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Optimal portfolios for optimal investors.

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Rewarded factors such as value, momentum, and quality, and not just market beta, explain the cross-section of expected returns. Conversely, a small group of successful active managers that have been more actively taking risk have shown a better chance of outperforming going forward. We believe that blending such "top managers" with rewarded factors is essential for a risk- and cost-optimal active portfolio.

Top is better than average

The level of success of an average active equity manager has been variable. This is intuitive given the simple arithmetic truth that the weighted-average actively managed U.S. dollar has to underperform the cap-weighted market return.[i] Indeed, in Lipper's dataset of 396 U.S.-domiciled large-cap equity funds that were launched before January 1999, we see a meager 0.11% active return gross of fees over the 20-year period between January 2002 and January 2022. Funds in the global universe investing in both developed and emerging markets averaged about 1.1% over the same period but, with an average expense ratio of around 1.5%, still lagged net of fees.

What if we could avoid so-called "closet indexers"? Cremers, et al. (2016), gathered evidence from more than 10,000 mutual funds across 32 countries in the 2000s and concluded that the most actively managed funds outperform their benchmarks despite charging higher fees. In a study of 1,380 U.S. active equity managers between 1990 and 2009, Petajisto (2013) showed that those that didn't have high active shares or take enough risk underperformed their benchmarks after fees, but that outperformance persisted in portfolios with high active risk. As shown in Table 1 and Exhibit 1, top managers that have been successfully running high-conviction portfolios continued to outperform going forward until January 2022. However, the approximately 8% active risk of an average top manager is too high for most investors. Simply adding risk-control positions is like taking ballast on an early-day cargo ship; it's useful to steady the ship but does not add commercial value. Traditional multi-managers manage such risk by building a portfolio of multiple managers. It helps but leaves the active risk at more than 5%, as Table 1 shows, which is not ideal.

Table 1: Performance of top managers, Jan 2002 - Jan 2022

Top managers		Active return	Active risk	Information ratio	Idiosyncratic alpha
U.S.	Average	1.12%	8.35%	0.14	0.73%
	Portfolio of 5	1.12%	5.25%	0.21	0.73%
Global	Average	2.55%	8.36%	0.31	1.65%
	Portfolio of 5	2.55%	5.26%	0.49	1.65%

Exhibit 1: Annualized active return comparison

Source: SEI, Lipper. Jan 2002 - Jan 2022. Active return represents the gross manager return minus benchmark return. Top managers that are high-conviction outperformers are updated annually[ii]. Idiosyncratic alpha is estimated in a univariate regression of the manager's active return on the realistic active return of a factor[iii]. Realistic active returns of factors are calculated as raw active returns deducted by half of the sample mean and estimated transaction costs. Past performance does not predict future returns.

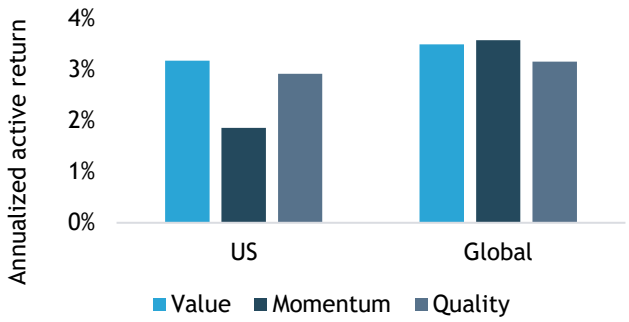
Rewarded factors are better than ballast

In our opinion, a better approach to risk management could involve blending the riskier top managers with diversifying and rewarding factor portfolios. Just as transporters crossing the Atlantic Ocean in the 19th century learned to use building materials (which had positive commercial value) as ballast, we could allocate to factor strategies that diversify risk and offer good active-return potential. Indeed, as documented in numerous academic studies[iv] and validated below, factor proxy portfolios[v] representing the value, momentum, and quality factors delivered impressive outperformance over long periods and varying geographies (Table 2 and Exhibit 2).

