NEW FRONTIER

Behind the Curtain: Investment Process and Case Studies

- Exploring Our Process and the Impact of some Investment Scenarios

Robert Michaud David Esch

Presented on May 1, 2025

Outline

- Investment principles
- Case study
- Technology preview

NEW FRONTIER

Investment Principles

Investment principles and theory

- Institutional framework
  - Be conservative in assumptions
  - Invest over time
  - Estimate risk and return and invest accordingly
  - Deliver the portfolio that's most optimal for your goal today
- Consequences
  - Avoid big jumps and bets
- We will examine several different hypothetical scenarios
  - Market shifts
  - Modifications to the investment universe

Philosophy

- Avoid discredited investing practices
- Apply provably beneficial practices

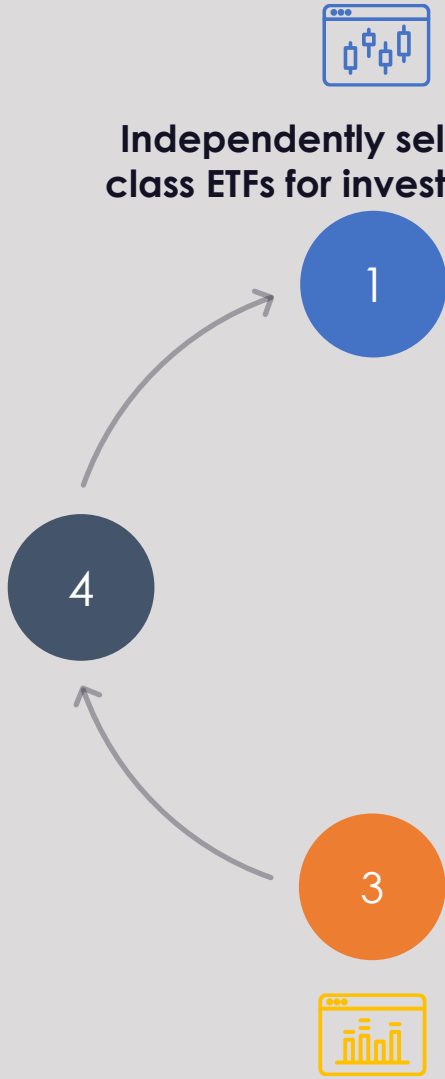
What We Avoid is Important

- Predict the future
  - Expert predictions of the S&P are worse than random chance.
- Pick favorite stocks
  - Stock pickers can underperform monkeys (Hsu and Kalesnik 2014).
- Pick favorite mutual funds
  - After fees, there's very little persistence in top performing funds.
- Pick favorite asset class
  - E.g. periodic table of the asset class returns
- Time markets
  - Tactical managers often fail to avoid market downturns.

Beneficial Practices

Diversification	• Securities • Asset classes • Risk factors Geographical regions Time (intertemporal risk management) Asset Managers
Managing Costs	• Limit turnover • Low cost ETFs • Manage taxes
Strategic but not static forecasts	• Use currently available data • Avoid speculation
Optimize portfolios	• Build portfolios for investor objectives • Seek to maximize return and especially minimize risk • Balance risk and return

