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AQR's DELTA Strategy

In the summer of 2011, the principals at AQR Capital Management met in their Greenwich, CT, office to decide how best to market their new DELTA strategy. After launching in the late summer of 2008, the DELTA strategy had compiled an excellent track record, but David Kabiller, a Founding Principal and the Head of Client Strategies at AQR, was frustrated that the fund had not grown faster in light of its exceptional performance. In Kabiller's experience, the combination of a solid track record plus an innovative product usually led to explosive growth in assets under management (AUM), but that had not been the case so far with DELTA.

The DELTA strategy was a product that offered investors exposure to a basket of nine major hedge fund strategies. The DELTA strategy was innovative in two ways. First, in terms of its structure, AQR implemented the underlying strategies using a well-defined investment process, with the goal of delivering exposure to a well-diversified portfolio of hedge fund strategies. Second, in terms of its fees, the new DELTA strategy charged relatively lower fees: 1 percent management fees plus 10 percent of performance over a cash hurdle (or, alternatively, a management fee of 2 percent only). This fee structure was low relative to the industry, where 2 percent management fees plus 20 percent of performance, often with no hurdle, was standard. These features, while distinct relative to other related "hedge fund replication" products, had yet to fully resonate with investors, and Kabiller needed to decide on a more effective marketing approach given the large number of competitors entering this space.

AQR

AQR was established in 1998 and headquartered in Greenwich, CT. The founding Principals of the firm included Clifford Asness, David Kabiller, Robert Krail, and John Liew, who had all worked together at Goldman Sachs Asset Management before leaving to start AQR.

Asness, Krail, and Liew had all met in the Finance PhD program at the University of Chicago, where Asness' dissertation had focused on momentum investing. AQR's over 200 employees managed $24.0 Billion in assets. A large amount of these assets were invested in hedge fund strategies.

Professors Daniel Bergstresser (HBS), Lauren Cohen (HBS), Randolph Cohen (MIT), and Christopher Malloy (HBS) prepared this case. HBS cases are developed solely as the basis for class discussion. Cases are not intended to serve as endorsements, sources of primary data, or illustrations of effective or ineffective management.

Hedge funds

While open-end mutual funds had to register with the SEC, calculate and publish daily net asset values (NAVs), and provide investors with daily liquidity, hedge funds were not automatically regulated by the SEC and enjoyed as much flexibility as they could negotiate with their clients with respect to liquidity. In exchange for this light-touch regulation, hedge funds were restricted in their marketing: only high net worth and institutional investors could directly invest in these funds.

Nevertheless, academic work had by the late 1990s established that hedge funds offered a risk exposure that was less correlated with broad market indexes than most mutual funds, and potentially offered high risk-adjusted returns. The performance of the hedge fund industry during the 2001-2002 recession was particularly good; **Exhibit 1** shows that while stock market indices (S&P and NASDAQ) fell dramatically during this period, broad hedge fund indices (e.g., DJCS_Hedge and HFRI_FW, which were designed to track the overall performance of the hedge fund industry) rose.

In response to the perception that hedge funds truly offered outperformance, institutional money flowed into hedge funds during the late 1990s and 2000s, and the size of the industry grew rapidly. **Exhibit 2** charts the growth in the number of funds and total AUM (assets under management) in the hedge fund industry since 1997. With this growth in assets and managers, questions began to surface about the role of hedge funds in a portfolio and whether there were other ways to capture those returns without being exposed to some of the negatives of hedge fund investing.

Alternatives to hedge funds

Although many investors were attracted to the possibility of obtaining high returns and/or low covariance with other investments in their portfolio, many still found hedge funds themselves to be unappealing. Among the reasons for their distaste were: a) illiquidity, b) minimum investment requirements, c) high fees, d) the difficulty of selecting the right hedge fund manager, e) the inability to gain access to high quality funds, and f) the lack of established benchmarks in the industry.

Most hedge funds only allowed redemptions on certain dates – often at the end of each quarter. Additionally many funds had an initial lockup – that is, investors could not redeem from the fund for a set period after investing; the period was often one year though some funds had no lockup and others had locked up investors for as long as five years. Most funds also had a minimum investment size of at least $1 million. In addition, many investors found the fees charged by hedge funds, which often amounted to 2% of assets under management (some funds even charged the full cost of their operations to their funds, amounting to more than 2% management fees) plus an additional 20% of profits generated by the fund, to be excessive and hoped to obtain similar benefits at a lower cost. Some investors also found the idea of selecting a portfolio from the many thousands of available hedge funds to be an intimidating task, especially given the lack of transparency (both as to investment process and holdings) that was common among hedge fund managers. And of course even if an investor could identify a set of funds that made up an attractive portfolio, the managers of those funds might not accept an investment at that time or from that investor. Finally, in contrast to the mutual fund industry, there was a lack of established benchmarks for hedge funds, making it difficult to assess skill versus luck and idiosyncratic versus systematic returns. While hedge fund indices existed, these were just peer groups, not true benchmarks, and were biased by a number of things, including style drift and survivorship bias.

In response to these criticisms, alternative products were soon introduced into the marketplace.

Funds of Hedge Funds (FOFs)

One popular alternative to direct hedge fund investing was the funds of hedge funds (FOFs) structure. FOFs aimed to take investors' money and allocate it among a select group of hedge funds – sometimes among a small number (even in the single digits in some cases), and sometimes among hundreds of funds.

This approach solved a number of the issues facing hedge fund investors, especially those with modest capital. FOFs had less onerous liquidity rules than individual hedge funds, and FOFs were less likely to encounter liquidity problems than individual funds since they could obtain liquidity from a number of underlying funds. Still, FOFs were ultimately subject to the underlying liquidity (both with respect to liquidity terms and underlying holdings) of the funds they were investing in. In addition, a single minimum investment bought a portfolio of many funds, and an experienced and hopefully expert financial professional, or team of such professionals, selected the funds, and chose allocations among them that (presumably) produced a well-optimized portfolio. Finally, FOF managers claimed that their experience and connections provided access to hard-to-enter funds.

