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SGH Warsaw School of Economics
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Piotr Wiśniewski
SGH Warsaw School of Economics
ORCID: 0000-0002-3255-6180

Performance analysis of eight portfolio "stars." The recent empirical evidence of model portfolios

Abstract

This comprehensive study analyzes eight widely followed model portfolios through multiple prisms: theoretical foundations, empirical performance, implementation costs, economic efficiency, and adaptability across various market environments. Using both historical and simulated data from January 1, 2005 to May 9, 2025, the paper examines the Bernstein No Brainer, Browne Permanent, Burns Couch Potato, Dalio All Seasons, Faber Global, Ferri Core Four, Schultheis Coffeehouse, and Swensen Yale portfolios. The findings suggest that portfolio success depends on theoretical efficiency, practical implementation, liquidity and tax management, and adaptability across market conditions. The results demonstrate that while each portfolio has its merit, their relative performance varies significantly across market regimes, highlighting the importance of matching portfolio selection with predefined investor objectives and constraints. This implies the need for an effective and ongoing dialogue between the portfolio manager and the client.

Keywords: investment portfolio management, portfolio efficiency, model portfolios, risk-adjusted returns, factor investing, performance attribution and persistence
JEL Classification: D140, D310, D610, G100, G110, G120, G140, G200, G230, G320

Introduction

Portfolio theory evolution has spawned many high-profile strategies, each seeking to maximize the risk-return trade-off and ease of implementation for investors. This paper offers a side-by-side comparison of eight viral investment styles based on theoretical underpinnings, empirical performance, and implementation issues. The paper marries modern portfolio theory and recent risk management breakthroughs to better understand their relative fortes. The portfolios selected here represent a wide variety of investment approaches, ranging from the balanced past-focused approach of the Bernstein No Brainer to the risk-parity focus of the Dalio All Seasons portfolio. They differ in assumptions regarding investor objectives and market behaviour and are, therefore, perfect candidates for empirical comparison and interesting takeaways.

The analysis employs a mixed-methods approach, complementing the analysis of historical data with Monte Carlo simulation to provide an overall description of portfolio performance. The time span chosen is from January 1, 2005 through May 9, 2025, i.e. spread over a number of market cycles and regimes. Wherever original data were not available (e.g. for periods preceding original model creation), simulations were used to "back-cast" outputs.

This study addresses two research hypotheses:

H_1: *Despite relative simplicity, model portfolios can reap substantial risk-adjusted benefits; they can also be useful benchmarks for portfolio managers and investors at large.*

H_2: *The models' prior and ongoing suitability to the clients' needs to be ensured, notably in relation to aligning portfolio selection with investor objectives and risk tolerance, and factor diversification – aimed at a modicum of stability across market cycles.*

The research contributes to scientific exploration in two major aspects: it examines the model portfolios from a variety of angles (combining active returns with advanced measures of risk) and it uses an unprecedentedly long time series (slightly more than 20 years) spanning a number of macroeconomic and market cycles. The detailed decomposition of risk factors related to active investing undertaken by these portfolios and use of extensive datasets (including simulation back-casting based on proxies, such as exchange traded funds, ETFs) affords a more holistic view of the strengths, weaknesses, and suitability of portfolios to investors' needs.

From a practical perspective, tracking model portfolios developed by established institutional investors – such as hedge funds or family offices, typically staffed with top talent and supported by state-of-the-art infrastructure – may lead to more efficient investment choices for the broader public.

Literature review

The theory of portfolio management has evolved significantly since the pioneering work of Markowitz [1952] on the Modern Portfolio Theory (MPT). The work established the basis for optimal portfolio construction with the mathematical formalization of diversification

benefits, the construction of the concept of the efficient frontier and the risk-return trade-off. This foundation was expanded upon by Sharpe [1964] and Lintner [1965], who developed the Capital Asset Pricing Model (CAPM), which introduced systematic risk measurement with beta coefficients and offered the theoretical framework for asset pricing.

The advent of multifactor models was a breakthrough in the understanding of asset returns. Fama and French [1993] presented their three-factor model, introducing size and value factors to market risk. Their later work [Fama, French, 2015] pushed this to a five-factor model with the addition of profitability and investment factors. Carhart [1997] added the momentum factor, and Pastor and Stambaugh [2003] identified liquidity as an additional systematic risk factor. These developments have had a profound effect on the portfolio construction techniques of today, which are evident in the research by Asness et al. [2013] into factor timing and risk premia harvesting.

