Building a Better Long-Short Equity Portfolio

Executive Summary

Long-short equity (“LSE”) is a classic hedge fund strategy that has historically generated higher risk-adjusted returns with lower volatility than equity markets. It has become a core strategy for many institutional portfolios and currently comprises 25% of the HFRI Index. LSE is also quickly becoming established with mutual fund investors. In this paper, we review the track record for LSE, the intuition and sources of returns underlying the strategy, and its potential as part of a diversified portfolio.

We find that conventional approaches to LSE can introduce unintended risks, both in terms of active risk-taking and net market exposure. Specifically, for some managers, market exposure is a byproduct of stock selection rather than a conscious, independent decision. This presents a challenge for investors in both determining an appropriate portfolio allocation and in evaluating the skill of their manager. We propose an alternative approach to LSE that explicitly separates three sources of returns: the return from equity beta, the return from tactically varying this beta over time, and the security selection alpha from long and short stock positions. We believe this approach may more efficiently harvest the returns underlying LSE investing, while also providing investors greater transparency and better risk control.

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Please read important disclosures at the end of this paper.
Introduction

Alfred Winslow Jones is credited with launching the first long-short equity (LSE) fund in 1949. Unlike other funds at the time, Jones's sought to hedge investors from downside market swings by shorting certain stocks that he expected to perform relatively poorly. In his words, “The logic of the idea was very clear... You can buy more good stocks without taking as much risk as someone who merely buys.”1 In doing so, he was able to harvest returns in both rising and falling markets. Furthermore, Jones was able to amplify his positions (and returns) by using leverage. Despite the fund's strong annualized performance of nearly 22% from 1949 to 1968 (compared to the S&P 500, which posted annualized returns of approximately 12% over that period), Jones's strategy went virtually unnoticed for years.2 While similar hedge funds gradually did spring up in the 1950s and early 1960s, it was not until 1966 that the first LSE mutual fund, the Hubshman Fund, was launched.3 LSE has since become a staple for hedge fund portfolios, and more recently has shown strong growth as a mutual fund strategy. Only 25 mutual funds were categorized as LSE at the end of 2007, with an estimated size of $12 billion. At the end of 2012, LSE had grown to 89 mutual funds with over $32 billion under management.4 We believe this growth has benefited both hedge fund and mutual fund investors– not only have mutual funds imposed more stringent transparency on managers, but these funds generally cost less than the traditional “2 and 20” (2% management fee and 20% performance fee) charged by many hedge funds.

LSE’s growth and increasing role in investor portfolios are no doubt due in part to its recent track record, shown in Exhibit 1. Since 1995, LSE funds, as measured by hedge fund indexes, have generated equity-like returns (over this period exceeding broad equity markets) with less risk, thus delivering a higher Sharpe ratio.5

Room for Improvement

Many LSE fund managers have traditionally been fundamental stock pickers, with portfolios constructed by buying a set of stocks that are expected to outperform, and selling short another set of stocks that are expected to underperform. LSE managers also tend to use leverage to amplify returns from stock picking, while still taking less market risk than broad equity markets. A portfolio’s net notional exposure, defined as long exposure less short exposure, is usually positive. For example, a typical manager’s balance sheet might be 100% long and 40% short, for a net equity market exposure of 60%.

Net equity market exposure is a major source of risk and return in LSE portfolios, but this risk is not always explicitly managed.

![Exhibit 1: A Strong Track Record for Long-Short Equity](image)

**Exhibit 1: A Strong Track Record for Long-Short Equity**

<table>
<thead>
<tr>
<th></th>
<th>Annualized Returns</th>
<th>Annualized Volatility</th>
<th>Sharpe Ratio</th>
<th>Max Drawdown</th>
<th>Correlation to MSCI World</th>
<th>Beta to MSCI World</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSCI World</td>
<td>7%</td>
<td>16%</td>
<td>0.20</td>
<td>-54.0%</td>
<td>0.7</td>
<td>0.4</td>
</tr>
<tr>
<td>Long-Short Equity Index</td>
<td>10%</td>
<td>10%</td>
<td>0.71</td>
<td>-22.0%</td>
<td>0.7</td>
<td>0.4</td>
</tr>
</tbody>
</table>

Note: Long-Short Equity Index is the Credit Suisse Long/Short Equity Index, which shows total returns net of fees. Source: MSCI and Credit Suisse.