Thus FOFs presented an appealing package, and indeed close to half of all money invested in hedge funds came through FOFs. However, many investors were put off by FOF fees, which historically included an additional layer of fees often as high as half the level of hedge fund fees themselves (thus making total fees paid about 1.5 times higher than for direct investing).

Multi-strategy Funds

Another approach to obtaining an alternative-investment portfolio while avoiding some of the challenges of one-strategy-at-a-time creation was to invest in multi-strategy hedge funds. Such offerings were often made by large hedge fund firms that offered a variety of individual strategies. Investors might have the option to invest in a multi-strategy fund that allocated assets across the different silos within the firm.

One major advantage of multi-strategy funds over FOFs was fees: multi-strategy funds typically did not charge an additional fee layer over and above the hedge fund fee (as FOFs did). Further, multi-strategy funds only charged performance fees when the total investment was in the money; whereas, in the case of FOFs and direct single strategy investments, an investor could be subject to performance fees even if the net, aggregate performance wasn't positive. A second potential advantage of multi-strategy funds was in portfolio construction. Not only was the allocation among strategies performed by professionals, those professionals likely had a high level of insight and visibility into the opportunities available to the individual silo managers.

Multi-strategy funds generally offered as good or better liquidity than individual-strategy funds, and of course there was no trouble gaining "access" to the underlying managers. Multi-strategy funds appeared to offer strong diversification, although in the famous case of the hedge fund Amaranth, investors thought they were investing in a diversified portfolio of strategies. However, extreme losses in one of the portfolio's silos led to the loss of approximately 75% of total portfolio value. Consequently many investors felt they were not truly diversified if they had a large allocation to a multi-strategy fund, but this could be potentially mitigated through the right amount of transparency into the positions and risks of the portfolio, or, of course, through diversification among several different multi-strategy funds, thereby minimizing single firm risk.

One potential concern with multi-strategy funds from the investor's point of view was the question of portfolio manager quality. Although it was possible that a single firm could gather under one roof the very best managers in a variety of specialties, some investors found this implausible.

Hedge fund replication

Starting in 2006, a number of investment management firms also introduced "hedge fund replication" products. These strategies, implemented using liquid instruments, purported to give investors a 'top-down' exposure to the broad risk exposures of the hedge fund industry. These products could be viewed as an effort to provide 'hedge fund beta,' or the systematic part of hedge fund performance.

The rationale for these products originated from studies of hedge fund returns that highlighted the idea that the line between 'alpha' and 'beta,' was potentially fluid. The alternative systematic exposures of hedge funds could be viewed as a kind of "exotic beta." If hedge fund returns could be approximated with dynamically traded portfolios of liquid assets, then investors attracted to hedge fund returns, but potentially looking for a liquid or low-fee alternative to actual hedge funds could invest in a 'hedge fund replication' product that attempted to mimic hedge fund returns using liquid assets.

These top-down approaches aimed to use statistical methods to create a portfolio of liquid assets that had similar performance to hedge funds as a class. One top-down approach was to use linear regressions, or optimizations, to build a portfolio that had high correlations to historical hedge fund returns. An example of this approach consisted of three steps. First one would obtain a long-run time series of returns on a diversified portfolio of hedge funds (e.g., the HFRI monthly hedge fund indices were commonly used). Then one would obtain returns on a large number of liquid investments--these could be indexes of stocks (e.g., S&P 500, MSCI EAFE, MSCI Emerging, Russell 2000, etc.), bonds (e.g., US 10-year government bonds), currencies (e.g., EUR-USD Spot Exchange Rate), etc. () Finally, one would use a standard statistical optimizer, or linear regression, to find the portfolio of liquid investments (either long or short and at weights implied by the statistical analysis) that most closely replicated the statistical characteristics of the hedge fund portfolio. **Exhibit 3** presents the monthly returns from a set of indices that were commonly used for hedge fund replication purposes.[1]

Specifically, the goal was to create a portfolio that historically moved as close to one for one with the hedge fund portfolio, so that it had high correlation with the hedge fund portfolio, and yet also matched other "statistical moments," such as volatility, skewness, and kurtosis. Historically, and ideally on a forward-looking basis as well, this portfolio would fulfill a role in the diversified portfolio similar to the role that hedge funds would play.

Exhibit 4 plots the recent return performance of a few commonly used hedge fund indices (e.g., DJCS_Hedge, HFRI_FW, and HFRX_Global), which represent composite indices of individual hedge funds and were designed to track the overall return performance of the industry; as well as a fund-of-hedge funds (FOF) index (HFRI_FOF) designed to track the overall return performance of funds of hedge funds. **Exhibit 5** presents the return performance of four popular hedge fund replication index products, produced by Merrill Lynch, Goldman Sachs, JP Morgan, and Credit Suisse. **Exhibit 6** presents the return performance of the overall hedge fund indices alongside the performance of these hedge fund replication products.

[1] This is an excerpt of the data. The full data series is in the Spreadsheet Supplement to the case.

AQR's approach

For years, the principals at AQR had been working on understanding the underlying nature of hedge fund returns and exploring the possibility of being able to capture them in a transparent, liquid and cost effective way. Thus, they were initially intrigued by the introduction of these hedge fund replication products, but very soon came to the conclusion that an entirely different approach to delivering exposure to the systematic risk factors of the hedge fund industry was needed. Whereas AQR's competitors focused on the 'top-down' products described above, AQR focused on creating a 'bottom-up' approach that sought to deliver significant risk-adjusted returns instead of simply replicating an index by: capturing classical, liquid hedge fund strategies that were uncorrelated with traditional markets, implementing them at low cost, and then bundling these strategies into a well-constructed single portfolio focusing on portfolio construction, risk management and trading.