New Frontier Investment Process



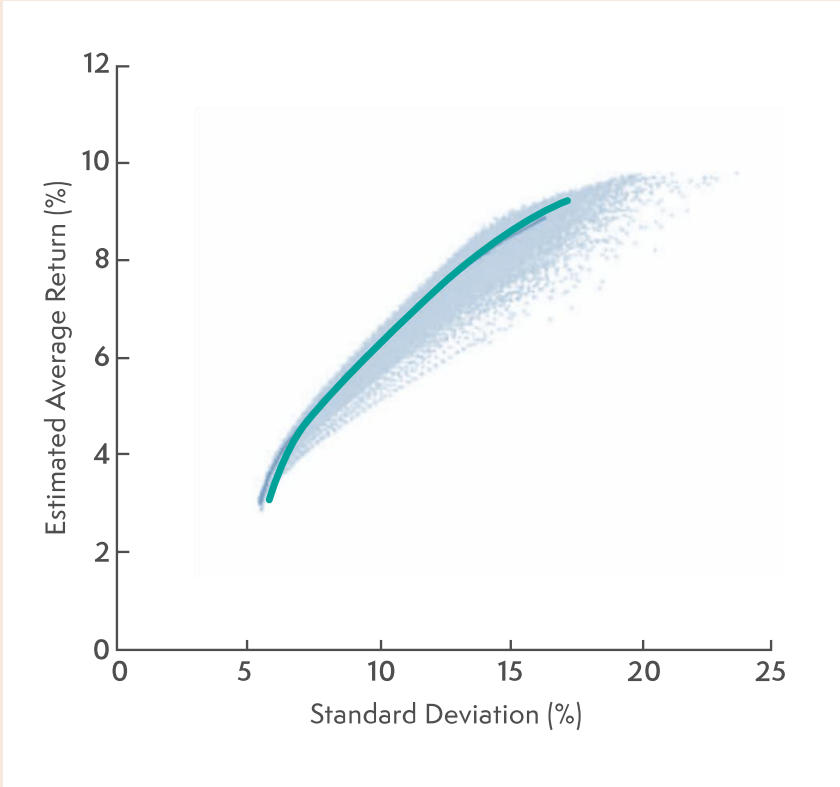
Unified Investment Process

1. Select Asset Universe and ETFs
2. Estimate Risk and Return
3. Construct Portfolio
4. Monitor and Rebalance

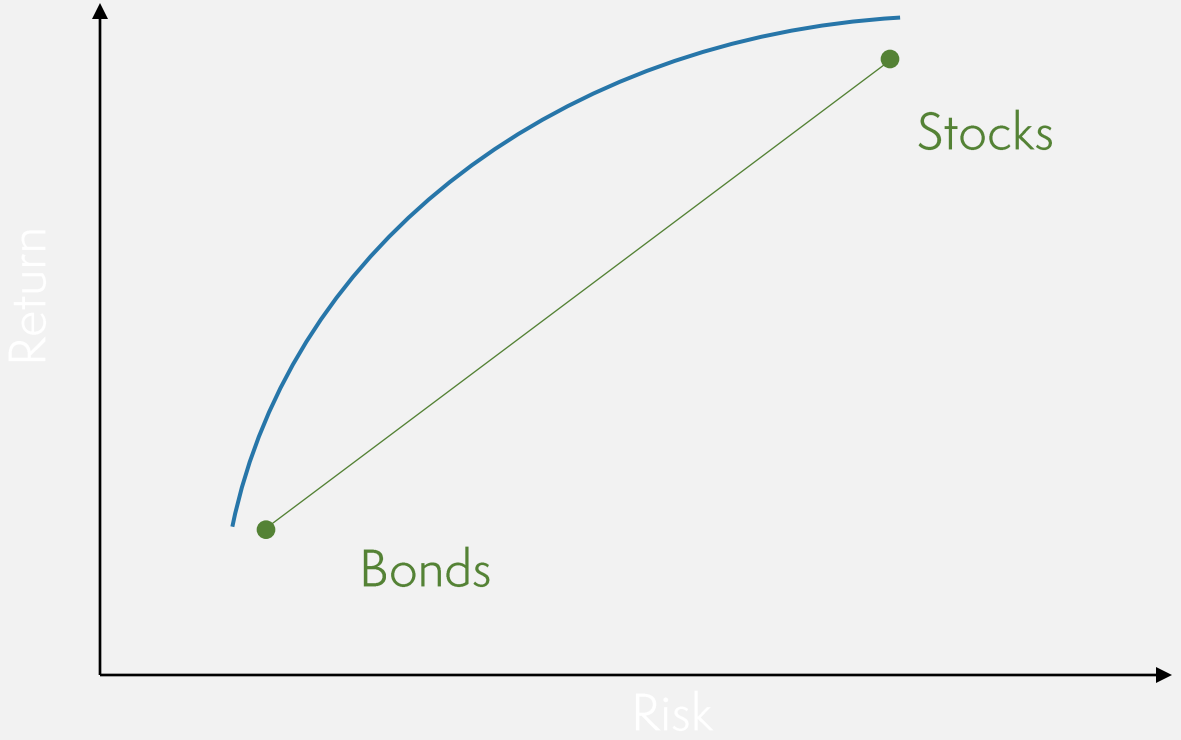
All of our portfolios are constructed using our multi-patented Michaud Optimization™, which builds a customized mix of ETFs to meet each client's risk tolerance and investment objectives.

