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Diversification and Beyond:

The Comparative Benefits of Multi-Strategy Investing

SOME OF THE WORLD'S BEST risk-bearing firms and elite producers of alpha, execute a broad range of investment strategies. In the universe of alternative investment products, a majority of funds invests in a single investment strategy and a smaller proportion allocates capital across multiple strategies. We strongly believe that managers of multi-strategy funds offer investors advantages they could not obtain from managers of single-strategy investments—including a better value proposition, better alignment of incentives, more efficient capital allocation, and better risk management—and we manage multi-strategy funds in keeping with that view. Those advantages, we believe, stem in large part from a broader and more nuanced perspective on global financial markets that comes with allocating risk capital across a range of investment disciplines.

In this *Market Insights*, we focus on multi-strategy funds and managers, comparing them with their single-strategy cousins. We won't delve into the relative merits of fund-of-funds products because they present a different set of trade-offs. The paper first considers the structural advantages of the multi-strategy approach and then addresses some common criticisms.

D E Shaw & Co

But let's step back for a moment. A multi-strategy approach to investing rests on claims about the benefits of diversification. The core premise of modern portfolio theory, associated with the work of Harry Markowitz and others, is that risk-adjusted returns can be improved at the portfolio level by allocating to multiple investment strategies and asset classes that are imperfectly correlated. Some have questioned whether diversification is possible through all market cycles. It's commonly thought that in crisis periods, all correlations go to 1.0, eliminating the key benefits of diversification. We've found, however, that in the universe of hedge-fund strategies that's not been the case. Over the past three years—most of which surely qualifies as a crisis period—the average pairwise correlation among hedge-fund strategies, as defined by the components of the Dow Jones Credit Suisse Hedge Fund Index, was 0.36. While positive, this level of correlation clearly indicates the ability to benefit from diversification.

One drawback of using the Dow Jones Credit Suisse Hedge Fund Index as a metric is that those returns are available only on a monthly basis. In the depths of financial distress, the correlation of daily returns is arguably more relevant than monthly correlations. (We emphasize daily correlations because a particularly large loss on a given day could trigger provisions in contracts with leverage providers that materially reduce—or even cut off—access to financing, forcing a fund to liquidate positions and potentially exposing it to catastrophic losses.) In our experience, pairwise correlations between investment strategies are lower when measured on a daily basis than when measured using monthly data. For example, from July 2007 through December 2010, the average pairwise correlation of the more than 20 alternative investment strategies and sub-strategies managed by the D. E. Shaw group was never higher than 0.1 when measured daily (and 0.15 when measured monthly).

Diversification, it is often remarked, is the only free lunch. But how should it be served? Both single- and multi-strategy approaches can benefit from the diversifying effects of allocations to multiple asset classes. While many people believe that a portfolio of single-strategy funds offers an optimal solution to the diversification problem, we believe that multi-strategy funds, and the firms managing them, exhibit ten distinct advantages relative to managers focusing on one or a few strategies.

1. Quantifying Netting Risk

Multi-strategy funds charge fees on the net performance of the strategies in the fund, and single-strategy funds charge fees on overall performance. For investors in a collection of single-strategy funds, this introduces so-called "netting risk," as illustrated by the following scenario. Imagine an investor has a portfolio of two single-strategy funds. If Fund A has a profitable year, the investor pays a performance charge. Let's assume, however, that Fund B experiences a negative return. Although the investor pays no performance fee to, but likely earns a loss carryforward from, Fund B, the performance charge paid to Fund A places a drag on aggregate performance on a net basis. However, if the individual strategies deployed by each of the single-strategy funds were managed within a multi-strategy fund and experienced the same aggregate performance, the investor would pay a smaller performance fee (or no performance fee if that aggregate performance were flat or negative) and thus would be spared the drag on return.

It's possible for investors to avoid this netting cost by adding value through manager selection. But how much manager-selection alpha would the investor need to add to overcome the netting risk? We ran a Monte Carlo simulation to shed some light on the question. Here are the key assumptions:

- 10 uncorrelated investment strategies;
- 15% annual gross return for each strategy within the single- and multi-strategy funds;
- 25% annual volatility of return for each strategy within the single- and multi-strategy funds;
- 1% risk-free rate;
- fees of 2% and 20% (subject to a highwater mark) for the single- and multi-strategy funds;
- performance is measured monthly, and fees on performance are charged annually;
- the multi-strategy fund rebalances monthly, and investments in the single-strategy funds are rebalanced annually on terms favorable to the investor; and
- a fund shuts down and returns capital if performance declines by 40%.