Origins of AQR's approach

The idea of direct, simplified implementation of core hedge fund strategies was hinted at by the pioneering work into merger arbitrage of Mark Mitchell and Todd Pulvino. Mitchell and Pulvino were both former academics (at Harvard Business School and the Kellogg School of Management, respectively) who subsequently teamed up with AQR in 2001. A simple merger arbitrage strategy, for example, worked as follows: after the announcement by Firm A of a desire to acquire Firm B, the merger arbitrageur made a purchase of the target Firm B shares while shorting the acquirer Firm A's shares (if the acquisition was to be made in cash, the arbitrageur merely purchased Firm B shares without shorting Firm A). Typically upon the announcement of the merger, the price of the target shares would not rise all the way to the price that would be appropriate if the merger were sure to be completed.

When Mitchell and Pulvino studied the merger arbitrage industry, they found that merger arbitrage strategies did deliver substantial risk-adjusted returns. Specifically, the expected returns of putting merger arbitrage investments into place was high, and while the risk was higher than one might naturally have expected -- because mergers tended to break up exactly at times of market stress, and therefore the merger arbitrage strategy had more beta, or market exposure, than might be presumed -- nevertheless they found that even accounting for this risk, the performance of a naïve merger arbitrage strategy that invested in every deal was substantial.

Mitchell and Pulvino also looked at the performance of actual merger arbitrage funds. A merger arbitrage fund would be expected to add alpha by correctly identifying which mergers were more or less likely to achieve completion than the market anticipated. So, for example, if the market pricing of a deal was such that the expected return would be zero if the merger was 90% likely to be completed, the merger arbitrageur's job was to try to figure out whether in fact the merger was substantially more than 90% likely to go through, substantially less than 90%, or about 90%, and then invest only in those deals that were substantially more than 90% likely to go through. What Mitchell and Pulvino found was that merger arbitrage funds made money, but that they did not show an ability to forecast which mergers would close over and above the market's ability. That is, the outperformance that merger arbitrageurs were generating was no greater than the outperformance that would be generated by a simple strategy that bought every target and shorted every bidder, particularly net of fees.

This opened the door to a potential strategy for the replication of merger arbitrage: simply participate in every merger arbitrage deal that met a set of basic screens (e.g., size and liquidity). The benefit to investors would be a potentially more diversified portfolio of merger deals than would be obtained from a fund manager who only selected a subset of the deals, and also potentially far lower fees, because there was no need to pay an analyst to determine which mergers were more or less likely to succeed. With this as a template, one could easily imagine a whole roster of potential hedge fund strategies that could be captured in a systematic way (e.g., long value stocks and short growth stocks, convertible arbitrage, carry trades, trend following trades and trades exploiting other well-known empirical asset pricing anomalies). Since the early work into merger arbitrage, AQR had spent years researching these other classical hedge fund strategies that could be captured from the bottom-up.

Bottom-Up versus Top-Down

AQR preferred their bottom-up approach for a variety of reasons. First, they felt that many hedge fund strategies earned returns for bearing a liquidity risk premium, which you could not earn by trading solely in liquid instruments as in the hedge fund replication methods. For example, in order to capture the returns from a convertible bond that traded at a discount to fair value because of a liquidity risk premium, you needed to own the convertible bond, not simply liquid assets that were correlated with the convertible bond. Second, since top-down methods aimed to maximize correlations with recent past hedge fund performance, these approaches were necessarily backward-looking and based on what hedge funds were doing in the past. By contrast, if you ran the actual strategies, one could respond to market opportunities immediately. Finally and perhaps most importantly, AQR felt that the hedge fund indices upon which most top-down replication strategies were based had a variety of biases (e.g., survivorship bias), had too much exposure to traditional markets (i.e., equity and credit beta) and also tended to reflect the weights of the most popular strategies. Since these popular strategies were crowded with many trades, the expected returns on these strategies going forward were potentially lower. In short, while they shared the noble goals of top-down replication products (i.e., attempting to provide liquid, transparent exposure to hedge fund strategies at a lower fee), AQR felt that the approach had fundamental flaws or, as Cliff Asness put it in a speech in October 2007 on hedge fund replication, "Not Everything That Can Be Done Should Be Done."

AQR's DELTA Strategy

In late 2007, AQR decided to focus their years of research on capturing the classical hedge fund strategies in a systematic way from the bottom up by "creating our own product that would seek to deliver these strategies in a risk-balanced and efficiently implemented way." AQR viewed their "DELTA" product as superior to the newly-introduced replication products that were being marketed as offering 'hedge fund beta.' In fact, AQR staff bristled at comparisons between the existing hedge fund replication products and their DELTA product. To ensure that AQR was taking a broad approach and to avoid being insular, they formed an external advisory committee made up of some very seasoned hedge fund investors to help guide the development of the product.

The DELTA name was an acronym that reflected the product's characteristics: 'Dynamic, Economically Intuitive, Liquid, Transparent and Alternative.' The portfolio was designed to be uncorrelated with the overall stock market, and would be diversified across nine broad strategy classes: a Fixed Income Relative Value strategy, a Managed Futures strategy, a Global Macro strategy,

an Emerging Markets strategy, a Long/Short equity strategy, a Dedicated Short Bias strategy, an Equity Market Neutral strategy, a Convertible Arbitrage strategy, and an Event Driven strategy.

