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Key Design Choices in Long/Short Equity

Executive Summary

The aim of a long/short equity strategy is to convert a set of stock selection views into an efficient and diversifying source of returns. In this short article, we review the case for allocating to long/short equity and address several key choices faced by investors and by managers. Systematic or discretionary? Single-name shorts or index hedging? And how should managers combine many different views or “signals” into a single long/short portfolio? Finally, we argue that long/short equity strategies have a proven track record of delivering “cash-plus" returns in higher interest rate environments.

Investors are looking for resilient sources of return in the face of mounting headwinds for equity markets. Long/short and market-neutral equity strategies deserve consideration, and this paper highlights a few of the key decision points when navigating the asset class.

Portfolio Solutions Group

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About the Portfolio Solutions Group

The Portfolio Solutions Group provides thought leadership to the broader investment community and custom analyses to help AQR clients achieve better portfolio outcomes.

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Introduction: Why Long/Short?

The performance of any traditional stock portfolio is the sum of two components: the return due to the market exposure ("beta") and the rest, which can be attributed to the investor's active views ("alpha").

In most cases, the beta is the dominant component. Shorting allows the market exposure to be offset, and negative views to be expressed as well as positive views. This has three key practical applications:

Separation

Invest separately in passive beta and diversifying long/short active risk, harvesting beta at very low cost, and making tactical adjustments to it without impacting active risk

Augmentation

Hold a traditional active stock portfolio but supplement active risk with an additional long/short allocation, to achieve better balance between risks in the portfolio

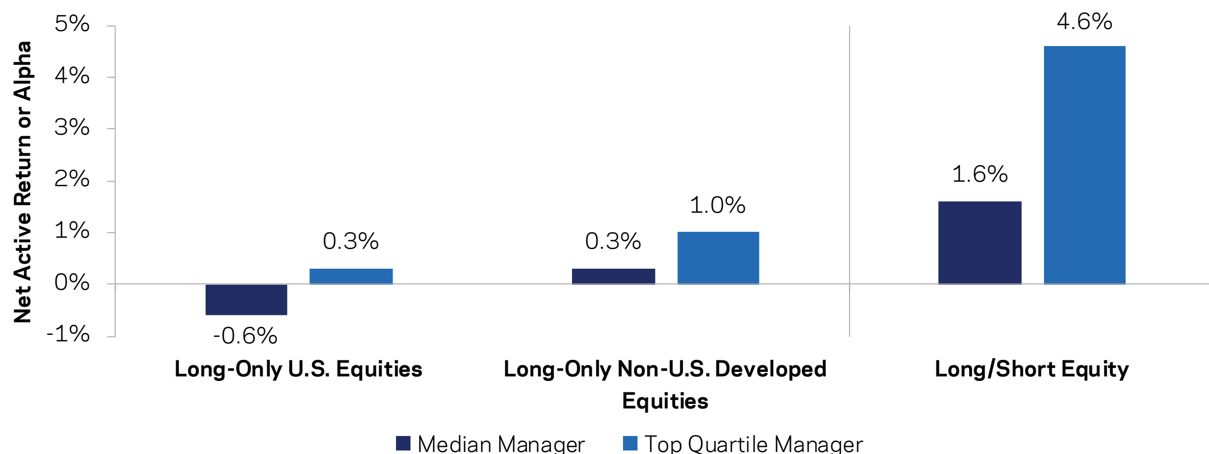
Efficiency gains

Allow a small amount of shorting *within* a traditional equity portfolio to better express active views, improve tax efficiency or achieve sustainability goals

Above all, managers can express their stock-level views and information more efficiently in a diversified long/short portfolio than in a constrained long-only portfolio that must be more concentrated to achieve a comparable level of active risk. Long/short strategies are therefore likely to offer a more reliable source of excess returns. **Exhibit 1** shows that long/short managers have done a better job of generating excess returns during the past decade, which was particularly challenging for long-only U.S. managers.