Michaud optimizations run thousands of scenarios to account for errors and unknowns.

The result is the efficient portfolio with the statistically surest path to achieving investor objectives.



Why Optimize?



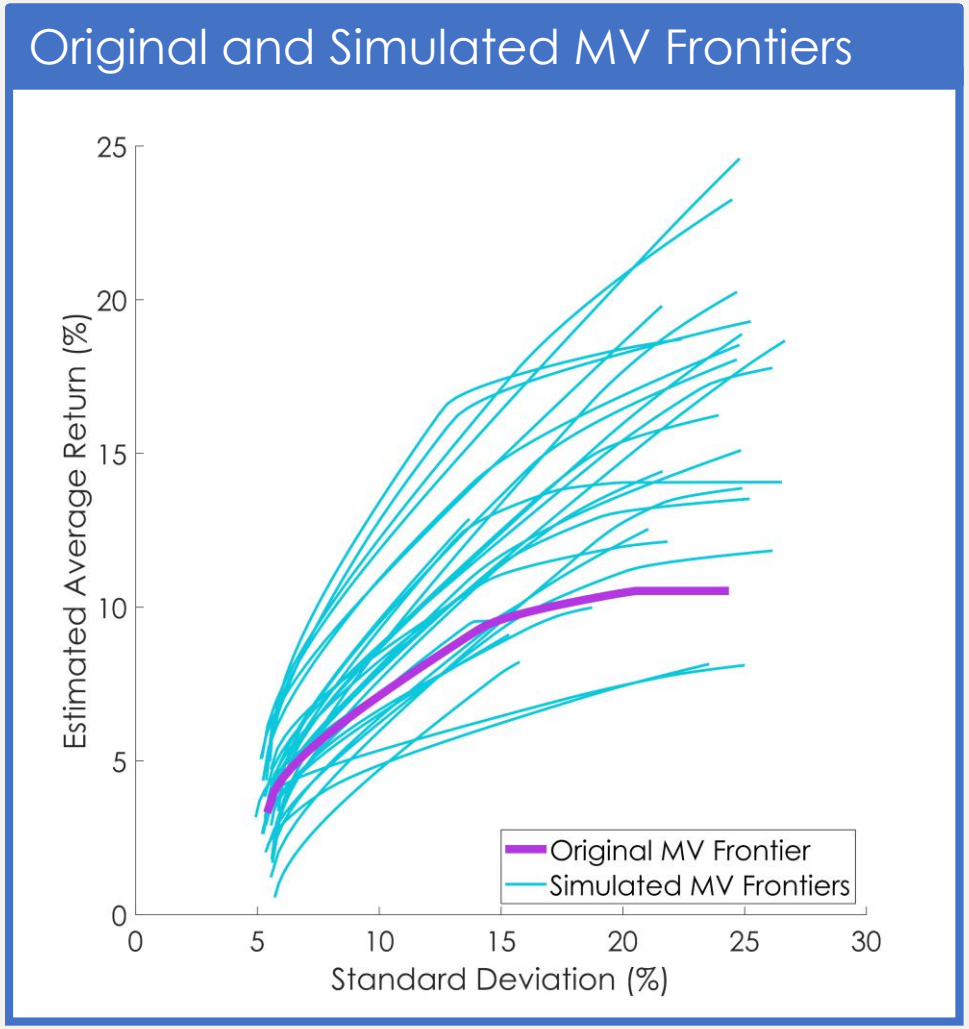
Why Isn't Everyone Optimizing

- Theoretically correct
- Practically unusable for investment solutions

- Common practices
  - Min variance or tax optimization
  - Constrain solutions
  - Avoid optimization entirely

Understanding Portfolio Uncertainty

- Start with your risk-return estimates and compute the Markowitz frontier (red curve)
- Simulate new inputs and compute a new efficient frontier (cyan)
- Do this many times
- Each simulated frontier as optimal as any other by construction
- Thousands of possible optimal asset allocations
- Thousands of ways things can happen consistent with what you believe