Performance

AQR decided to go ahead with the creation of the DELTA strategy in the late summer of 2008. By October 1, 2008, the portfolio was fully invested and had begun to compile a track record. At the time, the staff at AQR had worried that this might be "the worst possible time to be launching a product designed to capture classical hedge fund strategies." Nonetheless, the DELTA portfolio performed well in the fourth quarter of 2008 immediately after its launch, an impressive feat given the turbulence in the market. **Exhibit 7** charts the monthly performance of the DELTA strategy since inception. **Exhibit 8** shows the raw monthly returns of the DELTA strategy, compared to the raw monthly returns of stock market indices (S&P and NASDAQ) and broad hedge fund indices (e.g., DJCS_Hedge and HFRI_FW, which were designed to track the overall performance of the hedge fund industry). **Exhibit 8** also presents the "beta" of the DELTA strategy with respect to these various market and hedge fund indices, while **Exhibit 9** graphs the cumulative return performance of the DELTA strategy relative to these indices.

Marketing DELTA

Although DELTA was off to a great start, Kabiller felt like it was underperforming its potential. By the summer of 2011, despite its excellent performance, growth in DELTA's AUM had been modest. After giving it a lot of thought, Kabiller identified three primary challenges AQR faced in convincing investors to allocate capital to DELTA. First, many of his institutional clients had grown very comfortable selecting a set of hedge funds and paying them both management and performance fees. **Exhibit 10** presents the recent annual returns of some of the largest U.S. hedge funds, many of whom had delivered stellar returns over time. Kabiller was convinced that one of DELTA's major assets was its ability to deliver hedge fund returns with a significantly lower fee structure. But many of his institutional clients had difficulty assessing just how large an advantage this provided DELTA. For instance, if a client selected the two percent management fee with no performance fee structure, how much higher could they expect their after-fee returns to be? Given that performance fees were typically only paid on returns in excess of a cash hurdle, was a twenty percent performance fee really that costly to fund investors? Related considerations applied to investors that invested primarily through Funds of Hedge Funds. These investment vehicles typically added a layer of fees on top of the after-fee performance of their hedge fund investments – typically a one percent management fee and a ten percent performance fee. Due to DELTA's multi-strategy investment approach, its after-fee performance should perhaps be benchmarked against those of fund-of-funds alternatives. Conveying to such investors the fee advantage of DELTA in simple terms – for instance, how much better their competitors' pre-fee returns needed to be than those of DELTA to offset the fee differential – would go a long way in convincing them that DELTA was the superior approach.

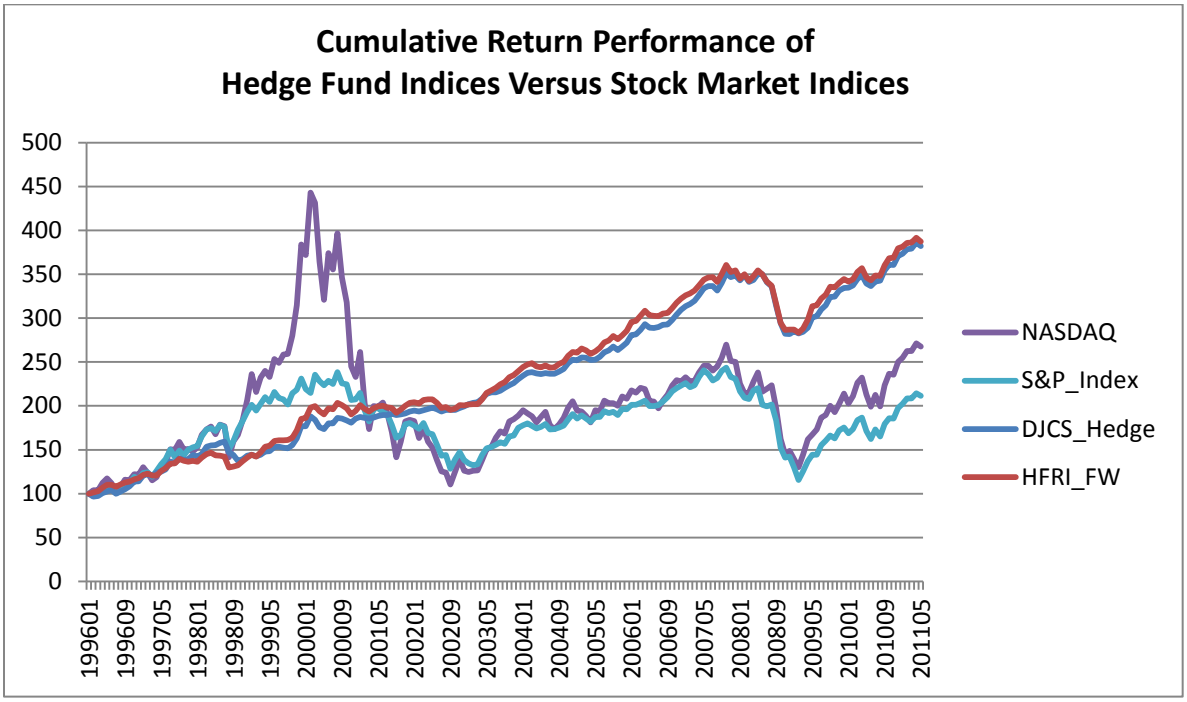
A second challenge in marketing DELTA was the emergence of the so-called hedge fund replication strategies. These strategies were almost the polar opposite of the fund-of-funds – they had modest fees and, because they replicated hedge fund returns using highly liquid indices, they faced little in the way of liquidity risk. Institutional investors interested in low-fee exposure to hedge fund returns found these products attractive, and Kabiller found it challenging to convey the advantages of the DELTA approach. His inclination was to focus on two key limitations of hedge fund replication. First, he felt they relied heavily on the historical relationship between hedge fund returns and major stock and bond market indices. To the extent that the relationship was not stable,

or to the extent that a large fraction of hedge fund movements could not be captured by an appropriate combination of these indices, the replication approach would be limited in its ability to truly deliver in real time the actual returns being earned by the average hedge fund investor. Second, even if the strategy could replicate a large fraction of the monthly fluctuations in performance of the average hedge fund, Kabiller felt it was likely that a "top-down" approach would be limited in replicating the actual edge, or "alpha," of the average hedge fund. Even if much of the risks to which hedge funds were exposed could be found in broad stock and bond market indices, it was unlikely that any of the informational or liquidity edges they possessed would appear in the returns of these indices.