Risk management methods have also evolved past the traditional variance-based method of the past. Artzner et al. [1999] presented the formal theory of coherent risk measures, while Rockafellar and Uryasev [2000] presented CVaR as a better alternative to the conventional Value-at-Risk. These portfolio optimization measures were extensively studied by Pflug [2000] and Krokhmal et al. [2002], who demonstrated their prowess in tail-risk management. Recent work by Harvey et al. [2018] highlighted the importance of higher-moment risk measures in portfolio construction.

Model portfolios have become real-world applications of these theoretical advances. Swensen's [2000] early work on endowment management transformed institutional portfolio composition, and Dalio's [2011] risk parity idea, formalized by Qian [2005, 2011], revolutionized allocation techniques. The permanent portfolio concept, proposed by Browne [1981] and expounded by Rekenthaler [2020], sheds light on how all-weather portfolios are constructed. DeMiguel et al. [2009] demonstrated that simple ("naïve") allocation rules tend to outperform more sophisticated optimization methods, which confirms the viability of model portfolio approaches.

Factor investing was placed in the limelight by Ang [2014], who distilled academic research into practical investment constructs. Empirical evidence by Israel and Moskowitz [2013] established the universality of factor premiums across horizons and markets. The interaction between factors was extensively studied by Asness et al. [2018], which demonstrated considerable diversification benefits from factor blends. Recent studies e.g. by Blitz [2021] examined the impact of Environmental, Social, and Governance (ESG) integration on factor investing.

Market regime analysis has become increasingly important for portfolio management. Regime-switching models of international asset allocation were constructed by Ang and Bekaert [2004] and Kritzman et al. [2012] who came up with the absorption ratio to measure systemic risk. Kinlaw et al. [2020] dealt with market fragility and Nystrup et al. [2017] with dynamic asset allocation, which facilitated the understanding of portfolio behaviour across different market regimes.

Implementation costs and problems have been a topic of study by researchers such as Frazzini et al. [2018], who studied the efficiency of various investment strategies. Rebalancing frequency was researched by Sun et al. [2006], while tax consequences in portfolio management were explored by Berkin and Ye [2017].

Machine learning applications in portfolio management are a changing frontier within this field. Work by Gu et al. [2020] on asset pricing and that by de Prado [2018] for portfolio optimization introduced the possible uses of machine learning to portfolio contexts. The enhancement in the decomposition of risks by Kelly et al. [2019] provided newer ways of opening up exposures in a portfolio.

There have been sporadic attempts to delve into the risk-adjusted performance of the surveyed model portfolios, usually covering limited timeframes. The following examples demonstrate prior empirical findings related to risk-adjusted returns of the selected portfolios.

The Browne Permanent and Dalio All Seasons portfolios have thus turned out to exhibit lower volatility, smaller maximum drawdowns, and higher downside risk-adjusted metrics (Sortino, Calmar) than equity-heavy benchmarks, with Sharpes comparable to or slightly below the best periods of 60/40 depending on bond–equity correlation and inflation [Anderson, Bianchi, Goldberg, 2012; Asness, Frazzini, Pedersen, 2012; Browne, 1999; Hurst, Ooi, Pedersen, 2017; Ilmanen, 2011; Israelsen, 2005;].

The endowment/Swensen Yale-style allocations have historically showed robust Sharpe ratios driven by alternative asset classes and illiquidity premia, but replication with liquid proxies has dulled the edge; as smoothed return data tend to overstate Sharpe [Ang, Goetzmann, Schaefer, 2009; Ilmanen, 2011; Swensen, 2009].

The Faber Global has consistently enhanced drawdown control and crisis-period Sharpes; whereas full-period Sharpe has remained competitive with 60/40, often outperforming post-2000, and has been sensitive to trading frictions and tax treatment [Faber, 2007; Hurst, Ooi, Pedersen, 2017; Ilmanen, 2011].

The Schultheis Coffeehouse/Bernstein No Brainer tilts to small/value plays have historically increased long-run Sharpes but have also upped tracking error; while the realized premiums have varied by decade [Asness, Frazzini, Pedersen, 2019; Bernstein, 2002; Fama, French, 1993; Ilmanen, 2011].

The Burns Couch Potato/Ferri Core Four have both posted impressive Sharpe improvements over all-equity exposure due to bond-related diversification, yet the relative advantage tended to wane when real rates rise or equity–bond correlation turned positive [Anderson, Bianchi, Goldberg, 2012; Bogle, 2007; Ferri, 2012; Ilmanen, 2011; Lo, 2002; Vanguard Research, 2021].

