Research Affiliates Model Portfolios

Robust. Adaptive. Disciplined.

Research Affiliates is a global leader in smart beta, active equity, and multi-asset strategies. The Research Affiliates Model Portfolios apply a systematic asset allocation process to a diversified roster of liquid asset classes, as represented by common industry benchmark indices.

Our model portfolios use a robust, adaptive, and disciplined approach that is informed by decades of research and experience. The resulting allocations offer a starting point for well-crafted strategic positioning in client portfolios.

- **Robust:** An evidence-based framework grounded in academic rigor

- **Adaptive:** Portfolios weights that dynamically respond to changing yields

- **Disciplined:** A systematic process institutionalizing a contrarian approach

Long-Term Snapshot

1/1/2000 - 9/30/2025	Conservative	Moderate	Aggressive	All Equity
Benchmark	40% MSCI ACWI 60% Barclays Global Agg	60% MSCI ACWI 40% Barclays Global Agg	80% MSCI ACWI 20% Barclays Global Agg	100% MSCI ACWI 0% Barclays Global Agg
Average Model Mixes				
Annualized Return				
Model	6.1%	7.0%	7.7%	8.3%
Benchmark	5.4%	5.9%	6.3%	6.7%
Annualized Volatility				
Model	6.4%	9.2%	12.3%	15.8%
Benchmark	6.8%	9.6%	12.6%	15.6%
Portfolio Efficiency				
Sharpe Ratio: Model | Benchmark	0.66 | 0.53	0.58 | 0.45	0.51 | 0.40	0.47 | 0.37
Information Ratio	0.30	0.41	0.50	0.61

Performance is based on data from Bloomberg and MSCI. Returns reported in USD. Past performance is not indicative of future results. The performance of the models is constructed using indices only and may change significantly over time and yield materially different results in the future. Please see "Current Allocations" for the indices used in calculating this simulated performance. Currently, no fees are charged for Research Affiliates Model Portfolios (RAMP). The performance reflected above does not reflect any fees for the RAMP service or third-party fees charged in connection with implementing the model portfolio. If such fees were reflected, performance results would be lower. Refer to Appendix for additional definitions and information related to methodology, indices and products selected, fees, and investment strategy. Please see additional important information in disclosures regarding hypothetical performance and the awards described on this page.

Performance & Risk

Performance (Annualized for Periods > 1 Year)   ITD Statistics Since 1/1/2020

As of 2025-09-30	QTD	YTD	1-Year	3-Year	5-Year	10-Year	ITD (1/1/20)	Volatility	Sharpe Ratio	Tracking Error	Info Ratio
Conservative	3.2%	9.4%	8.0%	10.7%	5.8%	5.7%	6.1%	6.4%	0.66	2.1%	0.30
Benchmark	3.8%	9.9%	8.8%	12.4%	5.8%	6.5%	5.4%	6.8%	0.53	-	-
Moderate	4.9%	13.0%	10.8%	14.4%	8.6%	7.8%	7.0%	9.2%	0.58	2.4%	0.41
Benchmark	5.1%	12.8%	11.8%	16.1%	8.6%	8.5%	5.9%	9.6%	0.45	-	-
Aggressive	6.7%	17.1%	14.2%	18.6%	12.0%	10.0%	7.7%	12.3%	0.51	2.6%	0.50
Benchmark	6.4%	15.8%	14.8%	19.9%	11.3%	10.5%	6.3%	12.6%	0.40	-	-
All Equity	7.9%	22.6%	16.9%	22.7%	14.5%	12.0%	8.3%	15.8%	0.47	2.6%	0.61
Benchmark	7.7%	18.9%	17.8%	23.7%	14.1%	12.5%	6.7%	15.6%	0.37	-	-

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Statistics & Scenarios

Statistics

As of 2025-09-30	Relative Up/ Down Capture	Batting Average	Slugging Ratio
Conservative	94%	68%	102%
Moderate	96%	65%	97%
Aggressive	99%	64%	95%
All Equity	102%	62%	95%

Definitions

Up (Down) Capture	Average return of the model portfolio when the benchmark is up (down), divided by the average return of benchmark when the benchmark is up (down)
Batting Average	The percentage of months the model portfolio beats the benchmark over all months since inception
Slugging Ratio	Average positive excess return of the model portfolio vs. its benchmark, divided by the average negative excess return of the model portfolio vs. its benchmark

Scenarios   Tech Bubble

Annualized Returns	3 Years Before Peak	3 Years After Peak	3 Years Before Trough	3 Years After Trough
Conservative	8.2%	3.0%	-2.0%	16.1%
Benchmark	13.2%	-3.9%	-3.1%	13.4%
Excess Return	-4.9%	7.0%	1.1%	2.7%
Moderate	10.1%	-4.1%	-5.6%	21.0%
Benchmark	15.9%	-11.6%	-6.9%	17.1%
Excess Return	-5.9%	7.6%	1.3%	3.9%
Aggressive	12.0%	-10.6%	-9.1%	25.3%
Benchmark	18.6%	-18.9%	-10.7%	20.8%
Excess Return	-6.6%	8.3%	1.6%	4.5%
All Equity	21.2%	-15.9%	-13.5%	28.0%
Benchmark	21.2%	-25.8%	-14.5%	24.4%
Excess Return	0.0%	9.9%	1.0%	3.7%

Note: We define 2/28/00 as the peak of the tech bubble and 2/28/09 as the trough of the financial crisis.