1 Institutional Investor, August 1968.
4 Source: Morningstar.
5 We use the same 1995 starting date throughout this paper for consistency. Had we instead showed statistics starting in 1994 (the inception of the Credit Suisse Long/Short Equity Index) the story would be similar: higher returns and lower volatility than the MSCI for the full period. Granted, going forward, we do not expect the same levels of outperformance from the industry.
For some managers, market exposure is instead a byproduct of security selection rather than a conscious, independent decision. For example, when a manager adds long exposure to a particular stock in the portfolio, that also increases the overall market exposure of the portfolio – regardless of the manager’s opinion of markets overall. The same idea is true of shorts. Thus there are two dimensions of risk related to market exposure: the overall, average level of market risk and the time-varying, tactical exposure to that risk. In both cases, this variability in market exposure over time can be a challenge for consistent risk management, as unintended market exposure can overwhelm the returns from long-short stock selection.

From an investor’s point of view, evaluating LSE funds is also difficult, as the degree of market exposure varies widely from fund to fund. Exhibit 2 shows the dispersion in market exposure, proxied by one year realized beta, across the universe of LSE mutual funds. With some funds targeting market exposure below 20% and others above 80%, there is a serious “apples to oranges” comparability problem. Given the heterogeneity across funds, determining a “standard” portfolio allocation to LSE is virtually impossible.

Last, a question to ask of LSE managers is whether their returns are becoming more influenced by market exposure than from active stock selection. As shown in Exhibit 3, the returns of LSE hedge funds, in aggregate, have become more related to those of the overall market over time. This suggests that despite the flexibility LSE offers, many managers may not be capturing meaningful amounts of active excess returns, but instead are increasingly relying on the equity risk premium as a source of returns.

**Building a Better LSE Portfolio**

As a strategy, LSE provides investors three potential sources of returns: stock selection, passive market exposure, and tactical market exposure. A meaningful shortcoming with some conventional approaches to LSE is that one choice – stock selection, which at times leads to an arbitrary, non-intentional market exposure – dictates the exposure given to all three (Exhibit 4, left side).

We believe that investors are better served by a strategy that seeks to explicitly and individually control all three major sources of LSE returns, as illustrated by the right chart in Exhibit 4. We believe that this approach represents a more efficient process for...
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harvesting returns from each of these components. It uses a portfolio construction methodology that is more transparent, risk-controlled, and that we believe allows investors to capture each source of returns in a more disciplined manner.

Two major advantages of this approach are: 1) attribution, as we are able to clearly identify and manage three distinct and additive sources of returns, and 2) explicitly-controlled equity market exposure, which vastly reduces unintended equity market risk taking and allows better planning for how LSE should fit into an overall portfolio.

Implementing the Three Sources of Returns

1. Passive Market Exposure

To set the strategy’s passive market exposure, we use equity index futures, which relative to holding individual stocks, are more cash-efficient and have fewer (and lower) transactions costs. Our approach seeks to maintain a long-term strategic beta of 0.5 in order to benefit from some global equity market exposure and resemble other LSE funds. For this reason, the benchmark for the strategy is 50% the MSCI World Index plus 50% the Merrill Lynch 3-month T-Bill Index.\(^6\),\(^7\)

2. Tactical Market Exposure

Based on our views of expected returns for equity markets, our approach may tactically adjust equity market beta within a range of 0.3 to 0.7. These market views are derived from a proprietary model, which evaluates global equity markets based on a number of metrics. For example, we assess changes in economic conditions based on interest rates and fundamental signals. We also take into account valuation metrics and the volatility environment relative to history, among other signals.