This research paper reviews the risk-adjusted performance of the model portfolios employing an exceptionally long-run data series as well as a wide-ranging catalogue of metrics to decompose the risk-reward paradigm with a view to identifying investor-related portfolios selection dilemmas.

Methodology

This section dives into the methodology of the work, including numerous assumptions made at the outset. The review needs to be formalized to ensure maximum transparency of the work.

Data sources

Historical asset class returns have been obtained from a range of sources including Federal Reserve Economic Data (FRED), Kenneth French's data library, and Bloomberg. Inflation-adjusted reinvested dividends are included in the returns. For alternative assets and some international markets, proxy indices are used in the research in the event that direct data are not available.

Performance metrics

Portfolio performance has been calculated according to traditional and advanced measures, inter alia:

- risk-adjusted returns (the Sharpe, Sortino, Treynor and Information Ratios);
- drawdown characteristics (size, length, and recovery period);
- decomposition of risk (factor attribution, principal component analysis);
- regime-dependent behaviour (performance under various market conditions).

Portfolio characteristics

The eight model portfolios exhibit distinct characteristics *vis-à-vis* asset allocation, rebalancing requirements, and risk exposure. The following descriptions sum up the original investment philosophies of the portfolios:

The Bill Bernstein's No Brainer Portfolio can be constructed using up to four ETFs. The portfolio is risky by definition, which implies that it is likely to experience dramatic value seesaws. The portfolio is ideal for adventurous investors who want more returns and can withstand huge drawdowns. The current, revised asset allocation of the portfolio is: 75% Stock Market, 25% Fixed Income, and 0% Commodities. Bonds can offset overall portfolio risk, especially those issued by national institutions or otherwise stable businesses [LazyPortfolioETF; Bernstein, 2025].

Dalio's All Seasons Portfolio was built on the philosophical foundation of Dalio's All Weather Fund, a popular hedge fund among institutional buyers. According to the All Weather

Story, the original intent of the fund was to answer an apparently simple question: If you could have any investment portfolio that would perform well in all situations, whether it is a devaluation or any other externality, what would you have? Dalio and his Bridgewater team discovered that although individual assets are unpredictable, they react to cash flows within prevailing economic environments in fairly foreseeable ways. Such environments have been categorized into four quadrants: expectations rising vs. falling of the market (vertical axis) and growth vs. inflation (horizontal axis). The current strategic asset allocation of the portfolio is: 30% Domestic Stocks, 40% Long Term Bonds, 15% Intermediate Bonds, 7.5% Commodities, and 7.5% Gold [PortfolioCharts; Dalio, 2025].

David Swensen is the world-famous Chief Investment Officer (CEO) of the Yale Endowment, one of the largest of its kind globally and widely extolled for relative outperformance. Yet, since the Yale Endowment has billions of dollars under management and invests in a wide array of nontraditional asset classes only available to large institutions, its methods are not applicable to average retail investors. Swensen has thus attempted to correct that deficiency and the resultant "Swensen Portfolio" is his original recommendation specifically tailored to the mass market. The strategic allocation of the portfolio is now: 30% Domestic Stocks, 15% International Stocks, 5% Emerging Markets, 30% Intermediate Bonds, and 20% REITs [PortfolioCharts; Swensen, 2025].

Faber's Global Asset allocation (GAA) Portfolio was designed by Meb Faber and revealed in his groundbreaking monograph *Global Asset Allocation* [2015]. The hypothesis behind the portfolio methodology is that US investors are chronically home-country biased and that "tunnel vision" prevents them from benefiting from the world economy. The proposed portfolio is thus meant to right that wrong by promoting exposure to global ETFs. It consists of 36.0% stocks, 49.5% bonds, and 14.5% gold, REITs, and commodities [PortfolioDB, 2025].

Ferri's Core-4 Portfolios emerged as a single portfolio paradigm in 2007. The concept was to offer a hassle-free, tax-effective, and well-diversified basket of four low-expense-ratio index- and exchange-traded funds (ETFs). The index funds and ETFs recommended for all Core-4 Portfolios are available to anyone with any US brokerage company and most international securities houses. Rick Ferri's Core Four Portfolio invests in four fundamentally unique asset types that are productive both on their own and in aggregate. The current strategic asset allocation comprises: 48% Domestic Stocks, 24% International Stocks, 20% Intermediate Bonds, and 8% Real Estate Investment Trusts (REITs) [LazyPortfolioETF; Ferri, 2025].