Exhibit 1: Long-Only versus Long/Short Equity Manager Performance

October 1, 2013 – September 30, 2023



Source: AQR, eVestment, HFRI, MSCI, Bloomberg. U.S. Equities is U.S. large cap eVestment universe and International Equities is the EAFE Large Cap equities eVestment universe. We remove managers who do not have complete return series over the 120-month period. Manager active returns are calculated by eVestment relative to manager preferred benchmarks and are reported either gross or net of fees. For managers who report returns gross of fees, we convert the returns to net using the median fee of the universe. Long/Short Equity is the HFR Equity Hedge universe. Hedge fund returns are net of fees, excess of BofAML U.S. 3-Month Treasury Bill Index and beta-adjusted using MSCI World Hedged USD Index. Time period is trailing 10-year period ending September 30, 2023.

Funding Considerations

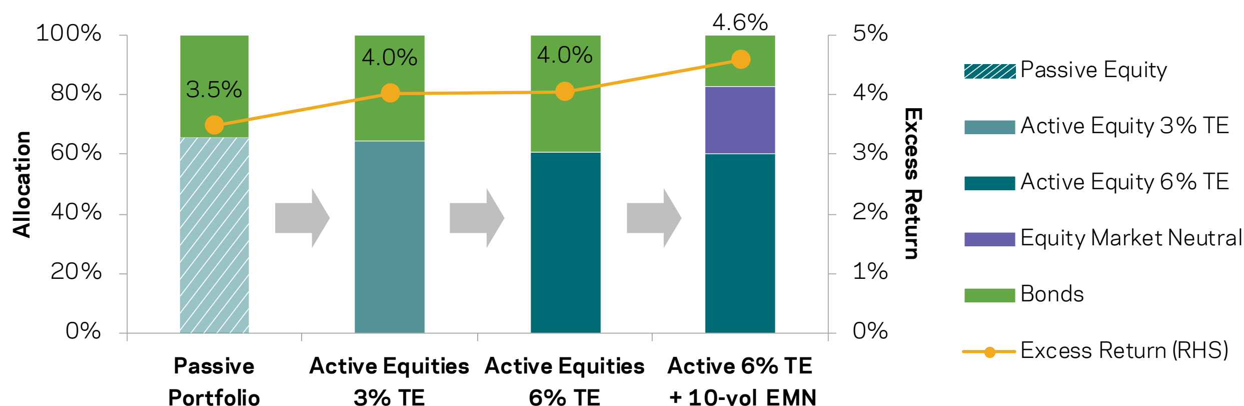
How do you fund a long/short allocation without giving up some beta and lagging your peers in bull markets? There are several ways to address this conundrum, and investors may employ some combination:

1. *Incorporate* diversifying strategies within the strategic allocation and embrace lower beta as the key to higher risk-adjusted returns (even if this creates tracking error versus equity-dominated portfolios).
2. *Replace* the beta using derivatives—this can be done by the investor or by the long/short manager as part of a "portable alpha" solution.
3. *Maintain* equity exposure and fund the long/short equity allocation from the diversifiers bucket that includes bonds and other alternatives. After all, it is a diversifying strategy.

Exhibit 2 illustrates a simple allocation analysis where a stock/bond portfolio sees diminishing benefits from ramping up long-only active risk but achieves a substantial boost by augmenting this risk with a long/short market neutral exposure within the diversifiers allocation. The chart shows four asset allocations—*all with the same level of portfolio risk*—and their associated expected returns according to the stated assumptions, which are consistent with long-run historical evidence.[1]

Moving from left to right, we first replace passive equities with active equities for a boost in expected returns (second column). We want to add more active risk because the portfolio is still dominated by market beta. But moving to a more aggressive long-only active equity portfolio (third bar) gives diminishing gains, because the active risk is now more concentrated and less efficient. We also have to reduce our allocation to this more active long-only equity strategy to maintain portfolio risk. In the fourth column, we add a levered, diversified equity market neutral allocation in the diversifiers bucket, which achieves a substantial further boost in expected returns, at the same level of risk.

Exhibit 2: Allocating to Equity Market Neutral: Four Portfolios at the Same Risk Level



Source: AQR. All portfolios have 10% volatility based on asset volatility and correlation assumptions. Assumptions: 0.3 Sharpe ratio for passive equities and passive bonds, with volatilities of 15% and 5% respectively; information ratios for active risk of 0.2 at 6% TE, 0.3 at 3% TE, and 0.4 for EMN; zero correlation between equities, bonds and all active equity risk. Not representative of any portfolio that AQR currently manages.

