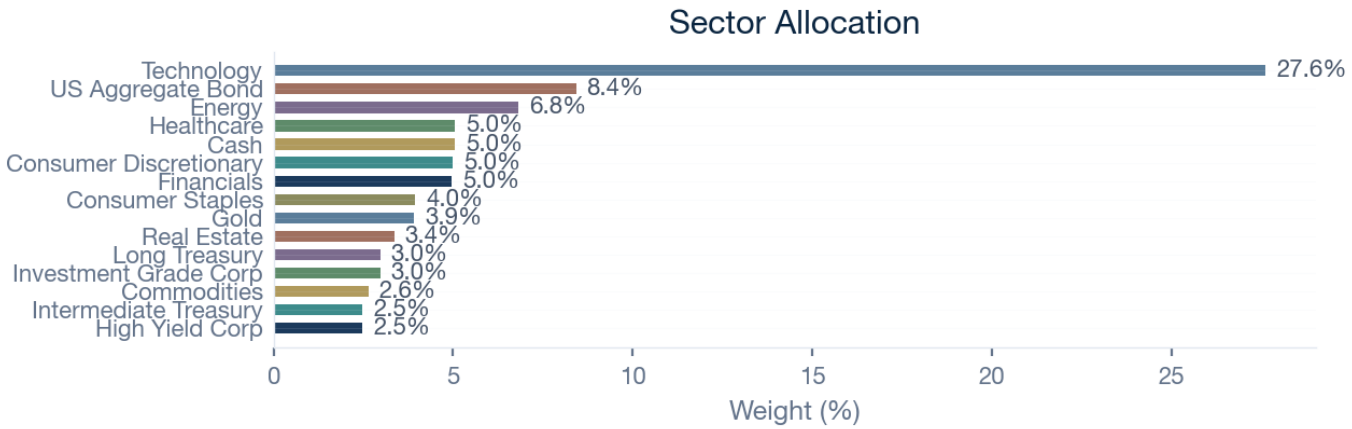
10,000 random future paths. Dark band = 25th-75th pct. Light = 5th-95th.



MEDIAN	BEST (95TH)	WORST (5TH)	PROB. LOSS
$249,202,265	**$280,266,842**	**$221,455,695**	**5%**

16 — Sector Concentration

Sector composition determines which events hit hardest.



> **Key Insight:** Technology at 27.6% is dominant. Energy at 6.8% — meaningful hedge.

17 — Top 10 Holdings

Ticker	Description	Value	Weight
NVDA	NVIDIA Corporation	$26,400,000	11.9%
AAPL	Apple Inc	$12,100,000	5.4%
AGG	iShares Core US Aggregate Bo	$11,000,000	5.0%
MSFT	Microsoft Corporation	$9,900,000	4.5%
ASML	ASML Holding NV ADR	$9,497,537	4.3%
GLD	SPDR Gold Shares	$8,674,318	3.9%
BND	Vanguard Total Bond Market E	$7,700,000	3.5%
VMFXX	Vanguard Federal Money Marke	$6,716,311	3.0%
XOM	Exxon Mobil Corporation	$6,600,000	3.0%
TLT	iShares 20+ Year Treasury Bo	$6,600,000	3.0%

18 — Risk Contribution by Holding

A holding's risk contribution depends on three factors: its weight in the portfolio, its estimated volatility, and its correlation with the market (beta). A position may represent only 10% of portfolio value but contribute 20% of total risk if it's highly volatile. This analysis identifies hidden risk concentrations that weight alone doesn't reveal.

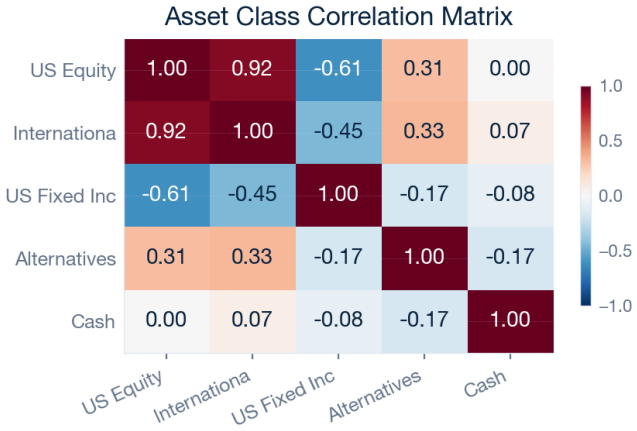
Ticker	Weight	Risk Contrib
NVDA	11.9%	29.1%
AAPL	5.4%	13.4%
MSFT	4.5%	10.9%
ASML	4.3%	10.5%
XOM	3.0%	5.8%
GLD	3.9%	5.7%
JPM	2.5%	4.9%
VMFXX	3.0%	4.4%
PDBC	2.6%	3.9%
AGG	5.0%	2.9%