When the 10 strategies are simulated inside a multi-strategy fund, the fund produces a net Sharpe ratio of 1.44, or approximately three times the Sharpe ratios of the individual underlying strategies. We then simulated a multi-manager portfolio by running each strategy as a standalone fund (but otherwise identically) to compare the aggregate performance of ten separate funds to that of the multi-strategy fund. We found that the independent manager portfolio generates a net Sharpe ratio of 1.26, 14% lower than the multi-strategy fund. In order for the multi-manager program of single-strategy investments to match the risk-adjusted performance of the multi-strategy fund, each strategy needs to generate an additional 157 basis points of gross return per year to compensate for the netting effect.

Some investors may be confident they can add that much additional value in manager selection over the long run to offset netting risk. Others may be less sanguine. Manager selection and netting risk do not take place in a vacuum, and other factors must be considered as well.

2. Generating More, and More Diverse, Alpha

One of the things we have learned over a number of years is how much collaboration across investment disciplines can enhance returns in different but related investment activities. A firm's expertise in credit markets, for example, can inform its asset-backed securities strategy. The portfolio construction technology supporting a systematically traded equity or futures strategy can help size positions for macro trades. Insights into the Asian convertible bond market can improve the structuring of private equity deals in the region. In short, a firm with a multi-strategy platform can build upon its success in one investment area to foster achievement in others.

The intrinsic benefits of generating alpha across multiple investment disciplines are self-evident. In addition, this dynamic can result in firms that, relative to single-strategy shops, are large, loaded with talent, well-capitalized, and highly profitable. And as we'll see below, those attributes have an affinity with other potential advantages for investors allocating capital to firms that manage multi-strategy funds.

3. Managing Risk Exposures

An important factor in determining an optimal allocation across multiple investment strategies is the relationship between strategies and in particular correlations among strategies to similar extreme events. Understanding changing relationships across strategies is highly dependent on the specific securities held by each strategy. Are energy and macro strategies both exposed to a simultaneous short-term commodity price shock? Could that shock take the form of a hurricane in the Gulf of Mexico to which a reinsurance strategy might also be exposed? How would such a hurricane affect equity positions in the homebuilding industry?

Managers that exclusively operate one or even a few single-strategy funds are likely less aware of such varying common exposures. Moreover, investors in such funds are less apt to obtain insights on such risks in the absence of daily risk reporting. Even if aware of those exposures, investors may be unable to take timely action given each underlying fund may not provide access to capital with the same frequency. Those challenges intensify when markets enter crisis periods and funds may restrict the access to investor capital. A manager of a multi-strategy fund, on the other hand, can have a comprehensive view of the portfolio and its instruments. That manager is thus better positioned to identify problematic correlations or exposures and to take corrective action by reallocating capital in a timely fashion. The usual caveats apply: just because a manager has a clearer view of the portfolio's risk exposures doesn't mean she will act in a timely or prudent way, and, as with single-strategy funds, transparency on risk exposures and portfolio characteristics is necessary for the investor to verify, if only after the fact, that this job is being done well.

4. Allocating Capital and Estimating Capacity

In our experience as a multi-strategy manager, we believe that the range of our investment activities and the depth of our alpha research and development programs have aided us in our capital allocation efforts. Not only do we often have forecasts on the relative attractiveness of our strategies, but the direct market intelligence obtained from dialogue across multiple asset classes with numerous dealers, money managers, and policymakers also sometimes gives us an indication of where there may be changes in opportunity and risk.

On a related note, achieving a desired level of diversification on an ongoing basis requires that capital be periodically reallocated across asset classes. Advocates of single-strategy funds often argue that their approach, which is not beholden to a multi-strategy manager's allocation decisions, allows for more opportunistic investing in different asset classes. But investors in a portfolio of single-strategy funds would seemingly find it more difficult to reallocate capital across strategies than a manager operating on a multi-strategy platform. As discussed above, firms that manage assets across a large number of strategies are likely to have more and better information regarding the cross-cutting currents of global capital markets. Moreover, most funds require notice periods for withdrawals, liquidity frequency generally runs from months to years, and many funds have lock-ups or other withdrawal restrictions.

Capacity management comes into play here as well. Alpha is scarce. If a manager exceeds capacity constraints, investment returns will deteriorate. And yet, even with equivalent facts, every business operator has an incentive to be optimistic about the prospects for his business and thus may fall prey to distorted perceptions. We believe that multi-strategy managers may view the world a bit more objectively than those focused on single strategies. Because their business models are not tied to a specific strategy, multi-strategy managers may be more disciplined in assessing capacity than managers relying on one source of alpha. As the saying goes, "If all you have is a hammer, everything looks like a nail."