1 Historically, long-only equity managers with higher active risk have delivered lower information ratios on average: see for example AQR *Alternative Thinking* Q2 2016, "Relaxed-Constraint Portfolios: Ignored but Not Forgotten." The 0.4 net-of-fee IR assumption for EMN is consistent with historical median EMN manager performance, as shown in the appendix, Exhibit A1.

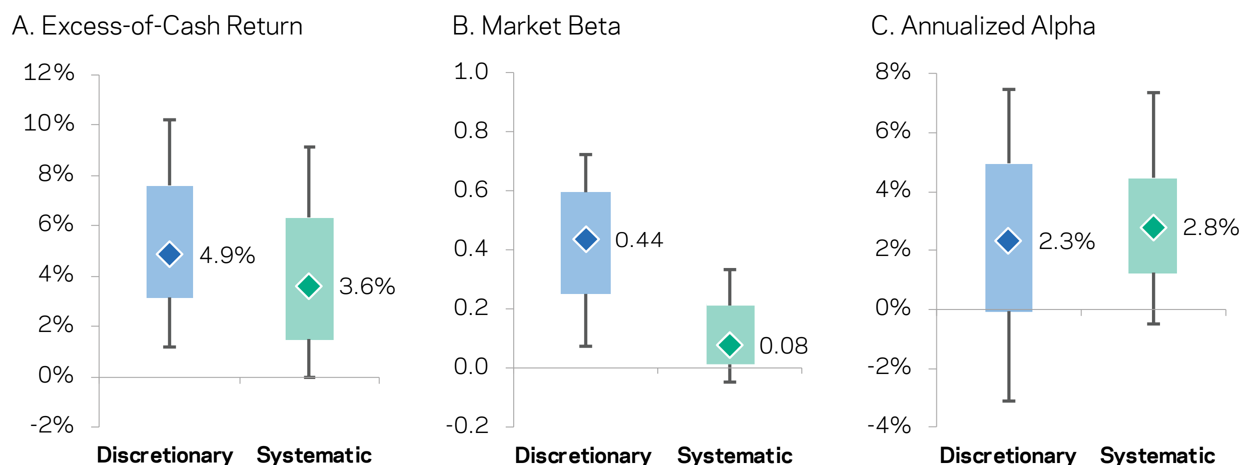
Systematic versus Discretionary

Systematic and discretionary long/short equity managers both seek tell-tale characteristics of stocks destined to outperform or underperform the market. Not surprisingly, both often look for similar characteristics—attractive valuations, resilient earnings, a catalyst for improvement, and so on. The main *difference* is in the way they construct portfolios, with systematic managers favoring diversified portfolios of hundreds of stocks, and discretionary managers favoring more concentrated portfolios of individual stocks where they have strong conviction. Systematic portfolios seek exposure to characteristics or factors, while discretionary portfolios are intentionally driven more by stock-specific outcomes.

Which approach delivers better results? There have been several attempts to answer this question empirically,[2] and our contribution is a simple but up-to-date analysis of manager return data from the HFR database. **Exhibit 3** shows performance distributions of more than 400 individual long/short equity managers since 1996. Here we define discretionary managers as those categorized as *fundamental growth* or *fundamental value*, and systematic managers as those designated *equity market neutral* or *quantitative directional*. We include both live and dead funds to mitigate survivorship bias, and we apply intuitive filters to remove very small, mislabeled or duplicated funds, and those with insufficient data to calculate meaningful performance statistics.[3]

Exhibit 3: Evaluating the Long/Short Alpha Proposition

Long/Short Equity Manager Performance, May 1996 – August 2023



Source: Hedge Fund Research, Bloomberg, AQR. Based on monthly data. Diamond indicates median, boxes span inter-quartile range and whiskers indicate 10th and 90th percentiles. Returns are net of fees. Alpha is calculated with respect to the MSCI World Index (hedged).

Median managers in both categories have delivered positive returns. Discretionary managers have tended to earn slightly higher returns but have relied on much larger exposure to the market, with a median beta of around 0.4 (Panel B). After controlling for this, most managers in both categories delivered positive alpha but it was the systematic managers who earned a higher median alpha with a narrower distribution. Importantly,

2 See for example AQR *Alternative Thinking* Q3 2017, "Systematic versus Discretionary," and Harvey et al. "Man vs. Machine" (2017).