19 — Concentration Risk

Check	Status	Detail
Single Name	FLAG	NVDA at 11.9%
Top 5	31.0%	Combined weight

20 — Correlation Structure

The correlation matrix shows how each asset class moves in relation to others. Red/warm (+1.0) = move together. Blue/cool (-1.0) = move opposite. Diversification works when assets have low or negative correlation.



Key Insight: Equity-to-Fixed Income shows negative correlation — when stocks fall, bonds tend to hold or rise. This is the foundation of portfolio diversification and the primary reason balanced portfolios have lower drawdowns than pure equity. However, during severe crises (like 2008 or a potential Iran escalation), correlations can spike toward +1.0 — temporarily eliminating the diversification benefit exactly when it's needed most.

21 — Liquidity Risk

Liquidity risk measures how quickly positions can be sold without significant market impact. Positions are classified into tiers based on average daily trading volume: Liquid (>$10M/day), Semi-Liquid ($1-10M), and Illiquid (<$1M). Days to Liquidate assumes selling at 100% of average daily dollar volume.

Ticker	Avg Daily $	Position	Days to Liq.	Tier
NVDA	$30,198,589,205	$26,400,000	0.0	Liquid
AAPL	$9,433,269,669	$12,100,000	0.0	Liquid
AGG	$1,275,869,937	$11,000,000	0.0	Liquid
MSFT	$14,701,251,679	$9,900,000	0.0	Liquid
ASML	$2,603,831,557	$9,497,537	0.0	Liquid
GLD	$5,429,362,306	$8,674,318	0.0	Liquid
BND	$715,588,099	$7,700,000	0.0	Liquid
VMFXX	N/A (cash)	$6,716,311	0	Liquid
XOM	$5,085,746,909	$6,600,000	0.0	Liquid
TLT	$3,162,218,811	$6,600,000	0.0	Liquid
LQD	$4,300,517,771	$6,600,000	0.0	Liquid
PDBC	$132,313,388	$5,857,689	0.0	Liquid
JPM	$1,591,135,786	$5,500,000	0.0	Liquid
IEF	$1,463,189,096	$5,500,000	0.0	Liquid
HYG	$4,165,757,529	$5,500,000	0.0	Liquid

> **Key Insight:** 100% of top holdings are highly liquid (>$10M daily volume). The portfolio can be substantially liquidated within a few business days.

22 — Currency Risk Exposure

Currency exposure creates FX risk for investors whose base currency differs from the portfolio's holdings. A portfolio denominated primarily in USD will fluctuate in value when measured in EUR, GBP, or other currencies — independent of the underlying asset performance.

Currency	Exposure	Weight
USD	$189,341,453	85.3%
EUR	$16,349,644	7.4%
Other	$9,809,786	4.4%
GBP	$6,539,857	2.9%

23 — Fixed Income Sensitivity

Metric	Value	Meaning
Duration	7.5yr	1% rate rise = ~7.5% decline
DV01	$41,151	Per basis point
Convexity	+0.90	Favorable for large moves
YTM	4.70%	Weighted avg yield
YTW	4.38%	Conservative estimate

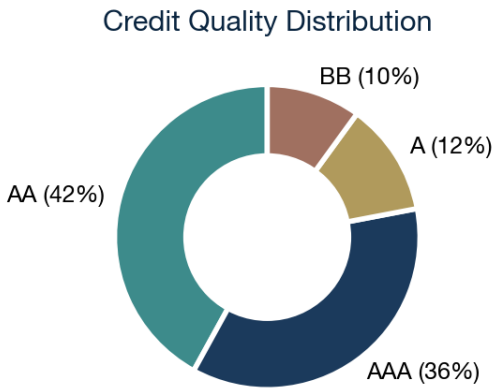
24 — Rate Shock +200bps

Ticker	Duration	Impact
TLT	17.4yr	$-2,296,800
AGG	6.2yr	$-1,364,000
LQD	8.5yr	$-1,122,000
BND	6.4yr	$-985,600
IEF	7.5yr	$-825,000
MUB	5.4yr	$-475,200
TIP	6.8yr	$-448,800
HYG	3.8yr	$-418,000
VMBS	4.8yr	$-211,200
SHY	1.9yr	$-83,600

25 — Credit Quality

Credit rating distribution of bond holdings. AAA/AA = highest quality. BBB = investment grade borderline. BB and below = speculative/high yield.