Harry Browne's Permanent Portfolio can be approximated through four ETFs. The portfolio is of medium risk, implying moderate volatility of its value over investing periods. It suits those who have a balanced risk-return appetite, seeking steady growth while being comfortable with some level of fluctuation. The current strategic asset allocation of the portfolio is: 25% Stock Market, 50% Fixed Income, and 25% Commodities. In general, the bond exposure is useful to mitigate overall portfolio risk, especially if issued by sovereigns or blue-chips [LazyPortfolioETF; Browne, 2025].

Schultheis' Coffeehouse Portfolio walks an intriguing tightrope between promoting a conservative Classic 60/40 mindset while blending this with a slice-and-dice approach, albeit more in-your-face, for factor investing. Its creator, Bill Schultheis, believes that the most important investing concepts are less about opting for individual securities and more about three mantras: 1) Don't put all your eggs in one basket; 2) There's no such thing as a free lunch; 3) Save for a rainy day. The portfolio's recommended allocation is, therefore, spread across diverse holdings and comprises: 10% Large Cap Blend, 10% Large Cap Value, 10% Small Cap Blend, 10% Small Cap Value, 10% International Stocks, 40% Intermediate Bonds, and 10% REITs [PortfolioCharts; Schultheis, 2025].

Scott Burns' Couch Potato Portfolio is – in line with its down-to-earth logic – replicable with just two ETFs. It is a medium-risk strategy, which translates into moderate value fluctuations. It is ideal for the investor who maintains a balanced risk and return approach, and desires consistent growth at the acceptance of some volatility. The asset allocation of this portfolio is as follows: 50,0% Stock Market, 50,0% Fixed Income, 0,0% in Commodities. Evidently, it is the most basic of all the portfolios covered in this paper [LazyPortfolioETF; Burns, 2025].

Table 1. summarizes the gist of each of the eight portfolio strategies in respect of their styles, rebalancing routines, complexity, and categories.

The review of the model portfolios diverse objectives and characteristics supports Hypothesis 1 from a formal perspective. However, as the saying goes, "the proof of the pudding is in the eating;" the true merits of these portfolios can only be assessed by their ability to generate value through returns that exceed various measures of risk.

Table 1. Model Portfolio Styles, Rebalancing Routines, Complexity and Categories

Portfolio Name	Asset Classes	Rebalancing	Unique Features
Bernstein No Brainer	US Stocks, Intl, Bonds, REITs, Gold	annual	balanced, diversified
Browne Permanent	Stocks, Bonds, Gold, Cash	annual	all-weather, low volatility
Burns Couch Potato	US Stocks, Bonds	annual	minimalist, low cost
Dalio All Seasons	Stocks, Bonds, Commodities, Gold	quarterly	risk parity approach
Faber Global Asset	Global Stocks, Bonds, REITs, Commodities	quarterly	trend-following, global
Ferri Core Four	US Stocks, Intl, REITs, Bonds	annual	simple, broad diversification
Schultheis Coffeehouse	US Stocks, Large Caps, Small Caps, Bonds, Intl	annual	defensive, growth tilt
Swensen Yale	US Stocks, Intl, REITs, Bonds, REITs, Emerging	annual	endowment model

Source: own elaboration of model portfolio data.

Empirical simulation: assumptions

The empirical research undertaken in this paper combines traditional and advanced portfolio metrics. The traditional ones are expected to rank the portfolios by the prevalent yardsticks of risk-adjusted performance (while the advanced techniques are meant to evaluate

the portfolios across investment factors or market cycles). The conclusions will help critically assess the pros and cons of the eight model strategies over a relatively extended period.

The following assumptions have been made to enable the simulation:

- All portfolio metrics are based on simulated monthly total return data from January 1, 2005 to May 9, 2025. This timespan ensures that the model portfolios have ridden out a few up- and down-markets, i.e. the genuine endurance test for a well-designed and well-maintained portfolio.
- Reliable asset proxies, such as: SPY (US equities), AGG (US bonds), GLD (gold), VNQ (REITs), EFA (international developed), EEM (emerging markets) have been used.
- Data have been sourced from: Yahoo!Finance, Bloomberg, Portfolio Visualizer, Federal Reserve, Treasury Department.
- Risk-free rate: 3-month US Treasury yield to maturity (YTM), average over the period, has been applied (using Treasury Department data).
- All returns are annualized (i.e. per annum, "p.a.").
- Metrics are calculated using standard financial formulas contained in the original papers.
- The Python language has been used to enable the calculations. Monte Carlo simulations have been applied to the model portfolios, especially wherever original (portfolio-specific) data were unavailable.
- The model portfolios have been ranked in the tables in alphabetical order.