3 Specifically, we exclude funds with beta > 0.8, those with AUM never exceeding $100 million, and those with less than 60 months of returns. This leaves 337 discretionary funds and 87 systematic funds.

correlations between the active portion of discretionary and systematic managers were near zero on average, suggesting the two approaches can be complementary. See the appendix for more detailed results.

The Short Side: Single Names or Index Hedging?

The short side of a long/short equity portfolio may serve two roles. First, as a **hedge** to offset the aggregate market exposure of the long positions, so that the portfolio risk is driven more by the relative performance of those favored longs and less by market direction. Second, it can hedge more granular (e.g., industry) risks and **express active views** by shorting specific stocks that are considered especially unattractive. If such laggards can be identified, shorting them will be an additional source of alpha. But shorting single stocks incurs operational and transaction costs, and for systematic, factor-based strategies there is some debate regarding the efficacy of this source of alpha. Is it more efficient just to short the index?

Intuitively, if stocks with a particular characteristic (such as low valuation) tend to outperform the market, then stocks with the opposite characteristic (e.g., high valuation) will tend to underperform the market. But the spread of performance may not vary linearly with the spread in the characteristic. Some researchers have presented findings that suggest that both sides contribute to factor premia, while others have concluded that little value is added by shorting single stocks in a factor portfolio.[4]

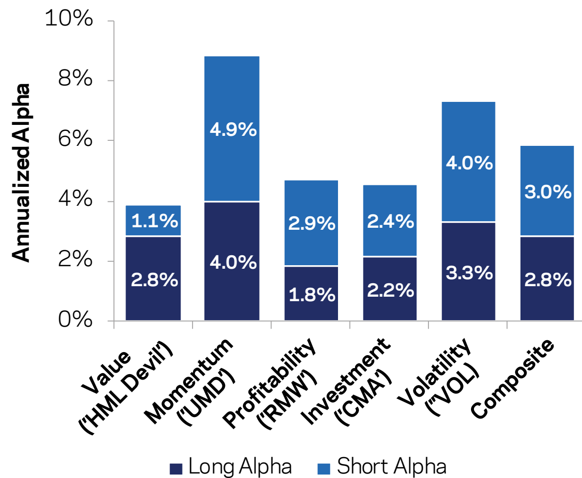
Any tests of the impact of shorting must be constructed and interpreted with care and with an eye on how they relate to real-world investing. For example, it's possible for both the long and short sides of an academic factor to have a beta greater than one and to outperform the market because of the way the factor is constructed. This doesn't mean the short side holds no information. In **Exhibit 4** we report the contributions to alpha from the long and short sides of five U.S. style factors and an equal-weighted composite over a 60-year period. For the value factor, the longs contributed more alpha than the shorts; but for the other factors, it's the shorts that contributed more. For a combination of factors, the contributions are nearly equal. This pattern holds for the standard academic construction (Panel A) and for a large-cap construction that is closer to most implementable long/short portfolios (Panel B).

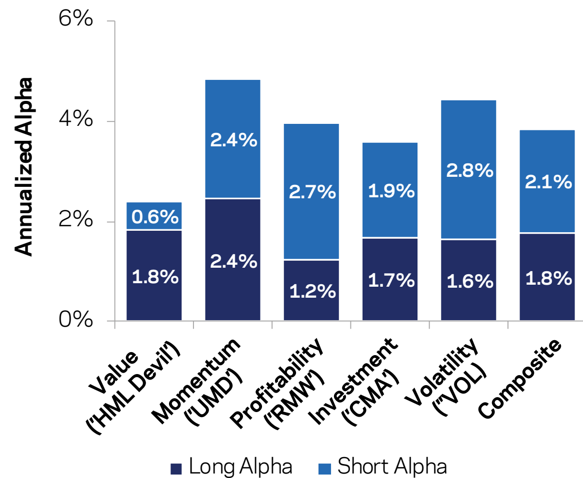
It's intuitive that shorting an index is a low-cost way to deliver some of the advantages of a long/short portfolio, by hedging the market beta. It's also intuitive that this approach leaves some of the alpha on the table. If a manager can identify unattractive stocks and has developed cost-efficient portfolio optimization techniques and trading infrastructure, shorting single stocks is a no-brainer.