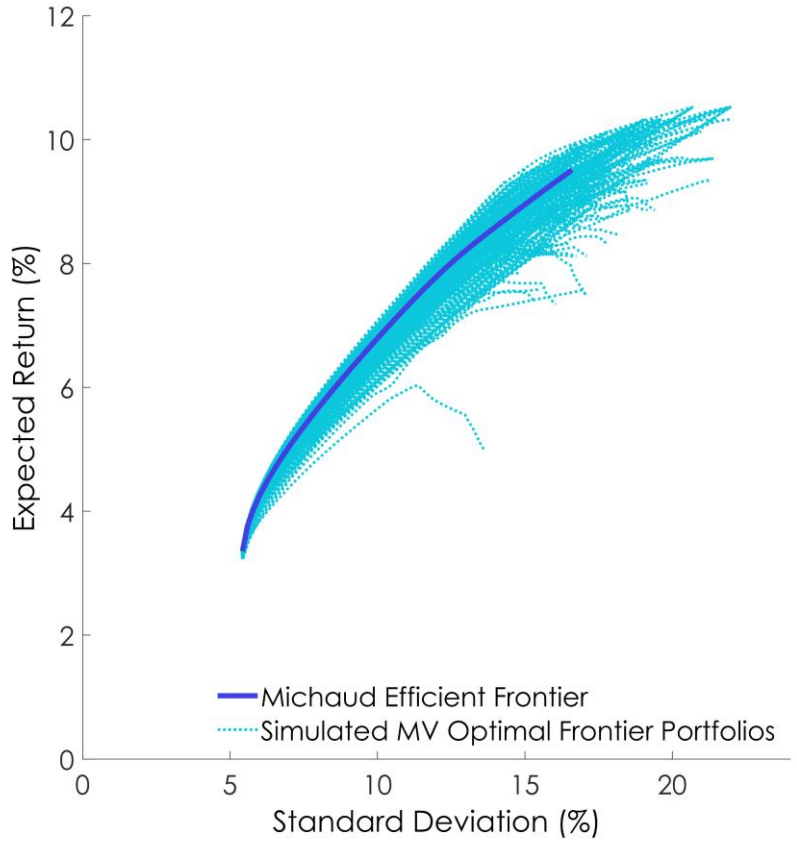


The Michaud Efficient Frontier

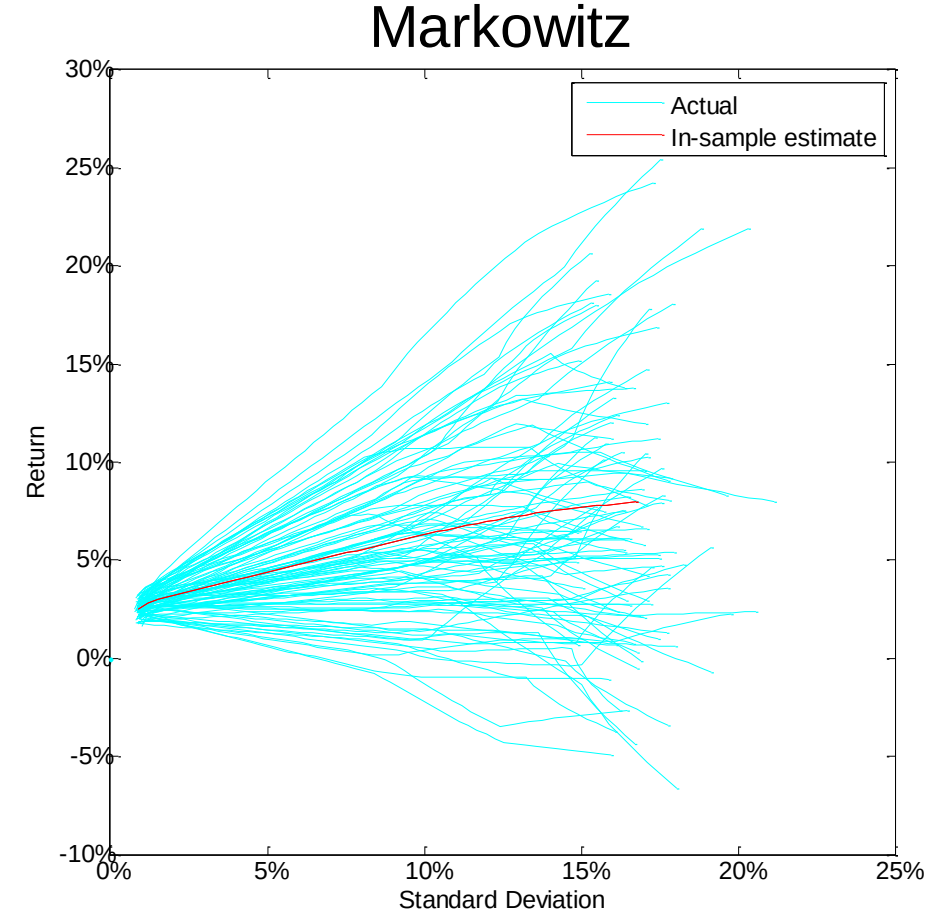
Harvard 1998, (OUP 2008, 2nd ed.), U.S. Patent 6,003,018