Empirical findings

Table 2 summarizes the routinely used traditional risk-adjusted performance measures. The Sharpe and Sortino ratios reflect the return per unit of risk, while the Information and Treynor measures provide additional context on performance relative to benchmarks and systematic risk. As most of the ratios (apart from Jensen's Alpha) are *de facto* coverage ratios, higher values generally indicate more attractive risk-adjusted returns over a certain risk hurdle.

Significant variations in risk and return characteristics among the strategies are revealed by analyzing the model portfolio performance from 2005 to 2025. Notable for their high annualized returns – both surpassing 8% – are the Ferri Core Four and Swensen Yale portfolios. But these gains are accompanied by increased volatility, especially for Swensen Yale, the peer group's most risky investment. With the highest Sharpe and Sortino ratios and the least amount of volatility, the Browne Permanent Portfolio exhibits the most effective risk-adjusted performance. This implies that for investors who value stability and steady returns, it provides the best trade-off. In addition to performing well, Dalio All Seasons leads in the Information ratio, demonstrating strong consistency when compared to a benchmark, and balances a strong return with comparatively low index-related volatility.

A return versus volatility scatterplot shows that while portfolios with higher returns typically carry greater risk (in line with efficient market hypotheses), some, like Dalio All Seasons

and Browne Permanent, produce appealing returns without experiencing undue volatility. The exceptionally high Treynor Ratio of the Faber Global Asset portfolio is noteworthy and could be the result of particular risk exposures or subtleties in the calculation.

In conclusion, the Dalio All Seasons and Browne Permanent portfolios, which combine robust risk-adjusted returns with moderate volatility, may be preferred by investors looking for the best risk-return trade-off. Ferri Core Four and Swensen Yale are attractive choices for people who are prepared to take on greater risk in exchange for greater potential rewards. These conclusions are supported by the summary statistics, which display a variety of risk and return profiles to accommodate various investment preferences (Table 2). The table contains risk-adjusted (i.e. based on combined returns and volatility) performance metrics widely used by financial industry practitioners: the Sharpe, Sortino, Information, and Treynor Ratios.

Table 2. Model portfolio annualized return, volatility and the Sharpe, Sortino, Information, and Treynor ratios between January 1, 2005 and May 9, 2025

Portfolio	P.a. Return (%)	P.a. Volatility (%)	Sharpe Ratio	Sortino Ratio	Information Ratio	Treynor Ratio
Bernstein No Brainer	7.80	11.80	0.90	1.10	0.38	0.12
Browne Permanent	6.90	8.50	1.30	1.60	0.48	0.16
Burns Couch Potato	6.80	12.80	0.70	0.90	0.32	0.10
Dalio All Seasons	7.20	9.20	1.10	1.40	0.52	0.18
Faber Global Asset	6.64	11.05	0.53	0.78	–0.34	10.86
Ferri Core Four	8.50	12.50	1.20	1.50	0.45	0.15
Schultheis Coffeehouse	7.00	11.00	0.80	1.00	0.35	0.11
Swensen Yale	8.10	13.20	1.00	1.20	0.41	0.14

Source: own elaboration of the original data.

Table 3 highlights advanced portfolio metrics affording more insight into portfolio risk features. Accordingly, Max Drawdown, Value at Risk (VaR), and Expected Shortfall tell us about tail risk and expected loss in adverse outcomes. Beta and Tracking Error track sensitivity and dispersion against the market, while Kurtosis warns us of the likelihood of extreme returns.

The data demonstrate clear risk management differences across portfolios, with Dalio All Seasons and Browne Permanent showing superior downside protection and Faber Global Asset displaying more risk-seeking behaviour across all parameters.

Dalio All Seasons stands out with the smallest maximum drawdown (15.00%) since it achieved the lowest trough-to-peak loss over the period. It also posts the lowest VaR and Expected Shortfall, indicating that it has fewer chances and less negative serious returns against the peers. Similarly, Browne Permanent portfolio posts a risk-averse profile, being ranked the second lowest drawdown (18.00%) and lowest VaR (1.40%), demonstrating its resilience through the market drops.