4 Blitz et al. (2020) argue that most added value of a multi-factor portfolio comes from the long positions, largely because they find there is better diversification between the long sides of different factors than between the short sides of those factors. By contrast, Israel and Moskowitz (2013) are unable to reject the hypothesis that the longs and shorts contribute equally to factor performance, gross of costs.

Exhibit 4: Alpha Decomposition of U.S. Style Factors

January 1, 1963 – September 30, 2023





Source: AQR. Investment and volatility factors go long stocks with low investment and low volatility, respectively. Alpha is calculated with respect to a cap-weighted market index. A return decomposition of global style factors gives similar results, with longs and shorts both contributing to alpha.

Weighing the Evidence (and Intuition): How Quant Managers Combine Signals

We've briefly made the case for going short when implementing active views in equity markets. But a systematic manager will probably monitor many different "signals" telling them one stock is more attractive than another. Some signals may be tried and tested, such as valuation multiples or measures of earnings quality. Others may be more innovative or experimental, perhaps using so-called alternative data sources like credit card transactions or natural language processing. How can a manager account for the possibility of "alpha decay" in well-established signals, while also guarding against the risks of data mining in more novel signals? In short, how should innovation be systematically incorporated into the portfolio?

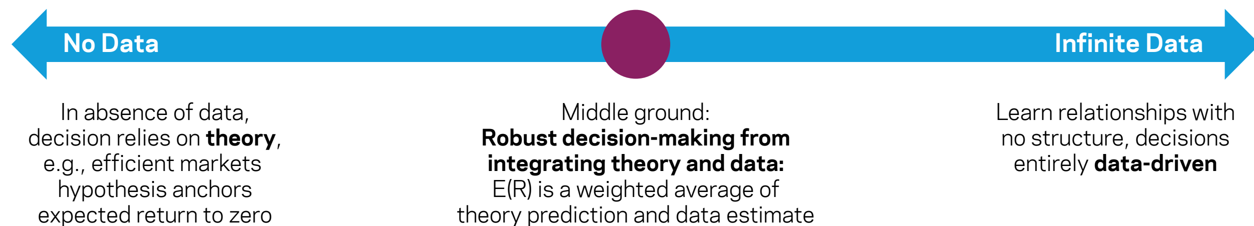
Purely data-driven approaches estimate the efficacy of a signal based on historical data and choose its weight accordingly. More fundamental approaches apply anchor weights based on judgement and economic intuition. The most thoughtful approaches combine both concepts, for example by using Bayesian learning models to systematically update economic priors with new data. **Exhibit 5** Panel A illustrates one such framework.[5] Panel B shows a simplified example of how weights could be distributed across a set of signals as new signals are periodically introduced to the

5 Specifically, under this framework the expected return of a signal, $E(R) = w \cdot \hat{a} + (1 - w) \cdot \alpha_{prior}$ where $\hat{a}$ is the data estimate, α_{prior} is the prior from theory, and w is determined by properties of the data. If we assume 1) unexpected returns are normally distributed with variance σ^2, and 2) the alpha prior is normally distributed with mean zero and variance $\sigma^2_{\alpha_{prior}}$, then Bayes' rule determines $w = 1/(1 + \sigma^2 / T\sigma^2_{\alpha_{prior}})$. Intuitively, when more data is available and/or there is less confidence in a zero-alpha prior, "w" is closer to one.