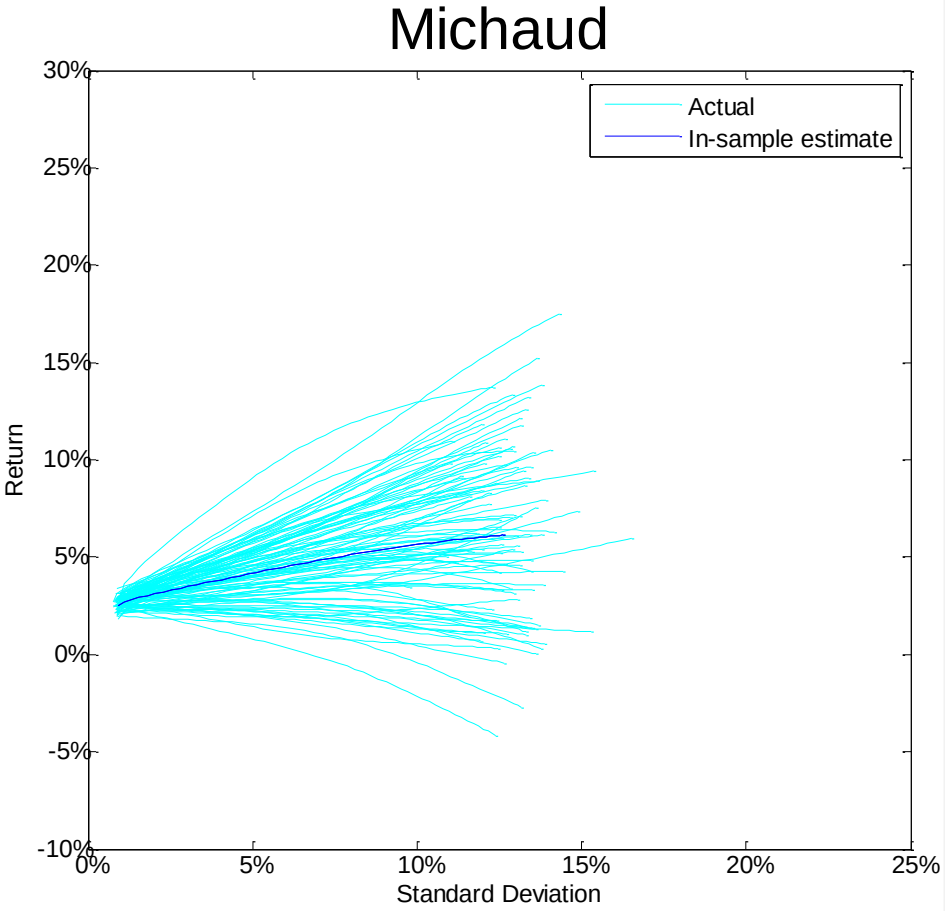
- U.S. patented averaging process
- Optimal allocations relative to thousands of investment scenarios
- Includes tail risks, fat tails, downside risk, black swans, periods when bonds beat stocks, etc.
- A *New* efficient *Frontier*

Michaud Resampled Efficient Frontier and Simulated Efficient Portfolios



Simulated Outcomes





NEW FRONTIER

Case Study

A Current Case: Assets and Estimates

- Current hypothetical estimates of Means, Standard Deviations, and Correlations of a pool of asset classes to use in Global Standard Optimizer
- Purely Hypothetical – we don't use all of these assets
- Process Combines
  - Historical Estimation (with noise reduction),
  - Current Information (e.g. T-Bill rate = 5.33%)
  - Financial Structural Knowledge

Data Sources: Bloomberg,
US Bureau of Labor
Statistics, New Frontier
Estimation Process