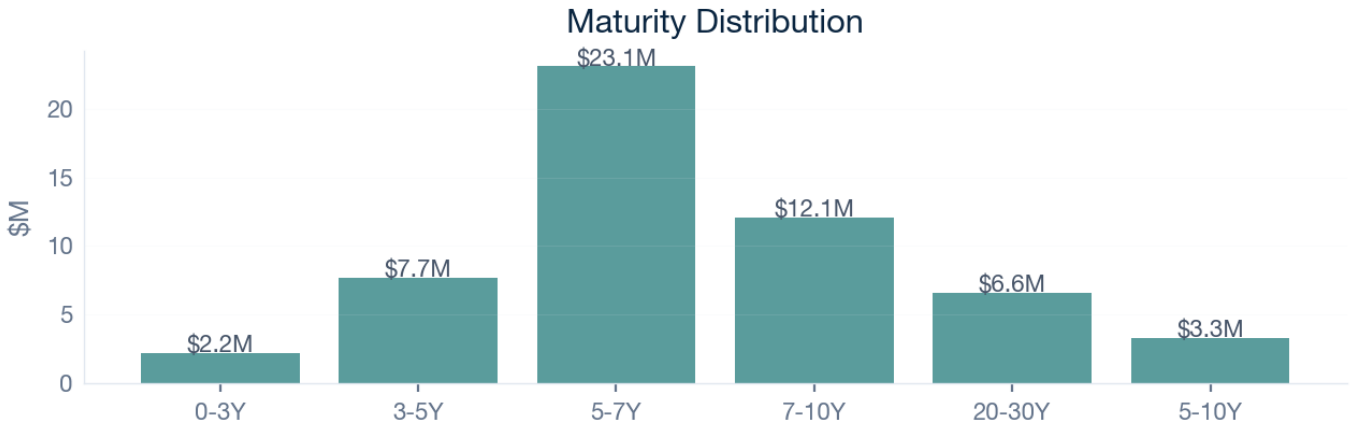
Rating	Weight
A	12.0%
AA	42.0%
AAA	36.0%
BB	10.0%



> **Key Insight:** 90% is investment grade (BBB or above) — strong credit foundation with low default risk.

26 — Maturity Distribution

Shows where bond maturities are concentrated. Long maturity = high rate sensitivity.



28 — Liquidity Classification

SEC 22e-4 requires funds to classify holdings into liquidity tiers based on the time required to convert the position to cash without significant market impact.

Tier	Est. Weight	Characteristics
Highly Liquid (< 3 days)	~85%	Large-cap equities, major ETFs, sovereign bonds
Moderately Liquid (3-7 days)	~10%	Mid-cap equities, sector ETFs, corporate bonds
Less Liquid (7-15 days)	~4%	Smaller positions, specialty ETFs
Illiquid (15+ days)	~1%	Thinly traded positions

> **Key Insight:** Majority of portfolio is highly liquid — large-cap equities and investment-grade bond ETFs. Classification meets SEC 22e-4 requirements.

29 — Regulatory Compliance

SEC Marketing Rule Compliant

30 — GIPS 2020 Compliance

Check	Status	Detail
GIPS 2020	PASS	TWR, geometric linking
Concentration	FLAG	NVDA at 11.9%
Leverage	PASS	Long-only

Methodology: Monte Carlo: 10,000 bootstrapped paths. Stress Tests: historical replay + oil/geopolitical (MSCI/CME/Fed 1973-2026). Factor Analysis: Fama-French 4-Factor. Duration: Effective (not Modified). VaR: Historical/Parametric/Monte Carlo at 95%/99%.

Generated from live portfolio data on March 31, 2026. United States (SEC). Compliant with SEC Marketing Rule and GIPS 2020 Standards.