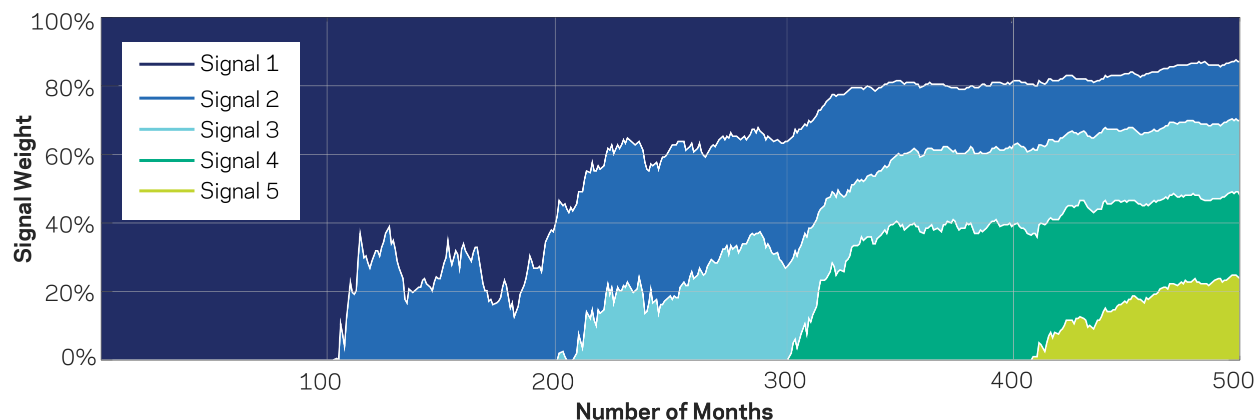
model. In this example, based on simulated data, we assume the newer signals are more richly compensated: each signal is introduced with a low weight, but it can earn itself a higher weight once there is sufficient data to validate stronger performance. The model remains well-diversified across available signals. This example contains only five signals, but a similar process could be applied to hundreds of predictors.

Exhibit 5: Model Construction in Systematic Long/Short Equity

A. Bayesian Framework for Leveraging Theory and Data to Make Decisions at Scale



B. Incorporating Innovation: Example of Dynamic Signal Weights as New Signals Are Introduced



Source: AQR. For illustrative purposes. Chart assumes one new signal is introduced every 100 months. Based on simulated data and not representative of any portfolio that AQR currently manages.

The role of thematic long/short strategies: Some strategies are designed to focus on a particular theme—to be a specialist rather than an all-rounder. Investors may be looking for an allocation to fill a particular niche in their wider portfolio or express a tactical view. Thematic strategies may implement the same signal-weighting process as described above but apply it to a focused subset of signals. Here are two quantitative examples:

- A long/short **value-focused** strategy designed to give high-octane exposure to the value theme when it appears tactically attractive, or to neutralize a growth bias in the wider portfolio.
- A long/short **defensive-focused** strategy that uses leverage to translate the pervasive low-risk anomaly into an attractive source of returns. This exposure is often highly complementary to other active risks in the portfolio, which may favor riskier, more speculative stocks.

Managing Risks and Grasping Opportunities

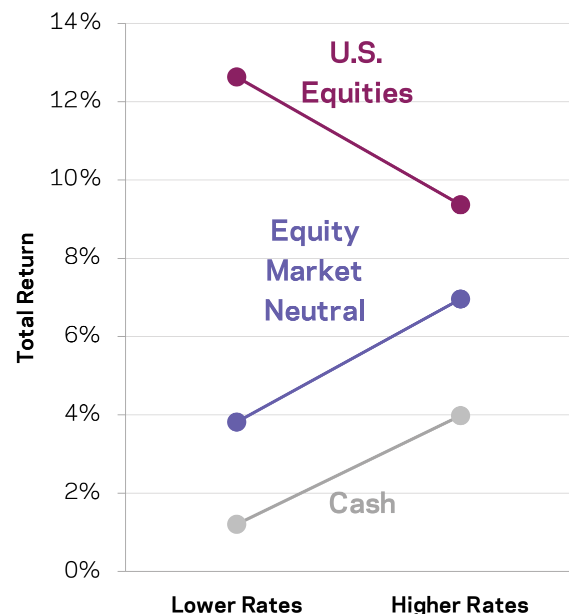
Long/short equity strategies hedge market risk with the aim of delivering diversifying active returns. But to do this they must use financial tools—notably leverage—that come with their own risks. The so-called Quant Crisis of summer 2007 was an instructive deleveraging episode that caused severe but short-lived stress to some long/short equity strategies, with consecutive days of elevated factor correlations and large losses. Many managers subsequently changed their processes to better manage this risk.[6]

There are other risks unrelated to leverage: a diversifying strategy can simply experience a prolonged episode of poor performance that is consistent with long-term expectations but very difficult for investors to tolerate. This may be because the episode coincides with market losses and is seen as a failure of diversification (but a diversifier is not a hedge and is not guaranteed to do well in a market sell-off). Alternatively, if a loss occurs when the market is up, it will appear more prominent and may prompt investor intervention.[7]

Investors must balance these risks against other (and more dominant) risks in their portfolio, notably the risk of a large or prolonged equity bear market, which could coincide with falling or resurgent inflation (i.e., bonds could do well or poorly), as well as liquidity and macro risks embedded in private assets.