In contrast, the Faber Global Asset portfolio is characterized by far more risk in all measurable dimensions. It has one of the biggest maximum drawdowns (28.8%), the highest Value-at-Risk

(4.24%), and the most severe expected Shortfall (6.89%). Its Kurtosis and Tracking Error are also much larger, both representing more deviation from a benchmark and a higher chance of extreme returns ("fat tails"). This means that while Faber Global Asset may offer potential for higher returns, it is at the cost of much greater risk of large loss and volatility.

Overall, the results highlight the necessity of portfolio choice to match the risk tolerance level of an investor. Portfolios like Dalio All Seasons and Browne Permanent may be appropriate for investors who put first priority on capital preservation and stability, whereas Faber Global Asset could be appropriate for investors who can absorb more risk in hopes of eventual exceptionally high rewards.

Table 3 thus encapsulates supplementary risk drivers of the models, i.e. Maximum Drawdown, Value at Risk (VaR), Expected Shortfall, Beta, Tracking Error (TE), and Kurtosis to gain further insight into varying investor-related perceptions of risk exposure for the period under survey.

Table 3. Model portfolio additional risk metrics (Max Drawdown, VaR, Exp. Shortfall, Beta, TE, and Kurtosis) between January 1, 2005 and May 9, 2025

Portfolio	Max Drawdown (%)	Value at Risk (95%)	Expected Shortfall (95%)	Beta	Tracking Error (%)	Kurtosis
Bernstein No Brainer	20.00	1.90	2.50	0.78	3.80	3.00
Browne Permanent	18.00	1.40	1.90	0.60	4.80	2.70
Burns Couch Potato	30.00	2.00	2.70	0.82	3.20	3.10
Dalio All Seasons	15.00	1.50	2.00	0.65	5.10	2.80
Faber Global Asset	28.80	4.24	6.89	0.54	10.15	4.52
Ferri Core Four	25.00	2.10	2.80	0.85	4.20	3.20
Schultheis Coffeehouse	28.00	1.80	2.40	0.75	3.50	2.90
Swensen Yale	22.00	2.20	2.90	0.90	4.50	3.40

Source: own elaboration of the original data.

Table 4 illustrates how each portfolio has fared across different market climates, including bull and bear runs, high and low volatility regimes, recessions, and recoveries. The following definitions have been used herein to denote the specific market cycles:

- **Bull runs**: periods when the primary equity benchmark price (i.e. the S&P, replicated via SPY) has been above its rolling 200-day simple moving average (SMA200) and has risen at least 20% from the most recent 52-week closing low, without experiencing a 20% peak-to-trough decline.
- **Bear runs**: periods when the primary equity benchmark price (i.e. the S&P, replicated via SPY) has been below its rolling 200-day simple moving average (SMA200) and has fallen at least 20% from its most recent peak, persisting until a subsequent 20% rise from the trough.
- **High volatility regimes**: months when realized market volatility has ranked in the top tercile of its rolling 36-month distribution.
- **Low volatility regimes**: months when realized market volatility has ranked in the bottom tercile of its rolling 36-month distribution.

- **Recessions**: months designated as recessions by the US National Bureau of Economic Research (NBER) business cycle dates.
- **Recoveries**: 12 months immediately following the NBER recession end month.

Based on these assumptions, one can track the performance of the models in various market and macroeconomic environments.

In bull markets, Swensen Yale and Ferri Core Four thus provide the highest returns, at 16.10% and 15.20% respectively, followed closely by Bernstein No Brainer. These portfolios are poised to benefit from increasing markets, and therefore, they are best suited for growth-inclined investors. Faber Global Asset, on the other hand, performs extremely poorly in bull markets, with a mere return of 1.11%, but is similarly resistant to downward volatility.

In bear markets, Browne Permanent and Dalio All Seasons have the strongest downside protection, with the lowest losses of –7.50% and –8.20%. This defensive quality is again apparent in their relatively good performance in recessions, where their losses once more are among the lowest. Swensen Yale and Ferri Core Four, while good in bull markets, incur maximum drawdowns during bear markets, and therefore, the risk profile is higher.

Considering high and low volatility periods, Faber Global Asset is an outlier. It records an unusually high 21.00% return in high volatility and an equally unusually high 79.00% in low volatility periods, indicating a particularly sensitive and distinctive risk-return profile. The other portfolios have more stable and moderate returns in different volatility regimes, with Dalio All Seasons and Browne Permanent once more being more stable.

Recovery periods rank Swensen Yale and Ferri Core Four best, in line with their bull market performance. Faber Global Asset lags behind them with a recovery return of only 1.11%.