A final challenge Kabiller faced in the marketing of DELTA was its track record. Although it had outpaced the broad HFRI index since its inception in the fall of 2008, the track record was still a fairly limited one. Moreover, since the central appeal of the product was its ability to match average hedge fund returns with modest fees, the outperformance ironically posed something of a challenge for DELTA. Kabiller felt it would be critical to understand its source before determining whether it was an aberration or whether they possessed a sustainable edge relative to the index of hedge funds.

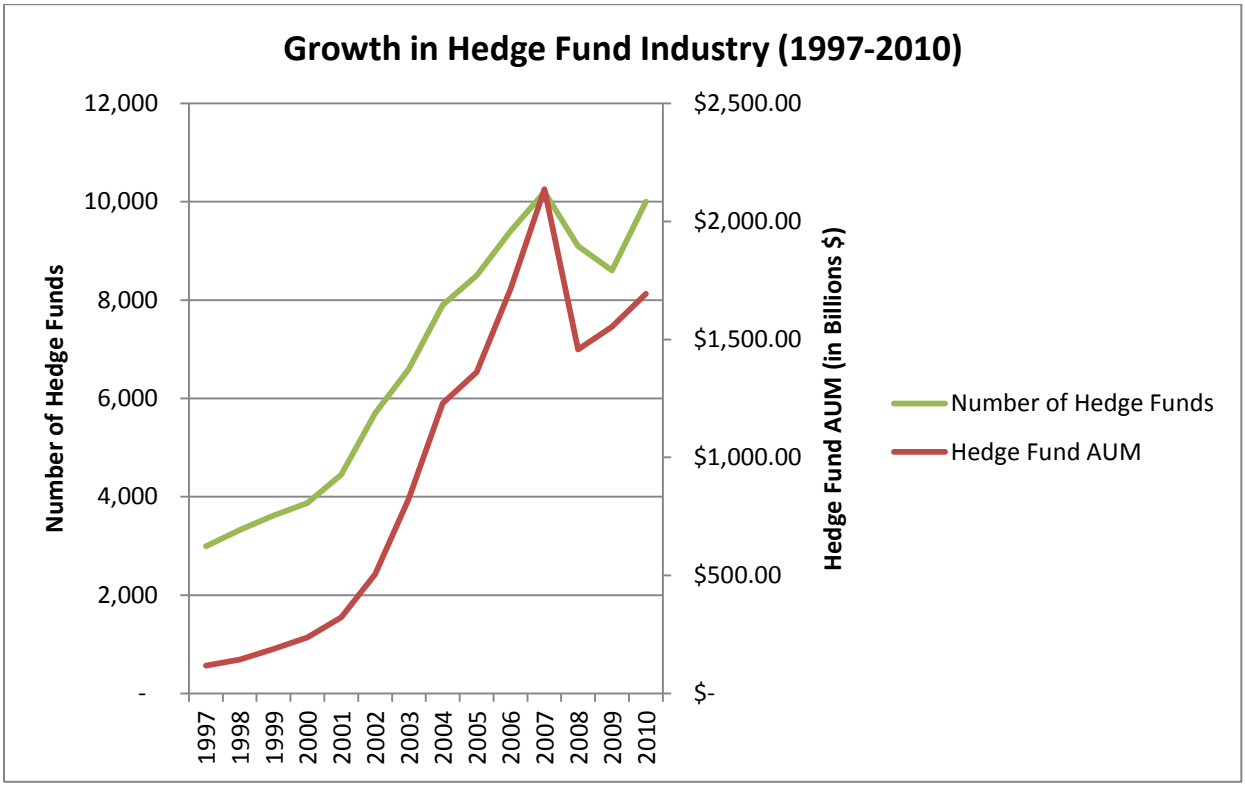
As Kabiller looked out beyond his infinity pool and into the calm waters of the Long Island Sound, he worried that without a proper grasp of these issues, many rough sales meetings lay ahead for him and his DELTA team.

Exhibit 1 Cumulative Return Performance of Hedge Fund Indices versus Stock Market Indices, since 1996.



Source: Bloomberg.

Exhibit 2 Total Number of Hedge Funds and Total AUM (Assets Under Management) for the Hedge Fund Industry, since 1997.