While tactical market exposure is expected to add some value over the long term, we believe it should be pursued only modestly. Whereas security selection evaluates the attractiveness of thousands of stocks, timing the overall market represents a view on a single asset, which deprives managers of diversification benefits. For these reasons, tactical market exposure represents a relatively small component of our portfolio construction process, as shown in Exhibit 4.

3. Global Security Selection

We believe that superior risk-adjusted returns can be more reliably achieved through a highly-diversified portfolio versus an approach that relies on large, concentrated positions. This belief is bolstered by the Fundamental Law of Active Management, which under simplifying assumptions states that an active portfolio’s Sharpe ratio is a function of 1) forecasting ability and 2) the breadth of the portfolio.\(^8\) Managers thus have two fundamental levers to generate active returns: by incorporating multiple, good themes to building better forecasts (forecasting ability), and by applying those forecasts globally across a large set of stocks and industries (breadth).

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\(^6\) In other words, the return of a portfolio that invests 50% in the MSCI World Index and leaves the remaining 50% invested in cash.

\(^7\) A general note on benchmarking for LSE is that many funds are managed to a similar net long equity exposure, yet have a cash benchmark, tacitly suggesting that all returns are due to dynamic returns, or skill.

\(^8\) Grinold (1989).
Our approach seeks to capture returns from a variety of indicators that have proven to be pervasive across equity markets, that have an economic explanation for why they have delivered positive returns, and for which there is good intuition for why they should persist. These themes include valuation, momentum, quality, and investor sentiment, among others.

What this means for security selection is that we seek stocks that are cheap relative to fundamentals, that are showing positive momentum, and that have maintained healthy financials. We also prefer companies where management is expressing positive signals to the market (e.g., increasing dividends, reducing share count) and for which other sophisticated market participants (such as short sellers) are in agreement with our view. Each of these security-selection themes seeks to capture a different source of expected returns, as evidenced by their low correlations to each other (or strongly negative correlations in the case of value and momentum). Importantly, because of these low correlations, the combination of these themes may deliver higher returns per unit of risk taken.

We pursue these themes across securities, industries and geographies to further improve the efficiency of active returns. When selecting stocks within an industry, we build our views in a manner that is industry-, country- and beta-neutral in order to cleanly implement alpha signals while avoiding any unintended exposures. We place greater weight on selecting stocks within industries, which our research shows gives the best apples-to-apples comparison of securities on a broad scale.

In other words, the portfolio is truly global, taking both long and short risk within a very wide variety of industries.

The largest part of our security selection process is from long and short positions within individual industries. But, this is not all we do. Independently of our within-industry stock selection, we also seek to generate alpha via industry and country-industry selection. As an example, our industry selection strategy may overweight airline stocks versus real estate stocks in all countries. On the other hand, our country-industry-selection strategy takes views on countries within each of these industries. For example, we may overweight US real estate stocks versus French real estate stocks. The themes we use to make country-industry pair decisions are very similar to those described earlier, but using them for these separate, independent decisions improves the breadth of the portfolio further.

We combine hundreds of longs and shorts using these strategies so that the resulting combination targets no net market exposure. This brings two major benefits: first, equity markets can experience wild swings in volatility levels. A security selection process that seeks no correlation to equities should be much less affected by the volatility of equity markets. This allows us to target specific risk levels and accordingly increase or decrease the portfolio’s exposures to active risk taking. Second, this approach allows investors to more easily measure an LSE manager’s true security-selection skill, as its returns are largely independent of equity market risks.

LSE strategies like the one described here generally require some leverage for the long-short security selection component to contribute meaningfully to returns. For our approach, we estimate long and short exposure may be twice as high as net asset value. Importantly, these exposures are managed to target zero beta to equity markets, and seek to contribute approximately 6% volatility over the long term from pure stock selection.