Assets and Estimates: Fixed Income

Asset	Mean	Standard Deviation
Cash	3.8%	0.6%
Floating Rate Bonds	4.0%	0.6%
Short Treasuries	3.9%	1.6%
Intermediate Treasuries	4.2%	4.7%
Long Treasuries	4.8%	11.8%
TIPS	4.8%	5.0%
Corporate	5.3%	7.8%
Long Corporate	5.6%	10.6%
Mortgage Backed	4.2%	3.9%
International Treasuries	3.8%	8.8%
Short High Yield	7.6%	7.3%
High Yield	7.2%	9.6%
Emerging Bonds	6.6%	10.0%

Data Sources: Bloomberg, US Bureau of Labor Statistics, New Frontier Estimation Process

Assets and Estimates: Equities and Alts

Asset	Mean	Standard Deviation
US Large Cap Value	9.6%	14.7%
US Large Cap Growth	9.6%	18.1%
US Small Cap Value	10.0%	18.8%
US Small Cap Growth	10.2%	21.7%
US Minimum Volatility	9.4%	12.0%
EAFE Min Vol	8.6%	12.0%
Canada	9.0%	19.3%
Europe	9.7%	18.4%
Switzerland	9.1%	15.8%
Pacific	8.5%	15.7%
International Small Cap	9.6%	19.2%
Emerging Markets	9.8%	18.6%
China	9.4%	26.3%
Gold	4.7%	16.1%
US REITs	8.3%	20.1%
International REITs	8.4%	18.3%

Data Sources: Bloomberg, US Bureau of Labor Statistics, New Frontier Estimation Process

We will examine

- Scenario: Lower Interest Rates
- How we model interest rates
- The impact of a scenario change on these asset estimates
- What happens to the portfolio weights generated by the Optimizer

- This is an illustration only of a complex process and how small changes to an input can have ripple effects through the whole portfolio

Interest Rates Fall

- Scenario: T-Bill rate falls 1 percentage point

- Impact on Other Fixed Income
- Impact on Equities
- Other impacts
- How it changes the portfolios

How we Model Optimizer Inputs

- Combine Information from
  - Historical Market Data – Co-movement of asset returns
  - Current Information – Fixed Income Yields, Geopolitical relations, Market regimes
    - Expressed as Views on portfolios of assets
  - Structural Market Information (e. g. Stocks beat Bonds)
    - Also expressed as Views on baskets of assets
    - Often one basket contrasted against another
  - Statistical Estimation Process Combines all of the above

How we Model Interest Rates

- Risk-Free rate – component of all estimated returns
- Market Portfolio Forecast – view gets adjusted up or down depending on value. Mathematical formula shrinks Equity Premia based on RFR.

- Views on other Fixed Income Assets directly modified by changes in yield curve
  - Often based on differences in yield curve values
- Impact on all assets propagated through correlations – "side effects"
- Revised risk and return estimates affect resampling process

Current hypothetical RFR: 3.84%
Scenario: lowered to 2.84%
Fixed Income Impact

- Floating Rate Bonds down relative to Short Treasurys (correlations)
- Corporates less impacted, HY Down

Asset	Old Mean	New Mean	Difference	Standard Deviation
Cash	**3.8%**	**3.0%**	**-0.8%**	**0.6%**
Floating Rate Bonds	**4.0%**	**3.2%**	**-0.8%**	**0.6%**
Short Treasuries	**3.9%**	**3.7%**	**-0.2%**	**1.6%**
Intermediate Treasuries	**4.2%**	**3.4%**	**-0.8%**	**4.7%**
Long Treasuries	**4.8%**	**4.0%**	**-0.8%**	**11.8%**
TIPS	**4.8%**	**4.1%**	**-0.7%**	**5.0%**
Corporate	**5.3%**	**5.3%**	**0.0%**	**7.8%**
Long Corporate	**5.6%**	**5.5%**	**-0.1%**	**10.6%**
Mortgage Backed	**4.2%**	**3.6%**	**-0.6%**	**3.9%**
International Treasuries	**3.8%**	**3.4%**	**-0.4%**	**8.8%**
Short High Yield	**7.6%**	**7.0%**	**-0.6%**	**7.3%**
High Yield	**7.2%**	**6.7%**	**-0.5%**	**9.6%**
Emerging Bonds	**6.6%**	**6.1%**	**-0.5%**	**10.0%**