Table 2: Performance of rewarded factors, Jan 2002 – Jan 2022

2002 - 2022	Active return	Active risk	Information ratio
U.S. value	3.18%	9.50%	0.33
U.S. momentum	1.86%	6.35%	0.29
U.S. quality	2.92%	3.99%	0.73
Global value	3.50%	7.04%	0.50
Global momentum	3.58%	5.68%	0.63
Global quality	3.16%	4.96%	0.64

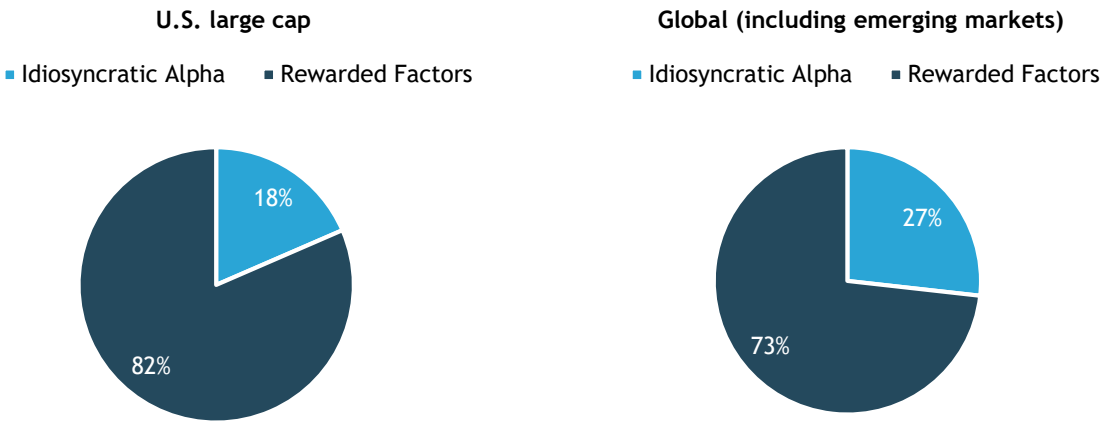
Exhibit 2: Annualized active return*



Source: SEI, Jan 2002 – Jan 2022. Factor proxy portfolios are constructed using the top-100 stocks ranked by their factor scores, adjusted for their market capitalization, and rebalanced quarterly within each universe (U.S.: large-cap equities, Global: developed- and emerging-market large-cap equities). Active return represents annualized factor-proxy return minus market return. Active risk is calculated as annualized standard deviation of active returns. Information ratio is the ratio between active return and active risk. Annualized transaction cost deduction: value 0.12%; quality 0.06%; momentum 0.24%. Returns shown in USD. Past performance does not predict future returns. *Net of transaction costs.

Strikingly, analyzing the subset of managers that have outperformed the market gross of fees over the same 20-year period reveals that rewarded factors accounted for 82% of their alpha in the U.S. and 73% globally[vi] (Exhibit 3).

Exhibit 3: Active return decomposition of outperforming equity managers, January 2002 – January 2022



Source: SEI, Lipper. Jan 2002 - Jan 2022. The outperforming manager universe is defined as managers that have average monthly return higher than the market over the entire 20-year period. Idiosyncratic alpha is estimated as the intercept from univariate time-series regression of the manager's active return on the active return of the factor that has the most significant positive coefficient estimate. In case of no positive coefficient estimate significant at 5%, the entirety of active return is kept as idiosyncratic alpha. The factor is chosen from a pool, including value, momentum, quality, low volatility, and their 2:1 mixes. Estimated transaction costs have been deducted from factor returns. Past performance does not predict future returns.