5. Holding "Best Ideas" in Size

When sizing their best investment ideas, managers often face a trade-off between expected return and risks associated with concentrated portfolios. We believe that multi-strategy funds offer greater flexibility with respect to position sizing because their managers spread risk exposures over a much broader portfolio.

Given their prevalence in the alternatives space, long/short equity strategies are perhaps the paradigmatic case. It's generally accepted that a fund dedicated to long/short equities would be ill-advised to allocate more than 10% to 20% of investor capital to a single stock position, even if that stock represented the manager's best idea. However, in a multi-strategy fund in which a long/short equities strategy constitutes, say, 10% of the total fund—making a 10% position in the long/short strategy a mere 1% position in the fund as a whole—the portfolio manager has greater latitude to hold more concentrated positions in such best ideas that are expected to contribute the most attractive risk-adjusted return to the fund. Marketing considerations also apply here. Single-strategy managers may have an incentive to diversify into lower quality ideas more than is optimal for the investor to avoid the higher volatility, or simply the scarier-looking risk report sent to investors, that results from additional concentration.

6. Attracting and Retaining Investment Talent

We believe that firms that have invested in a multi-strategy platform have the potential to recruit superior investment talent given the positive and mutually reinforcing effects of multiple core investment competencies, an attractive firm culture, and scale. Elite investment professionals often prefer working with other extremely talented practitioners, and those professionals may initially develop their exceptional abilities in part through such collaboration. Peer interaction allows them to exchange information and ideas, improve their skills, and ultimately advance their careers. Although some accomplished investors ultimately want to "run their own shop," many prefer the advantages of a firm that is involved in multiple disciplines. Warren Buffett, for example, has written extensively on why a rational business owner or manager may prefer the Berkshire Hathaway environment and structure to operating independently. If a firm develops effective communication and sets appropriate economic incentives, it can foster an environment characterized by a high degree of collaboration and attract highly talented individuals who are likely to thrive in such a working environment.

Performance is also a factor in retaining talent. In stable markets, the scale and breadth of alpha generation noted above can reinforce the firm's culture and help it retain top investment professionals and attract new talent. Periods of market stress, on the other hand, can jeopardize the business models of firms that are dependent on a single source of alpha and undermine efforts to retain talent. In a crisis, managers that have one core competency may be forced to liquidate positions that could be winners in the long run. This can erode franchise value and may prompt the departure of key professionals. By contrast, large firms with multi-strategy mandates afford greater stability in a market disruption. Even if single-strategy funds falter in a crisis, firms that run the same or similar strategies in a multi-strategy complex are less vulnerable to existential threats, and such relative stability is often an important factor in retaining key personnel.

7. Aligning Incentives

When evaluating various funds, investors in the alternatives space generally seek structures that align their interests with those of the manager. One way to achieve interest alignment is for portfolio managers to make a sizable investment in their own fund. Individual managers who have achieved a certain measure of economic success may prefer to retain a significant fraction of their net worth in a fund they manage in the expectation that they can manage their money more profitably than others (and avoid paying fees in the bargain). Yet, at some point, this idea flies in the face of prudent financial wealth management if it results in an irrational concentration of a manager's assets in one strategy. We believe that a manager may rationally invest a higher fraction of net worth in a multi-strategy fund than a single-strategy fund given the higher degree of diversification, thus better aligning the incentives of manager and investor.

The alignment of incentives encouraged by multi-strategy funds is not limited to investor and manager interests; it also applies across a management firm's personnel. As noted, we believe that talent attracts talent in multi-strategy shops. The interests of key investment personnel will be more closely aligned to the extent that those professionals are confident they will benefit from their colleagues' investment acumen when putting their own capital at risk in their firm's funds.

8. Managing Unencumbered Cash

The management of unencumbered cash is another area in which multi-strategy funds have a distinct edge over multi-manager portfolios. An efficient cash-management function can provide the multi-strategy fund with efficiencies not available to single-strategy funds. All funds must keep cash in reserve to protect against a variety of periodic short term stresses. In principle, liquidity management involves reserving cash to meet the following five distinct purposes:

- cushion normal earnings volatility ("PnL buffer");
- accommodate increases in prime-broker or counterparty margin ("financing buffer");
- adjust for changes in the size of a portfolio's positions ("ramp buffer");
- compensate for the movement of positions among various prime brokers, which can tie up cash transiting between entities for several days ("cash-flow buffer"); and
- provide some measure of insurance against unexpected volatility if markets enter a period of crisis ("stress buffer").