Data Sources: Bloomberg, US Bureau of Labor Statistics, New Frontier Estimation Process

"Current" RFR: 3.84%
Scenario: lowered to 2.84%
Equity and Alt Impact

- US, Developed Equities down
- Gold unaffected
- REITs down

Asset	Old Mean	New Mean	Difference	Standard Deviation
US Large Cap Value	**9.6%**	**8.8%**	**-0.8%**	**14.7%**
US Large Cap Growth	**9.6%**	**8.8%**	**-0.8%**	**18.1%**
US Small Cap Value	**10.0%**	**9.3%**	**-0.7%**	**18.8%**
US Small Cap Growth	**10.2%**	**9.4%**	**-0.8%**	**21.7%**
US Minimum Volatility	**9.4%**	**8.5%**	**-0.9%**	**12.0%**
EAFE Min Vol	**8.6%**	**8.0%**	**-0.6%**	**12.0%**
Canada	**9.0%**	**8.5%**	**-0.5%**	**19.3%**
Europe	**9.7%**	**9.3%**	**-0.4%**	**18.4%**
Pacific	**8.5%**	**7.5%**	**-1.0%**	**15.7%**
International Small Cap	**9.6%**	**8.8%**	**-0.8%**	**19.2%**
Emerging Markets	**9.8%**	**9.3%**	**-0.5%**	**18.6%**
Gold	**4.7%**	**4.8%**	**0.1%**	**16.1%**
US REITs	**8.3%**	**7.7%**	**-0.6%**	**20.1%**
International REITs	**8.4%**	**7.8%**	**-0.6%**	**18.3%**

Data Sources: Bloomberg, US Bureau of Labor Statistics, New Frontier Estimation Process

Current Portfolios (left) vs. Reduced Rate Portfolios (right)

Current Rate Portfolios

	20/80	40/60	60/40	75/25	90/10	100/0
Cash	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Floating Rate Treasurys	20.6%	10.7%	4.8%	1.8%	0.3%	0.0%
Treasurys	34.7%	24.2%	12.9%	6.6%	1.5%	0.0%
IG	1.9%	3.8%	4.3%	2.7%	0.8%	0.0%
HY	12.6%	11.6%	10.1%	7.9%	3.9%	0.0%
Other Bonds	6.5%	4.7%	3.3%	2.3%	0.9%	0.0%
US Large Cap	5.8%	12.4%	21.7%	30.3%	39.4%	42.0%
US Small Cap	2.0%	5.0%	7.5%	9.2%	11.4%	14.5%
Min Vol	8.4%	10.1%	8.4%	5.9%	2.7%	0.5%
Developed	2.1%	6.7%	12.4%	16.9%	21.7%	25.7%
EM	1.3%	3.8%	6.1%	7.6%	9.0%	9.4%
Gold	1.7%	3.1%	2.5%	1.6%	0.5%	0.0%
REITs	0.4%	2.0%	4.0%	5.2%	5.9%	5.8%

Reduced Rate Portfolios

	20/80	40/60	60/40	75/25	90/10	100/0
Cash	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Floating Rate Treasurys	8.0%	2.5%	1.0%	0.4%	0.1%	0.0%
Treasurys	43.9%	28.7%	14.0%	6.5%	1.4%	0.0%
IG	3.4%	6.7%	6.7%	4.3%	1.3%	0.0%
HY	13.5%	12.0%	10.3%	7.9%	3.8%	0.0%
Other Bonds	7.0%	4.6%	3.1%	2.1%	0.9%	0.0%
US Large Cap	6.2%	12.5%	21.6%	30.0%	38.9%	41.6%
US Small Cap	2.1%	5.0%	7.4%	9.1%	11.3%	14.3%
Min Vol	7.7%	9.2%	7.6%	5.3%	2.5%	0.4%
Developed	2.1%	6.7%	12.6%	17.2%	21.9%	26.0%
EM	1.5%	4.2%	6.6%	8.1%	9.5%	9.8%
Gold	2.2%	3.8%	3.0%	1.8%	0.6%	0.0%
REITs	0.4%	2.1%	4.1%	5.3%	6.0%	5.9%

Data Sources: Bloomberg, US Bureau of Labor Statistics, New Frontier Estimation Process