The optimal blend: Best of both

Consider an example of a top-manager portfolio comprising five equal-weighted, randomly selected top managers, and a rewarded-factor portfolio consisting of three equal-weighted, realistic factor proxies in value, momentum, and quality. Table 3 shows that the active risk of the optimal[vii] active blend portfolio is lower than both the top manager portfolio and the rewarded factor portfolio. Blending factors with managers provides a diversification benefit that improves the information ratios of the optimal portfolios.

Table 3: Performance of top managers, rewarded factors and the optimal active blend, January 2002 – January 2022

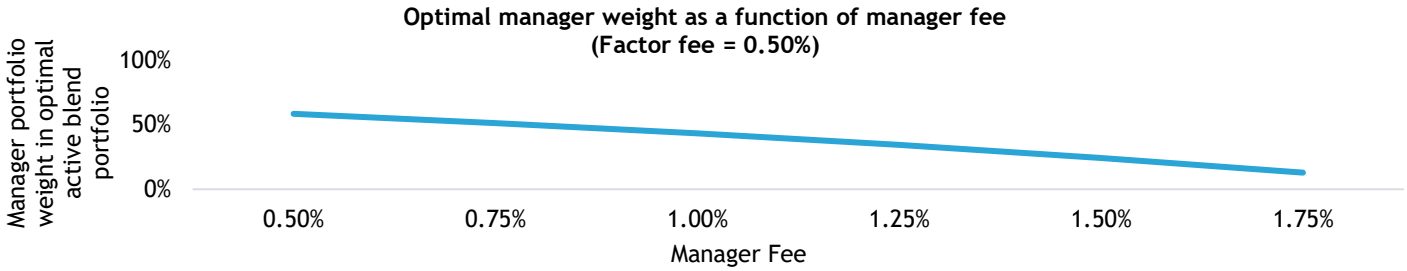
		Active return	Active risk	Information ratio	Idiosyncratic alpha
U.S	Top-manager portfolio	1.12%	5.25%	0.21	0.73%
	Rewarded-factor portfolio	1.26%	4.62%	0.27	0.00%
	Optimal active blend	1.20%	3.93%	0.31	0.26%
Global	Top-manager portfolio	2.55%	5.26%	0.49	1.65%
	Rewarded-factor portfolio	1.65%	3.94%	0.42	0.00%
	Optimal active blend	2.10%	3.81%	0.55	0.83%

Source: SEI and Lipper, Jan 2002 – Jan 2022. Top managers that are high-conviction outperformers are updated annually. Past performance does not predict future returns.

Optimal, after fees

The optimal allocation to different active-return sources can also be applied to net-of-fee active returns. While some investors may be able to negotiate different levels of fees paid to an active manager, we may assume that the active managers generally charge higher fees, which often drives down optimal allocation to top managers. In Exhibit 4, using the global universe as an example and assuming the factor portfolio fee is fixed at 0.5% annually, we can see the projection of manager portfolio weight in the optimal active blend portfolio falls from 60% to 10% as the manager's fee rises from 0.5% to 1.75%.

Exhibit 4: Optimal blend and fees



Source: SEI, Lipper, Jan 2002 – Jan 2022. Top managers that are high-conviction outperformers are updated annually. Rewarded factor portfolio's expense ratio is assumed to be fixed at 0.5%. Past performance does not predict future returns.

Conclusion

In a zero-sum world of active returns, seeking alpha is a competitive undertaking. Continuous improvement is paramount for maintaining an edge. New evidence has shown how factor investing can bring reliable sources of returns that have not only been successful on their own, but also arguably driven the bulk of the outperformance generated by successful active managers. While a small subset of top managers has exhibited outperformance for reasons that cannot be explained by their factor exposures, such managers are rare and can come with high active risk.

We believe the optimal active blend portfolio should include allocations to both a portfolio of top managers and a portfolio of rewarded factors. The fee of active management also plays a pivotal role in determining the optimal allocation. Instead of seeking fee-minimization, the optimal allocation still needs to be set in the relative context of expected net return, risk, and diversification property of each investment option.