Finally, and importantly, equity market neutral (EMN) strategies directly benefit from higher cash rates, because they have large cash holdings – longs are largely funded by proceeds from shorts. **Exhibit 6** compares average returns of the U.S. equity market to a much lower-risk EMN index in different interest rate regimes. Purely mechanically, EMN expected returns are several percentage points higher at the end of 2023 than they were two years earlier, especially if any performance fee is applied with a cash hurdle (as it should be).[8] In the current environment of large uncertainties for traditional assets, an allocation to long/short equity alternatives deserves strategic consideration.

Exhibit 6: Average Returns in Higher and Lower Rate Environments
January 1, 1990 – June 30, 2023



Source: GFD, Federal Reserve, Bloomberg, AQR. U.S. equities is S&P 500 index; Equity Market Neutral is HFR Equity Hedge: Equity Market Neutral Index; cash is 3-month Treasury Bill. For more details, see AQR Alternative Thinking "The Fed Shrunk the Equity Premium: Asset Allocation in a Higher-Rate World."

6 See for example "The August of Our Discontent: Once More Unto the Breach?" *Cliff's Perspective* AQR blog, August 2017.
7 One recent example was the growth bubble of the late 2010s. See discussion in "Is (Systematic) Value Investing Dead?" *Cliff's Perspective* AQR blog, May 2020, and related articles.
8 See AQR *Alternative Thinking* 2023 Issue 3, "Honey, the Fed Shrunk the Equity Premium: Asset Allocation in a Higher-Rate World".

References and Further Reading

AQR *Alternative Thinking* Q2 2016, "Relaxed-Constraint Portfolios: Ignored but Not Forgotten," white paper.

AQR *Alternative Thinking* Q3 2017, "Systematic versus Discretionary," white paper.

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Appendix

Below we present more detailed results of the comparison of discretionary and systematic long/short equity manager performance that was summarized in **Exhibit 3**.

Exhibit A1: Long/Short Equity Manager Performance

May 1996 – August 2023

	Discretionary					Systematic				
	10th %ile	25th %ile	Median	75th %ile	90th %ile	10th %ile	25th %ile	Median	75th %ile	90th %ile
Excess-of-Cash Return	1.2%	3.2%	4.9%	7.6%	10.2%	0.0%	1.5%	3.6%	6.3%	9.1%
Raw Volatility	7.2%	9.2%	11.7%	14.9%	18.9%	3.7%	6.4%	7.8%	11.2%	13.1%
Sharpe Ratio	0.11	0.28	0.46	0.66	0.85	0	0.2	0.51	0.87	1.18
Beta	0.07	0.25	0.44	0.59	0.72	-0.05	0.01	0.08	0.21	0.33
Annualized Alpha	-3.1%	-0.1%	2.3%	4.9%	7.4%	-0.5%	1.3%	2.8%	4.5%	7.3%
Beta-Adj. Volatility	5.4%	7.2%	9.4%	12.9%	17.8%	3.3%	5.9%	7.6%	10.1%	11.9%
Beta-Adj Sharpe Ratio	-0.32	-0.01	0.25	0.51	0.73	-0.07	0.16	0.37	0.69	1.12
Fund Count	**337 (144 live, 193 dead)**					**87 (31 live, 56 dead)**				

Source: Hedge Fund Research, Bloomberg, AQR. Based on monthly data. Returns are net of fees. Alpha and Beta are calculated with respect to the MSCI World Index (hedged).

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The **S&P 500 Index** is the Standard & Poor's composite index of 500 stocks, a widely recognized, unmanaged index of common stock prices.

The **MSCI World Index** captures large and mid-cap representation across 23 Developed Markets countries.

The **HFRI Equity Hedge: Equity Market Neutral Index** measures the aggregate performance of Investment Managers who employ Equity Market Neutral strategies, which typically maintain characteristic net equity market exposure no greater than 10% long or short.

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