Sizing these buffers involves estimating the volatility of the assets in a portfolio, individually and in the aggregate, in both normal and abnormal market environments. We believe the scale and diversification of multi-strategy funds allow for more robust buffers than single-strategy funds in each case. Those benefits are perhaps most striking in the areas of stress buffers, which have obviously taken on increased salience in recent years. In a market crisis, the manager of a multi-strategy fund can move cash between strategies to where it's needed most and thereby optimize stress buffers across those strategies. This means that a multi-strategy fund generally can afford to reserve a smaller proportional cash buffer than a portfolio of single-strategy funds would in the aggregate. The lower threshold on the amount of uninvested capital held in reserve can have a positive impact on the risk-adjusted return of a multi-strategy fund, and also generate more free cash per unit of return, relative to a multi-manager structure.

9. Benefiting from Dealer Relationships

A manager's ability to negotiate strong financing contracts depends in part on the number, scale, and breadth of the dealer relationships that it maintains. The forces of competition in the dealer financing community suggest that the quality of financing increases with the number of dealers with which a manager can negotiate and the more business that it can dole out. We believe that firms managing multi-strategy platforms have an edge in this regard because they tend to have larger asset bases than firm managing only one or a few strategies.

One of the key lessons of the past three years is that the quality of a firm's financing arrangements is crucial. We use the term "quality" in this context to denote four primary attributes: the degree to which specific business terms in financing contracts favor the manager, diversification of the supply of leverage, the duration of the financing, and pricing. Managers with large asset bases are advantaged when negotiating specific leverage provisions, such as circumscribing or avoiding altogether certain "triggers" permitting dealers to pull credit lines. They can diversify by sourcing leverage from multiple providers given the possibility of establishing a sizable relationship with each provider. They can bargain effectively for longer financing terms. And they can obtain better pricing given the volume of their business. Volume also means that a manager can secure some or all of these benefits for smaller (often single-strategy) funds as well as larger flagship (often multi-strategy) funds.

A second, related advantage to a broad set of dealer relationships is better deal flow. The bigger the dealer relationship, the more likely a manager will be at the head of the line when a dealer is looking for reliable counterparties for interesting deals. Furthermore, a multi-strategy manager can act more quickly on such deals—often a key determinant of success—by having a range of experts on hand to assess such opportunities and the freedom to proceed on that evaluation without first determining whether a particular deal fits within the (more narrow) investment mandate of a single-strategy fund.

10. Building Operational Infrastructure and Internal Control Systems

The breadth and scale of a multi-strategy manager's operations also allow it to build a sizable back-office and operational infrastructure to support its investment activities. Touting this as an advantage might be construed as making a virtue out of necessity. After all, greater complexity on the investment side necessarily means a bigger and better equipped back office and a more robust compliance regime. Firms dedicated to single strategies generally don't invest significant resources to build such infrastructure because they don't need to. But this argument is shortsighted. All firms in the alternatives space are exposed to operational risk, and this has only intensified in recent years with elevated regulatory scrutiny and numerous changes in the rules that govern trading in various capital markets.

Furthermore, there's a feedback loop between a firm's infrastructure and asset scale and the talent recruitment/retention factor already discussed. Investors increasingly demand institutional quality infrastructure from managers in the alternatives space, which means that marginal dollars are more likely to flow to larger firms with more robust infrastructures. And because a strong back office and support organization provides investment professionals with more freedom to practice their craft, multi-strategy firms may attract a disproportionate share of the best talent.

Anticipating Counterarguments

We acknowledge a number of rejoinders to the case favoring a multi-strategy approach over multiple investments in single-strategy funds. We believe that several of these counterarguments are justified, but a number of others apply equally to multi- and single-strategy funds. Let's start with the latter.

One charge often leveled against multi-strategy funds is that the breadth of their investment universe inevitably results in excessive beta exposure. On this view, multi-strategy funds package their alpha along with returns that are heavily correlated to various forms of beta. And even if that beta is relatively "exotic," it might even be replicated by various combinations of options or long or short positions in exchange-traded funds.

Although this critique might apply to certain multi-strategy funds, it doesn't appear to characterize multi-strategy funds on average—actually, quite the opposite. Leaving aside the topic of exotic beta (which might require a separate paper), the Dow Jones Credit Suisse Hedge Fund Index had a correlation of 0.65 to the S&P 500 over the last seven years. Over that same period, the Dow Jones Credit Suisse Multi-Strategy Hedge Fund Index had a correlation of approximately 0.55 to that equity index, and, we know it's possible to improve upon that. (Our largest multi-strategy fund had a correlation of approximately 0.15 to the S&P 500 over that same period.) The more general point here is that portfolio construction (whether at the strategy and/or aggregate level), not the number of strategies deployed, determines whether a fund delivers uncorrelated returns.