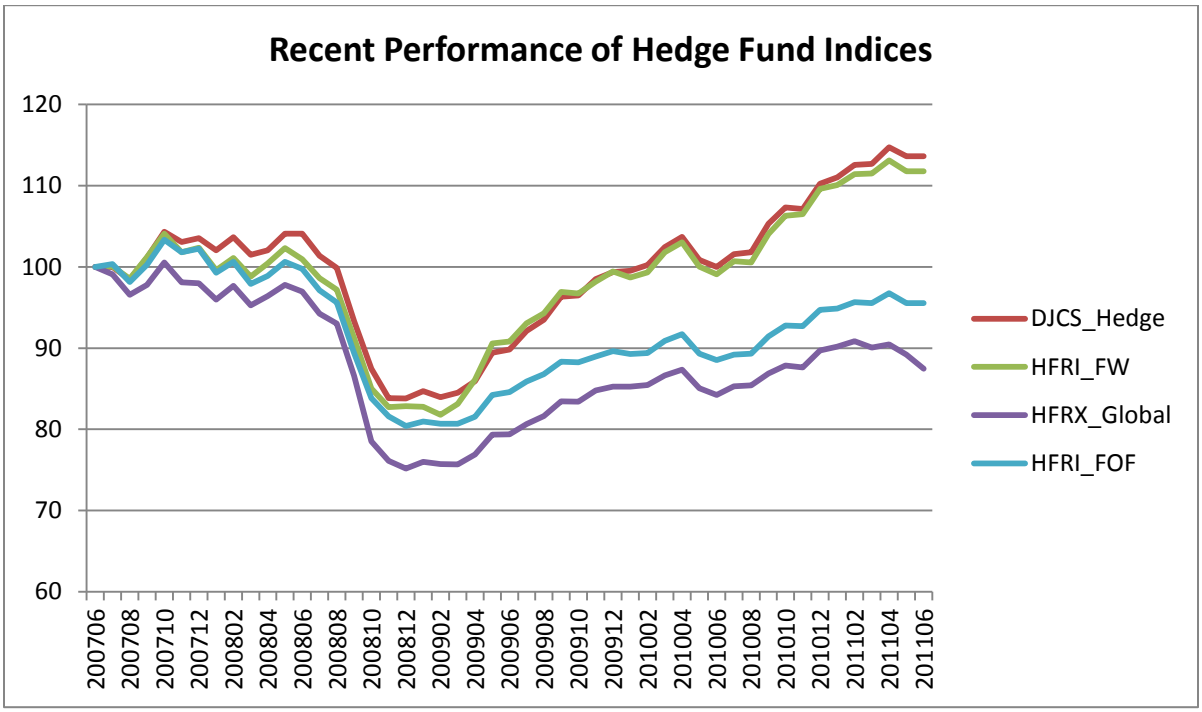
Source: Created by casewriters using data from Hedge Fund Research, www.hedgefundresearch.com, accessed August 2011.

Exhibit 3 Excerpt of Monthly Returns on Indices Commonly Used for Hedge Fund Replication (1996-2011). The full data series is contained in the Spreadsheet Supplement to the case

	HFRI	HFRI FOF	HFRI FW	MSCI EM	MSCI EAFE	RUSSELL 2000	S&P 500	US TREAS 2YR	US TREAS 10YR	CURRENCY
1/31/1996	1.1%	2.7%	2.9%	7.6%	3.7%	-0.2%	3.4%	0.9%	0.4%	5.1%
2/29/1996	2.8%	-0.6%	1.2%	-0.6%	-1.0%	3.0%	0.9%	-0.5%	-3.6%	-3.7%
3/29/1996	1.9%	1.0%	1.5%	1.1%	2.8%	1.8%	1.0%	-0.2%	-1.1%	-0.3%
4/30/1996	5.3%	3.1%	4.0%	5.2%	3.5%	5.3%	1.5%	0.0%	-1.7%	4.5%
5/31/1996	3.7%	1.5%	3.1%	0.1%	-1.2%	3.9%	2.6%	0.2%	-0.6%	-1.4%
6/28/1996	-0.7%	0.4%	0.2%	0.9%	1.0%	-4.2%	0.4%	0.8%	1.5%	-0.3%
7/31/1996	-2.9%	-1.9%	-2.1%	-6.2%	-4.9%	-8.8%	-4.4%	0.4%	0.0%	-1.0%
8/30/1996	2.6%	1.5%	2.3%	2.6%	0.9%	5.7%	2.1%	0.4%	-0.5%	-1.4%
9/30/1996	2.2%	1.2%	2.1%	1.4%	4.6%	3.7%	5.6%	0.9%	2.2%	0.9%
10/31/1996	1.6%	1.6%	1.0%	-1.4%	-1.2%	-1.7%	2.8%	1.2%	2.9%	4.1%
11/29/1996	1.7%	2.3%	2.1%	1.7%	4.0%	4.0%	7.6%	0.8%	2.8%	0.4%
12/31/1996	0.8%	0.7%	1.3%	1.0%	-0.7%	2.4%	-2.0%	0.0%	-2.1%	0.0%
…		…	…	…	…	…	…	…	…	…
1/31/2011	0.4%	0.1%	0.4%	-2.1%	1.6%	-0.3%	2.4%	0.2%	-0.4%	-0.7%
2/28/2011	1.3%	0.8%	1.2%	-1.4%	2.4%	5.4%	3.4%	-0.1%	0.0%	-0.2%
3/31/2011	0.5%	-0.1%	0.1%	4.3%	-2.8%	2.4%	0.0%	-0.1%	0.0%	1.1%
4/29/2011	1.3%	1.2%	1.5%	0.8%	2.0%	2.6%	3.0%	0.5%	1.6%	1.7%
5/31/2011	-1.3%	-1.1%	-1.2%	-1.6%	-1.3%	-2.0%	-1.1%	0.4%	2.7%	-0.9%
6/30/2011	-1.3%	-1.3%	-1.2%	-1.9%	-1.2%	-2.5%	-1.7%	0.1%	-0.7%	-0.8%
7/29/2011	-0.3%	0.4%	0.2%	-0.9%	-3.5%	-3.7%	-2.0%	0.2%	3.3%	0.6%
8/31/2011	-4.9%	-2.6%	-3.2%	-7.3%	-8.7%	-8.8%	-5.4%	0.4%	5.7%	-1.2%
9/30/2011	-6.0%	-2.8%	-3.9%	-7.4%	-4.3%	-11.4%	-7.0%	-0.1%	2.8%	1.4%
10/31/2011	4.9%	1.1%	2.7%	9.1%	6.2%	15.0%	10.9%	0.0%	-2.0%	0.0%
11/30/2011	-2.0%	-1.0%	-1.3%	-3.8%	-2.5%	-0.5%	-0.2%	0.0%	1.3%	1.0%
12/30/2011	-0.9%	-0.4%	-0.4%	0.0%	0.5%	0.5%	1.0%	0.0%	2.0%	0.3%
1/31/2012	3.8%	1.9%	2.6%	7.4%	3.9%	7.0%	4.5%	0.1%	0.8%	0.0%