Putting It All Together

The strategy described in this paper primarily seeks to add alpha via its long-short stock portfolio. It also manages its beta relative to the MSCI World Index to a long-term target of 0.5, and within a shorter-term range between 0.3 and 0.7, depending on our market views.

While the market-neutral portion of the portfolio targets a specific volatility, the volatility of the beta portion of the portfolio will vary in tandem with that of equity markets. That is, a 0.50 beta is a more volatile position when the equity market is more volatile, and vice versa. Hence the overall strategy does not explicitly target a volatility level.

An example will illustrate the relationship between the volatility of the alpha and beta portions of the portfolio. Assuming our portfolio has a beta of 0.5 and that the MSCI World Index has a volatility of 18%, the beta portion of the portfolio would have a volatility of 9%. If the security selection portion of the portfolio has a volatility of 6%, the volatility of the combined portfolio would be approximately 11%. Depending on whether equity markets are more or less volatile and whether our desired beta is at the upper or lower extreme of its 0.3-0.7 band, the overall portfolio would be more or less volatile.

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9 This is just from the security selection process, as the overall portfolio will have net market exposure from the market and tactical market components (a beta between 0.3 and 0.7). The benefit of this separation is that it can improve performance attribution and risk measurement.

10 Because the stock selection component is targeted to be uncorrelated to equity markets, we can estimate the volatility as (total volatility)² = (equity volatility)² + (security selection volatility)².
As one would expect of an LSE portfolio, it will be less volatile than the broad equity market, with its volatility expected to range from approximately 50% to 80% of the MSCI World Index’s.

**Expected Returns**

Although returns are far harder to accurately forecast than volatility, the strategy discussed in this paper provides investors with a more transparent method for setting return expectations.

For example, if an investor expects the security selection component to deliver a 0.5 Sharpe ratio with a 6% volatility, that translates to a 3% expected return in excess of cash (6% volatility * 0.5 Sharpe). If the investor’s equity market return expectation is 5% over cash, then this would translate to an expected return on a 0.5 beta portfolio of 2.5% (also excluding the contribution from cash).

Thus, ignoring any returns from tactical market exposure, the combination of these two sources of returns yields: 3% + 2.5% = 5.5% over cash, on a strategy expected to average 11% volatility over the long-term (see earlier paragraph for setting long-term volatility expectations). Depending on an investor’s expectations for each source of returns, it may be reasonable to assume LSE has the potential to deliver equity-like returns with lower volatility than equities.

**Hypothetical Performance**

Combining the exposures to passive market exposure, tactical market exposure and security selection strategies may result in attractive returns with a lower volatility. The resulting hypothetical performance of the components and the combined strategy are shown in Exhibit 5, where the graph illustrates the accumulation of wealth from the three sources of returns. As shown in Exhibit 5, the strategy also provides superior downside protection characteristics relative to equity markets, with a maximum drawdown of -36% versus -54% for the MSCI World Index.

**Risk Management and Craftsmanship**

The strategy described in this paper is constructed in a manner that seeks to mitigate some of the risks involved in equity investing. Many LSE funds focus predominantly on U.S. investments: only 10% of assets under management for U.S.-based mutual funds are invested outside of the U.S.11 In contrast, the approach described in this paper is highly diversified along multiple dimensions, holding hundreds of stocks across industries and countries.

Particularly in LSE, one must be acutely aware of the subtleties and added risks involved in managing portfolios. For example, AQR actively monitors beta estimations to account for changing market environments and potential data errors. Given the risks involved in shorting stocks, we believe a manager should have a process in place to closely track each short position for materially adverse price movements and fees.

LSE is inherently a dynamic strategy, and implementation costs can erode alpha. We believe additional value can be added through a manager’s “craftsmanship” in implementation, including through the use of proprietary algorithmic trading.