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[i] See Sharpe (1991). Empirical studies by Gruber (1996), Wermers (2000, 2003), Malkiel (2003), and Jones and Wermers (2011) confirm that the median active manager generally does not outperform the cap-weighted benchmark net of fees, and even the small subset of those that do outperform are only able to maintain that outperformance for short periods.

[ii] Each January, top managers are identified as those with past 3-year active risk in the top quintile and past 3-year active return in the top half of all active managers in the universe, excluding outliers (past 3-year active risk above 99th percentile).

[iii] Idiosyncratic alpha is estimated as the intercept from univariate time-series regression of the manager's active return on the active return of the factor that has the most significant positive coefficient estimate. In case of no positive coefficient estimate significant at 5%, the entirety active return is kept as idiosyncratic alpha. The factor is chosen from a pool including value, momentum, quality, low volatility, and their 2:1 mixes.

[iv] Fama and French (1992, 1993) added SML (small minus big market capitalization) and HML (high minus low book-to-market ratio) factors as proxies for size and value risk on top of the market factor. Jagadeesh and Titman (1993) introduced 1-year momentum. Novy-Marx (2013) related quality to gross profitability as an important long-term driver of expected stock returns.

[v] To construct investable factor proxies, we rank stocks on a composite of relevant factor metrics for each factor family. To ensure investability and fair comparison to live active manager portfolios that are bound by relative risk constraints, factor scores are also adjusted by market capitalization. Stocks that rank within the top-100 in respective investment universe by respective factor family are included into the respective factor proxy. Alternative approaches of using larger proportion of the universe results in factor proxies with less active risk but diluted exposures to the true factors. A sample of 100 stocks is sufficiently large to diversify stock-specific risk, while active risk tolerance can be addressed in the portfolio construction stage later on.

[vi] Starting with a broad universe of 1,190 U.S. large-cap equity funds from the Lipper database that are benchmarked to the S&P 500 Index, we study the 396 funds that were launched before January 1999. The global universe is smaller, with 90 managers launched before 1999 benchmarked to the MSCI ACWI Index. For the subset of managers that have outperformed the market gross of fees over the 20-year period (91 in U.S. and 52 in Global), we estimate the manager's idiosyncratic alpha as the intercept of univariate regression of the manager's monthly active return regressed on the active return of a factor. The factor is

chosen from a pool of factors including the aforementioned rewarded factor proxies such as value, momentum, and quality, as well as low volatility, and 2:1 mixes of these factors. The factor mixes have been constructed using weighted-average factor scores at the stock level. For each outperforming manager, we first find out which factor has the most significant univariate regression coefficient estimate. If the coefficient estimate of this factor is positive and significant at a 5% level, we then report the intercept of that regression as idiosyncratic alpha. If not, we keep the entirety of the manager's active return as idiosyncratic alpha since the manager has not been taking a significant constantly long exposure to any factor. The rest of the manager's active return is systematic alpha from exposure to a rewarded factor.

[vii] Denoting the standard deviation of the active return by σ, a positive risk aversion parameter by δ, and information ratio (IR) of the active strategy by $IR = \bar{r}/\sigma$, where $\bar{r}$ denotes the expectation of the strategy's active return r, it can be shown that the optimal blend portfolio consists of risk positions: ${k_1}^* = \frac{IR_1}{2\delta}$ and ${k_2}^* = \frac{IR_2}{2\delta}$.

Therefore, as long as both active strategies have positive information ratios, an investor seeking to maximize risk-adjusted active return should allocate to both of them. In the presence of correlations, the optimal allocation into both strategies can both be positive if $\frac{IR_1}{IR_2} > \rho$ and $\frac{IR_2}{IR_1} > \rho$.

In other words, as long as the two active strategies both have positive information ratios, it makes sense to include both in the optimal active portfolio if: 1) They are uncorrelated or negatively correlated, or 2) They are positively correlated but their information ratios are comparable such that one is always greater than the other one adjusted by the correlation coefficient.

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