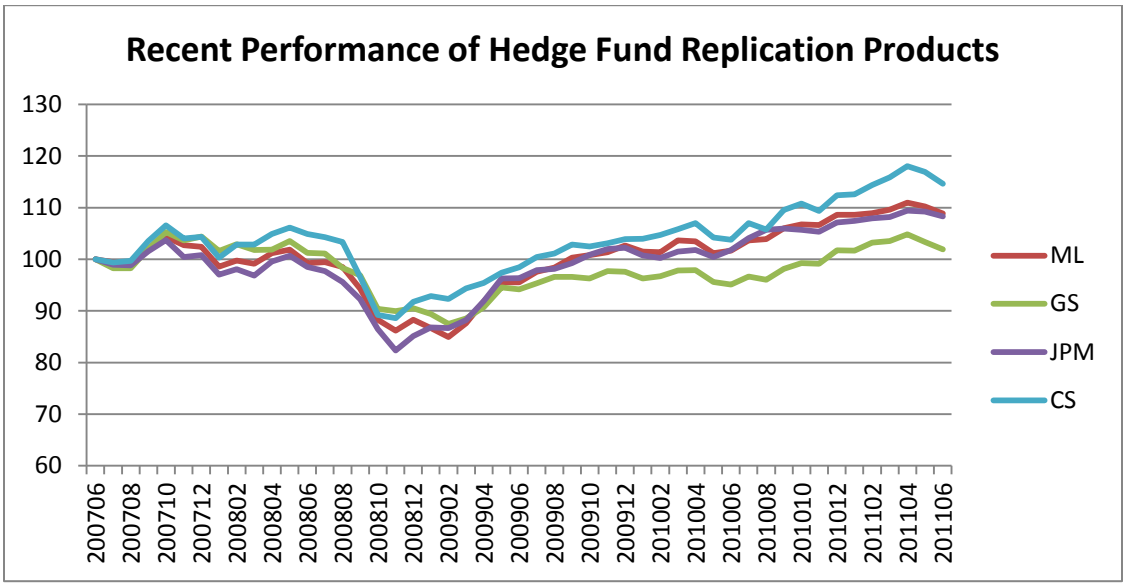
Source: Thomson Reuters Datastream.

Exhibit 4 Cumulative Return Performance of Overall Hedge Fund Indices, since June 2007.



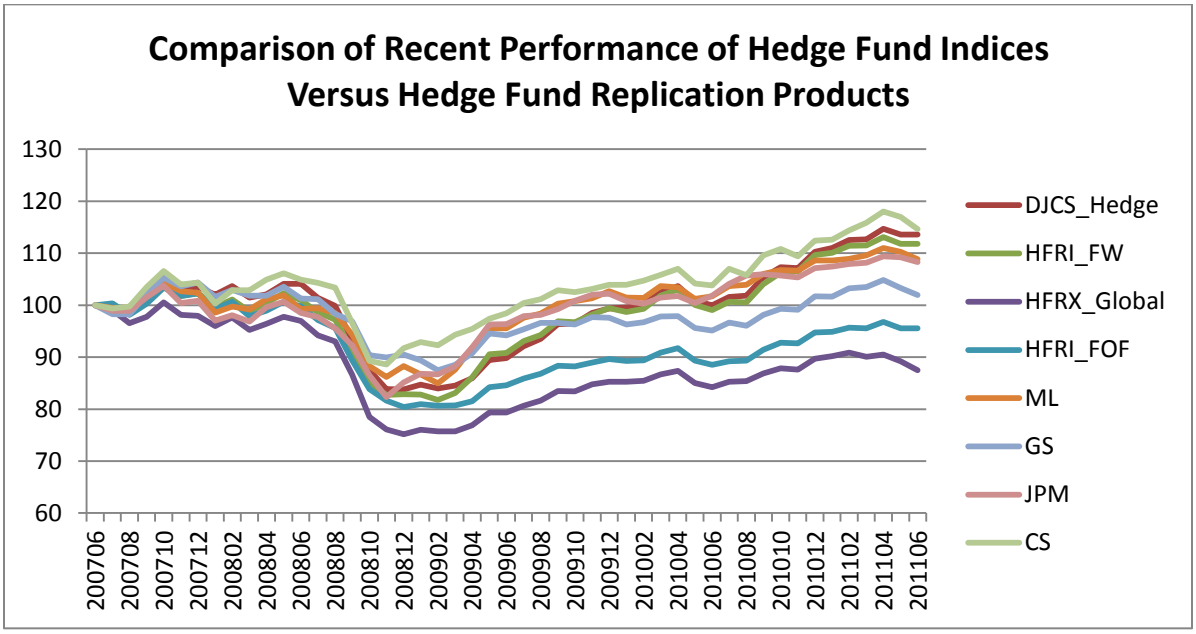
Source: Bloomberg.

Exhibit 5 Cumulative Return Performance of Hedge Fund Replication Indices, since June 2007.