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11 Source: Morningstar.
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systems and risk management. Generally, firms with extensive experience with trading large flows (both long and short), are able to obtain more favorable shorting rates and appropriately manage counterparty risk than firms that are newer to strategies traditionally pursued by hedge funds. This is particularly important in short markets where liquidity may be limited and prices may vary more across brokers.

Finally, risk management for portfolios that employ leverage, shorting or derivatives can become particularly challenging in a crisis. While many managers may attempt to stand fast throughout a crisis, strategies that use tools such as leverage may realistically not have this option – instead, the actual choice may be whether risk management decisions are planned by the manager or forced upon them. To address this, we further attempt to protect the strategy by employing a Drawdown Control System, which is designed to reduce the target risk level under sufficiently adverse investment conditions. We believe that when performance is meaningfully negative and market risks are high, it is prudent to reduce a strategy's risk targets. These decisions are best made through a pre-defined process that is designed and tested before stressful market events.12

LSE in a Portfolio

We believe the primary source of risk in investor portfolios is from equities. Because LSE seeks to offer investors equity-like total returns with less risk, it can be a compelling option for those seeking to reduce their equity risk without commensurately forgoing returns. Exhibit 6 presents a comparison of the MSCI World Index versus a portfolio that replaces 10% and 20% with our hypothetical LSE strategy.

LSE may also fit within a liquid alternatives portfolio, as its volatility characteristics may be more similar to alternative asset classes. Compared to investors who replace a portion of equity market exposure with LSE, investors who replace a part of their alternatives portfolio with LSE are more likely to maintain their current portfolio's level of volatility, and potentially generate higher total returns.

Conclusion

Institutional investors have long embraced alternative strategies, whose long-term efficacy and diversification benefits have added significant value. With the rise of LSE mutual funds we are optimistic that a wider range of investors will be able to access these valuable diversification tools for enhancing portfolio returns. It is essential, however, for investors to be aware of potential pitfalls of LSE, such as unintended market exposure.

AQR addresses these issues by proposing a diversified and disciplined alpha-generating strategy that is able to better manage risk, while seeking to maximize returns. We seek to improve the LSE landscape by providing an option for investors that is more transparent and risk-conscious, and that takes advantage of more than a decade of experience in managing liquid hedge fund strategies. We believe an approach that seeks to harvest each source of returns (pure alpha, passive market exposure, and tactical market exposure) independently, rather than as a byproduct of a stock selection process, may offer investors a better approach to capturing returns in an LSE strategy.

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12 The drawdown control system described here will not always be successful at controlling a portfolio’s risk or limiting portfolio losses. To add a degree of conservatism to the hypothetical results presented in this paper, we do not include drawdown control.
Disclosures

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Diversification does not eliminate the risk of experiencing investment losses.

Past performance is not an indication of future performance.

The model gross performance results contained herein do not reflect the deduction of investment advisory fees, which would reduce an investor’s actual return. For example, assume that $1 million is invested in an account with the Firm, and this account achieves a 10% compounded annualized return, gross of fees, for five years. At the end of five years that account would grow to $1,610,510 before the deduction of management fees. Assuming management fees of 1.00% per year are deducted monthly from the account, the value of the account at the end of five years would be $1,532,886 and the annualized rate of return would be 8.92%. For a ten-year period, the ending dollar values before and after fees would be $2,593,742 and $2,349,739, respectively. AQR’s asset based fees may range up to 2.85% of assets under management, and are generally billed monthly or quarterly at the commencement of the calendar month or quarter during which AQR will perform the services to which the fees relate. Where applicable, performance fees are generally equal to 20% of net realized and unrealized profits each year, after restoration of any losses carried forward from prior years. In addition, AQR funds incur expenses (including start-up, legal, accounting, audit, administrative and regulatory expenses) and may have redemption or withdrawal charges up to 2% based on gross redemption or withdrawal proceeds. Please refer to AQR’s ADV Part 2A for more information on fees.

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