Impact of Rate Change Scenario

- Float – Fixed Treasury Tradeoff – Float less valuable in lower rate environment
- IG more attractive
- HY slightly more attractive
- Alts more attractive means less total weight in FI and Equities

	2080	4060	6040	7525	9010	1000
Cash	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Floating Rate Treasurys	-12.6%	-8.2%	-3.7%	-1.4%	-0.2%	0.0%
Treasurys	9.2%	4.5%	1.1%	-0.1%	-0.2%	0.0%
IG	1.5%	2.8%	2.4%	1.6%	0.5%	0.0%
HY	0.9%	0.4%	0.2%	0.1%	0.0%	0.0%
Other Bonds	0.5%	-0.1%	-0.2%	-0.2%	-0.1%	0.0%
US Large Cap	0.4%	0.1%	-0.1%	-0.3%	-0.5%	-0.4%
US Small Cap	0.1%	0.0%	-0.1%	-0.1%	-0.2%	-0.2%
Min Vol	-0.7%	-0.9%	-0.8%	-0.6%	-0.3%	-0.1%
Developed	0.0%	0.0%	0.2%	0.3%	0.3%	0.3%
EM	0.2%	0.4%	0.5%	0.5%	0.5%	0.4%
Gold	0.5%	0.7%	0.4%	0.3%	0.1%	0.0%
REITs	0.1%	0.1%	0.1%	0.1%	0.1%	0.0%

Data Sources: Bloomberg, US Bureau of Labor Statistics, New Frontier Estimation Process

Summary

- These scenarios are for illustration and are not fully rendered investment portfolios!
- Every change to the inputs has consequences across the whole portfolio
- Sometimes these consequences must be managed
- New Frontier's investment process is an interconnected model of how the assets behave together


Q&A

Disclosures:

This information is for information purposes only. It does not constitute an offer or solicitation of securities or investment services or an endorsement thereof in any jurisdiction or in any circumstance in which such offer or solicitation is unlawful or not authorized. None of the information contained in this report constitutes, or is intended to constitute, a recommendation of any particular security or trading strategy or a determination by New Frontier that any security or trading strategy is suitable for any specific person. To the extent any of the information contained herein may be deemed to be investment advice, such information is impersonal and is not tailored to the investment needs of any specific person. All investments carry a risk of loss, including the possible loss of principal. There is no assurance that any investment will be profitable.

New Frontier Advisors, LLC ("New Frontier") is retained as a portfolio strategist ("Strategist") to provide model portfolios. Model portfolios are provided either (1) to registered investment advisors or broker-dealers ("Financial Advisors") through third-party asset management platforms ("Sponsors") or (2) to individual clients where New Frontier acts as subadvisor to the client's Financial Advisor and accesses the client's account through a qualified custodian ("Custodian") to execute the model portfolio's transactions. New Frontier does not provide investment advisory services tailored to the individual needs and objectives of any investor. New Frontier acts solely as subadvisor, strategist, model provider, and/or model manager, and its relationship with any investor is limited to a subadvisory role working with the investor's Financial Advisor. Investors should consult with their Financial Advisor if they have any questions concerning the information provided here.

Disclosures:

Past performance is no guarantee of future results. The portfolio's investment objective, risks, fees, and underlying expenses should be considered carefully before investing. As market conditions fluctuate, the investment return and principal value of any investment will change. Diversification may not protect against market risk. There are risks involved with investing, including possible loss of principal. Volatility represents the expected risk of the portfolio relative to major asset classes. The underlying holdings may invest in foreign and emerging market securities which will involve greater volatility as well as political, economic, and currency risks and differences in accounting methods. Portfolio holdings, exposures, and characteristics are as of the date show and are subject to change at any time. Before investing in any investment portfolio, the investor and Financial Advisor should carefully consider the investor's investment objectives, time horizon, risk tolerance, and fees. The Financial Advisor assumes full responsibility for determining the suitability and fitness of each portfolio for their clients.

These materials are prepared for financial professionals. Please note that any further distribution of these materials must comply with your firm's marketing guidelines as well as applicable rules and regulations. This includes policies and procedures satisfying the SEC's Marketing Rule that specifies that hypothetical performance can only be shared with end clients if is relevant to the likely financial situations and investment objectives of the intended audience. To receive additional information such as the New Frontier brochure (the Form ADV Part 2A), please contact updates@newfrontieradvisors.com