Investment Process

1 Asset Class Index Forecasts

Returns	Volatilities	Correlations

2 Portfolio Optimization

Maximize Risk-Adjusted Returns While Managing:			
Absolute Risk Tolerance	Relative Risk Tolerance	Forecast Uncertainty	Short-Term Momentum

3 Systematic Rebalancing

Target Allocations	
Minimum Trade Thresholds	Minimum Position Sizing

4 Implementation Options

ETFs	Mutual Funds
Targeted & Multi-Factor Solutions	Targeted & Multi-Asset Solutions

For illustrative purposes only. As of September 30, 2025 and subject to change. Refer to Appendix for additional definitions and information related to methodology, fees, indices and products selected, and investment strategy.

Forecasting Tools
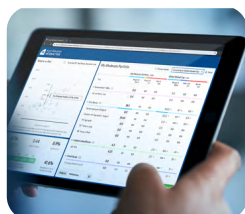
Asset Allocation Interactive

Expected returns & volatilities
for 140+ assets over 40 countries,
model portfolios and other strategies.

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How to Invest

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	ETFs		Mutual Funds	
	Targeted Solutions	Multi-Factor Solutions	Targeted Solutions	Multi-Factor Solutions
Equities				
US Large Value	FNDX PRF		PKAIX SFLNX	--
US Large Growth	--	MFUS	--	--
US Small	FNDA PRFZ		PMJIX SFSNX	--
Int'l Large Value	FNDF PXF		PPYIX SFNNX	--
Int'l Large Growth	--	MFDX	--	--
Int'l Small	FNDC PDN		SFILX	--
Emerging Markets	FNDE PXH	MFEM	PEIFX SFENX	--

Diversifiers				
Global REITs	--		SFREX	
Commodities	--		--	
EM Bonds	--		--	PAAIX PAUIX
US High Yield Bonds	PHB		--	
US TIPS	--		--	

How to Invest

Research Affiliates partners with leading investment management firms to bring our research insights and strategies to market through mutual funds and ETFs.

Visit researchaffiliates.com/how-to-invest.

*If you are interested in discussing options, please contact us. The products referenced above represent registered exchange-traded and mutual funds linked to investment strategies developed or branded by Research Affiliates, LLC as of September 30, 2025, and are subject to change. Research Affiliates, LLC does not make any representation regarding the advisability or suitability of investing in any investment fund or other investment product or vehicle. Research Affiliates, LLC is not compensated for promoting any fund identified herein and instead is only compensated with an asset-based fee as either a licensor of intellectual property or a sub-adviser to an investment adviser. Research Affiliates, LLC is not a broker-dealer and does not effect transactions in securities. See Appendix for more details on ETFs and mutual funds.

Appendix

RAMP Definition and Objective

Research Affiliates Model Portfolios (RAMP) is an asset allocation service, currently provided free of charge by Research Affiliates. The goal of RAMP is to offer investors a view into creating diversified portfolios using forward-looking estimates of risk and return coupled with a consideration of commonly-used passive. All RAMP models are constructed using a set of passive indices (see "Reference Index Benchmarks," below) each representing one of the 16 asset class categories: 7 stocks (US large value, US large growth, US small, International large value, International large growth, International small, and EM); 5 diversifiers (Global REITS, commodities, EM bonds, US high-yield bonds, and US TIPS); and 4 bonds (Global ex US Aggregate, US aggregate, Long US Treasuries, and Short US Treasuries). The RAMP suite consists of four model portfolios, which are referred to as Conservative, Moderate, Aggressive, and All Equity. Each model portfolio is designed to have comparable long-term characteristics as their benchmarks, which are a targeted blend of the MSCI ACWI Index and Barclays Global Aggregate Index. Specifically, the benchmarks for each model portfolio are as follows: 40% MSCI ACWI & 60% Barclays Global Aggregate, for RAMP Conservative; 60% MSCI ACWI & 40% Barclays Global Aggregate, for RAMP Moderate; 80% MSCI ACWI & 20% Barclays Global Aggregate, for RAMP Aggressive; and 100% MSCI ACWI for RAMP All Equity.

RAMP Methodology

RAMP model portfolios are created using a mean variance optimization process that incorporates long-term expected risk and return across a variety of assets. The portfolios are designed to target specific levels of risk aversion to portfolio volatility as well as tracking error aversion to the specified benchmark of each portfolio. Over long horizons, the volatility of each RAMP model will be similar to the associated benchmark volatility levels (6%, 9%, 12%, 14%) with a tracking error level close to 2% against the relevant benchmark. Although the model portfolios are designed to have similar risk characteristics as their benchmarks over long horizons, those characteristics can vary from the benchmark for periods of time. Long-term expected returns are calculated in USD, net of inflation, and are based on starting asset yields and expectations of real cash flow growth. These expected return models are based on research of historical asset characteristics, but may not be indicative of future results over any specific time period. The portfolio construction process also contains various features and constraints meant to minimize turnover, including limits on minimum trading size. Research Affiliates maintains the right to change the methodology used in the creation of its model portfolios at any time and without notice.