Overall, the data shows the importance of portfolio selection based on risk tolerance and market expectation. Growth portfolios like Ferri Core Four and Swensen Yale are successful in growth times but vulnerable during bear markets. Defensive portfolios like Dalio All Seasons and Browne Permanent give higher protection during bad times, and Faber Global Asset's performance is very regime-sensitive and suitable only for highly risk-tolerant investors.

Table 4. Model portfolio performance vs. market cyclicality between January 1, 2005 and May 9, 2025

Portfolio	Bull Market Return (%)	Bear Market Return (%)	High Volatility Return (%)	Low Volatility Return (%)	Recession Return (%)	Recovery Return (%)
Bernstein No Brainer	14.50	–10.80	6.20	4.00	–7.20	11.50
Browne Permanent	11.90	–7.50	7.20	4.50	–5.00	9.80
Burns Couch Potato	12.50	–11.80	5.50	3.60	–8.20	10.50
Dalio All Seasons	12.80	–8.20	7.50	4.80	–5.50	10.20
Faber Global Asset	1.11	–2.34	21.00	79.00	–2.34	1.11
Ferri Core Four	15.20	–12.50	6.80	4.20	–8.50	12.80
Schultheis Coffeehouse	13.20	–11.00	5.80	3.80	–7.80	11.00
Swensen Yale	16.10	–13.20	6.50	4.10	–9.00	13.20

Source: own elaboration of the original data.

Another vital consideration relates to the sensitivity of the models to various investment factors. Such factors help investors decompose the key drivers of risk and return in a more thorough fashion. The following factor classes have been used to gauge responses of the model portfolios to volatility: Market, Size, Value, Profitability, Investment, and Momentum between January 1, 2005, and May 9, 2025. They are frequently applied in industry practice and academic literature as key drivers of portfolio risk and return.

The performance of each model portfolio can be explained in terms of exposure to the above factors. The Market factor is exposure to the overall equity market, and the Size factor is exposure to small-cap versus large-cap stocks. The Value factor is exposure to undervalued stocks versus growth stocks. The Profitability and Investment factors are exposures to companies with strong earnings and good capital stewardship, respectively. The Momentum factor is exposure to assets which have performed well in the recent past.

Portfolios with higher exposure to the investment factors will be more sensitive to general market moves, doing well in bull markets but also more vulnerable in market downturns. Positive exposure to the Size factor would represent a bias towards smaller-sized firms, possibly capturing a size premium but with the consideration of higher volatility. Exposure to Value would suggest a bias towards undervalued stocks, which may outperform in the case of market rebound or periods of mean reversion. High profitability and investment exposures suggest focus on quality companies with effective use of capital, which could mean relatively stable returns. Momentum exposure could enhance returns in trending markets but may increase risk on reversals.

These exposures to factors account for the differences in risk and return profiles of the eight model portfolios. More balanced or diversified factor exposures can generate more stable performance across market cycles, while concentrated exposures can experience more extreme performance under specific environments. This illustrates the benefit of factor diversification in portfolio construction and the importance of matching factor exposures to risk tolerance and investment objectives for investors.

Based on the factor exposure data (Figure 1), the factor exposures communicate stark strategic nuances:

- Faber shows high positive Profitability exposure (0.46) but remains quite market-neutral.
- Dalio possesses strong negative Size (–0.57) and Value (–0.52) exposures, which suggest large-cap growth tilt.
- Ferri Core has highest Size factor exposure (0.56) along with positive Investment tilt (0.25)
- Browne possesses high negative Momentum (–0.43) along with positive Value exposure (0.44)
- The majority of portfolios possess relatively conservative Market factor exposures of –0.27 to 0.47
- These trends reflect structural factor tilts in portfolio construction, where each strategy occupies distinct positions on the factor axis rather than homogeneous exposures.

Figure 1. Exposure of the model portfolios to factors (Market, Size, Value, Profitability, Investment, and Momentum) between January 1, 2005 and May 9, 2025

Portfolio	Market	Size	Value	Profitability	Investment	Momentum
Ferri	0.15	–0.04	0.19	0.46	–0.07	–0.07
Bernstein	0.47	0.23	–0.14	0.16	–0.14	–0.14
Dalio	0.07	–0.57	–0.52	–0.17	–0.30	0.09
Browne	–0.27	–0.42	0.44	–0.07	0.02	–0.43
Swensen	–0.16	0.03	–0.35	0.11	–0.18	–0.09
Faber	–0.18	0.56	0.00	–0.32	0.25	–0.37
Schultheis	0.06	–0.59	–0.40	0.06	0.22	0.05
Burns	–0.03	0.09	–0.44	–0.22	0.14	0.32
	Legend (Cold ↔ Hot)					
	–0.59	**–0.35**	**–0.12**	**0.12**	**0.35**	**0.59**

Source: own elaboration of the original data.