A second critique centers on asset/liability matching. Some observers contend that multi-strategy funds tend to manage less liquid strategies alongside more liquid ones, and consequently a mismatch can arise between the liquidity of underlying instruments and the terms governing investor access to capital. Multi-strategy funds may aggregate instruments that are subject to higher or lower levels of market liquidity. But the potential for an asset-liability mismatch is not limited to the multi-strategy space. Managers of funds dedicated to strategies as disparate as long/short equities, fixed-income relative value, event-driven opportunities, and credit investing have fallen afoul of such mismatches, either by structuring a fund at the outset with overly "friendly" access to investor capital (relative to the liquidity of the fund's investments) or by failing to track the evolving liquidity of a fund's investments over time.

We support the notion that fund liquidity terms must be set appropriately given the liquidity of underlying instruments, taking into account how the liquidity of those instruments might change in times of market stress, but this isn't an issue unique to multi-strategy funds. Indeed, because managers of multi-strategy funds often combine strategies and asset classes with varying degrees of liquidity, those managers may be more likely than single-strategy managers to get asset-liability matching right.

Two other counterarguments strike closer to the core of what it means to be multi-strategy. One holds that multi-strategy funds are subject to a "tie-in" sales model that exposes investors to substandard businesses as part of the overall package. Because investors in multi-strategy funds purchase a fixed menu of strategies, rather than choosing *à la carte,* investors may find it difficult to assess a manager's strengths and weaknesses in any one particular area. As a result, the investor may end up buying relatively lesser performing strategies that the manager bundles with better performers. By contrast, investors that build customized multi-manager portfolios can select only those strategies they desire and can choose only those managers in which they have conviction. This is a valid argument; it is, we believe, simply outweighed by the advantages of multi-strategy funds cited above.

A second credible rejoinder centers on complexity and suggests that the sheer number of strategies "under the hood" may result in a portfolio that is highly complex and consequently too difficult for the investor to comprehend. As a result, some investors prefer single-strategy models on "stick-to-your knitting" grounds and the straightforward analysis of the investment proposition and ongoing monitoring.

It's true by definition that multi-strategy funds have more moving parts than any single single-strategy fund, although in fairness, the level of complexity may be no greater than a multi-manager program of single-strategy investments. Still, given that these moving parts fall into a single fund and that the dynamics of the whole portfolio may be harder for investors to grasp than the individual strategy parts, we believe that managers of multi-strategy funds can and should design transparency regimes that illuminate a fund's exposures at both levels. Providing useful information about the strategies included in a multi-strategy fund and their aggregate performance requires significant thought and effort. Though not an easy task, we believe that it's possible to create informative and insightful investor reports in that regard.

Conclusion

Many firms, including our own, focus less on categorization and nomenclature and more on producing alpha; the more of it, and the more diversified it is, the better. But for good or ill, our firm and many of its products have been placed in a multi-strategy bucket. We began managing multi-strategy investment funds on the premise that allocating capital across different strategies could enhance the risk-adjusted return of the total portfolio. This paper has attempted to catalog some of the structural advantages that accrue to multi-strategy funds or single-strategy funds managed by multi-strategy managers relative to a portfolio of separate allocations to single-strategy funds or firms that manage only one or a few strategies.

We believe the advantages conferred by managers of multi-strategy funds cut across a wide swath of hedge-fund processes and activities, including alpha generation, risk management, financing, and back-office operations. In our view, to quote perhaps an unlikely source in V.I. Lenin, there's a point at which "quantity turns into quality": a firm or fund that manages ten or fifteen alternative investment strategies can offer investors a range of benefits that, when taken as a whole, are not available from single-strategy managers or funds that invest in just a handful of strategies.

That said, trade-offs certainly apply when an investor chooses, say, between an investment in a multi-strategy fund and a portfolio of single-strategy funds. The degree to which a given investor gains comfort with one or the other approach will of course vary. But we strongly believe that a multi-strategy approach to investing not only enhances portfolio diversification and risk-adjusted returns but also bolsters operational infrastructure and the alignment of manager and investor interests. Our firm packages its strategies in a variety of funds that straddle both sides of the multi-strategy/single-strategy divide. However, as a matter of firm culture, we believe all of our investment activities are characterized by, and benefit from, a multi-strategy perspective on global financial markets.