Reference Index Benchmarks

We use a set of well-known passive indices to construct the RAMP models. These commonly-used benchmarks are representative of each asset class within the model portfolios and include the following, in the order shown herein:

- *Equities*: Russell 1000 Value (US large value), Russell 1000 Growth (US large growth), Russell 2000 (US small), MSCI EAFE Value (International large value), MSCI EAFE Growth (International large growth), MSCI EAFE Small (International small), and MSCI Emerging Markets (Emerging markets).
- *Diversifiers*: S&P Global REIT Index (Global REITs), Bloomberg Commodity (Commodities), JPMorgan GBI-EM Global Diversified Composite Unhedged (EM bonds), Barclays Corporate High Yield (US high-yield bonds), and Barclays US Treasury US TIPS (US TIPS).
- *Fixed Income*: Barclays Global Aggregate Ex-US Hedged (Global ex US aggregate), Barclays US Aggregate (US aggregate), Barclays US Treasury Long (Long US Treasuries), and Barclays US Treasury 1-3 Year (Short US Treasuries).

In addition, when calculating the historical return, risk, and characteristics of each model portfolio, we substitute the reference index benchmark of five equity asset classes with a corresponding index underlying a RAFI strategy, when return data is available. Specifically, for US large value, US small, international value, and EM stocks, we use Russell RAFI US, Russell RAFI US Index Small, Russell RAFI Developed ex US, and Russell RAFI Emerging Markets Indices, respectively, starting on July 31, 1996. For international small stocks, we use FTSE RAFI Developed Ex US SMid 1500, starting on June 30, 2008.

ETF and Mutual Fund Tickers

The product names corresponding to each ETF and mutual fund ticker referenced in the How to Invest section are as follows:

- *ETF (targeted solutions)*: Schwab Fundamental US Large (FNDX), Invesco FTSE RAFI US 1000 (PRF), Schwab Fundamental US Small (FNDA), Invesco FTSE RAFI US 1500 (PRFZ), Schwab Fundamental International Large (FNDF), Invesco FTSE RAFI Developed Markets ex-U.S. (PXF), Schwab Fundamental International Small (FNDC), Invesco FTSE RAFI Developed Markets ex-U.S. Small-Mid (PDN), Schwab Fundamental Emerging Markets Large (FNDE), Invesco FTSE RAFI Emerging Markets (PXH), and Invesco Fundamental High Yield Corporate Bond (PHB).
- *ETF (multi-factor solutions)*: PIMCO RAFI Dynamic Multi-Factor U.S. (MFUS), PIMCO RAFI Dynamic Multi-Factor International (MFDX), PIMCO RAFI Dynamic Multi-Factor Emerging Markets (MFEM).
- *Mutual Fund (targeted solutions)*: RAE US (PKAIX), Schwab Fundamental US Large (SFLNX), RAE US Small (PMJIX), Schwab Fundamental US Small (SFSNX), RAE International (PPYIX), Schwab Fundamental International Large (SFNNX), Schwab Fundamental International Small (SFILX), RAE Emerging Markets (PEIFX), Schwab Fundamental Emerging Markets Large (SFENX), and Schwab Fundamental Global Real Estate (SFREX).
- *Mutual Fund (multi-asset solutions)*: PIMCO All Asset (PAAIX) and PIMCO All Asset All Authority (PAUIX).

Additional Important Information

References to indexes and benchmarks are hypothetical illustrations of aggregate returns and do not reflect the performance of any actual investment. Investors cannot invest directly in an index. Index performance does not reflect the deduction of advisor fees, trading expenses, or other costs.

Models shown are intended for investment professionals only and not the retail public.

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Appendix (cont.)

Research Affiliates, LLC and its affiliates did not pay fees to be considered for the awards mentioned herein. The methodology and selection criteria for the awards are as follows:

- *Graham and Dodd Awards of Excellence*: Winners are chosen through a two-stage selection process. First, all members of the Financial Analysts Journal Advisory Council and Editorial Board are invited to vote, producing a shortlist of peer-reviewed research articles published in the Journal throughout the year. Second, the G&D Awards Committee (six members selected from the CFA Institute Board of Governors, the CFA Institute Leadership Team, CFA Society Leadership, and the Journal editorial team) collectively decides the award winners from the shortlist.
- *William F. Sharpe Indexing Achievement Award*: A panel of industry experts sift through all original nominations, and select by vote five finalists from each category. These finalists are then submitted to a voting committee comprised of the world's leading academics in the field of indexing research.
- *Bernstein Fabozzi/Jacobs Levy Awards*: Articles are selected annually on the basis of voting by subscribers. The article receiving the most readers' votes wins the Best Article award, and the three next in order win Outstanding Article awards. Authors are not permitted to vote for their own articles. The ballots are tallied by Portfolio Management Research.

Disclosures