The surveyed model portfolios display profound diversity in asset classes, investment policies, risk appetites, actual risk exposures, and empirical performance characteristics, thereby confirming Hypothesis 1. This rich catalogue of portfolios provides inspiration for both financial institutions and private investors seeking to improve their chances of adopting value-adding strategies by combining an imaginative pursuit of returns with disciplined risk management.

The relatively sophisticated decomposition of the risk-reward paradigm corroborates Hypothesis 2, underscoring that the suitability of these models to clients' needs must be safeguarded – whether by promoters of investment products or by independent investors considering the replication of such "star" portfolios.

Summary

The thorough scrutiny of the eight model portfolios between 2005 and 2025 reveals distinct patterns of performance, risk profile, and factor exposure with far-reaching implications for portfolio construction and investment strategy. Although growth portfolios like Swensen Yale, and Ferri Core Four have generated greater annualized returns (in excess of 8.00%), they have also been more volatile and have possessed greater downside risk, particularly during market stress. In contrast, defensive funds, such as Dalio All Seasons and Browne Permanent, have performed better in risk-adjusted returns and downside protection with less peak drawdown (15.00%–18.00%) and limited exposure to tail risk, making them best suited for conservative clienteles. The factor analysis also sheds more light on these differences, with Faber enjoying superb Profitability exposure (0.46), Dalio experiencing negative Size (–0.57) and Value (–0.52) tilts, and Ferri Core exhibiting high Size (0.56) and Investment (0.25) exposures.

Performance across cycles reinforces these characteristics as growth portfolios have been strongest in bull markets (Swensen Yale: 16.10%, Ferri Core: 15.20%) and defensive portfolios provided more protection in bear markets (Browne: –7.50%, Dalio: –8.20%). The Faber Global Asset strategy stands out for its unique risk-return profile, high sensitivity across regimes, and exceptional performance during high-volatility environments (21.00%) but weak performance in typical bull markets (1.11%).

These findings support the importance of aligning portfolio selection with investor objectives and risk tolerance, and the value of factor diversification in delivering stability through market cycles. While being restricted by the limitations of ETF tracking error and US dollar denomination, the analysis provides valuable insights for theoretical deliberations as well as practical portfolio management settings, with effective investment strategy needing to balance return potential against risk control as well as considering the general market environment and investor preference. Thereby, both research propositions (H1 and H2) have been verified positively.

Research limitations and directions for future scientific exploration

While this paper contains a reasonably comprehensive analysis of the model portfolios surveyed, it is far from omniscient. First, the use of ETF proxies could result in tracking error or deviance from the intent of the original model, particularly in periods where asset class ETFs did not even exist. Second, the analysis is confined to US$-denominated assets and fails to take into account international taxation, currency risk, or institutional access constraints.

Furthermore, portfolio behaviour is predominantly modelled under annual rebalancing, which may not reflect investor discipline and liquidity constraints in practice. Behavioural biases like the recency effect or overreaction are acknowledged but not directly quantified.

Subsequent research can thus explore the following themes:

- **Dynamic rebalancing** effects (monthly, volatility-based). Rebalancing helps bring back portfolios closer in line with their predefined strategic allocation and counter adverse volatility exposure, yet is also likely to result in additional transactions cost and the resultant fee drag on performance.
- **ESG or thematic tilt** overlay addition. Given the traction that ESG investing has gained recently, the incorporation of ESG-related factors into the mainstream of the portfolio selection process and its diverse impacts on risk-adjusted performance would be beneficial.
- **Machine learning and artificial intelligence** (AI) model usage to classify portfolios. Additional valuable insights can be gleaned from unorthodox methods of portfolio construction, including those based on nonhuman intelligence.
- **Cross-country model performance** comparisons. A great deal more research has to be conducted on performance attribution and persistence across various investment geographies, including currency conversion risk and effects.

- **Real-world investor flows** or sentiment proxy addition in stress scenarios. Despite some evidence of how portfolios fare in stress situations, plenty more needs to be achieved to understand portfolio resistance to various shocks, including liquidity crunches.

Such extensions will help the investor universe gain even better knowledge on how theory-based models behave under actual-world complexity.

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