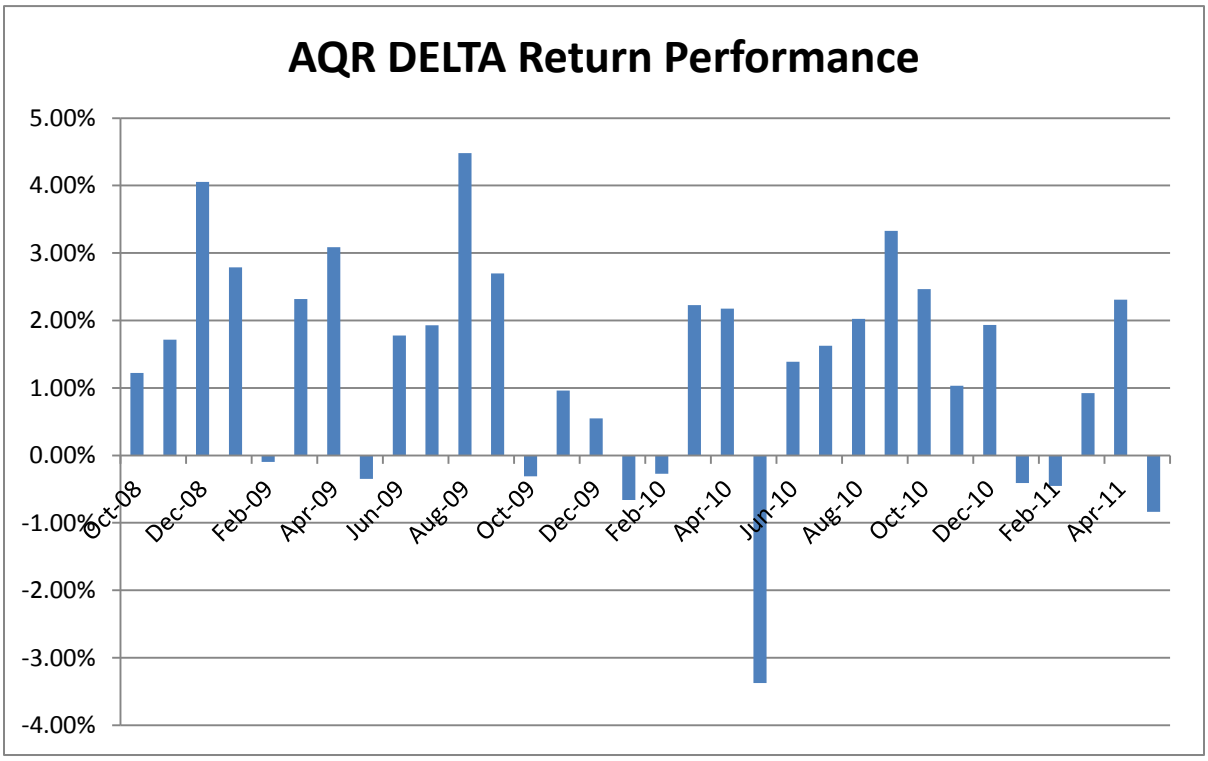
Source: Bloomberg.

Exhibit 6 Comparison of Cumulative Return Performance of Overall Hedge Fund Indices versus Hedge Fund Replication Indices, since June 2007.



Source: Bloomberg.

Exhibit 7 Monthly Return Performance of AQR DELTA strategy, Since Inception.



Source: Company documents.

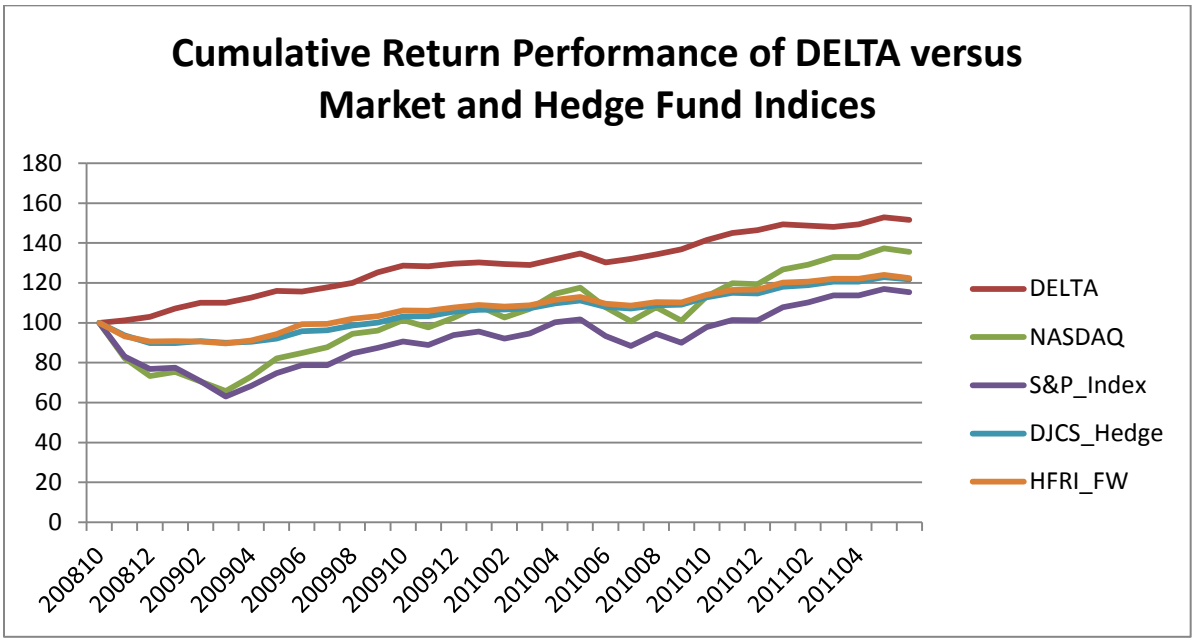
Exhibit 8 Monthly Return Performance (and Beta) of AQR DELTA strategy compared to Market Indices (S&P, NASDAQ) and Hedge Fund Indices (DJCS_Hedge, HFRI_FW), since October 2008.

Date	DELTA	NASDAQ	S&P_Index	DJCS_Hedge	HFRI_FW
200810	1.22%	-17.73%	-16.94%	-6.30%	-6.84%
200811	1.72%	-10.77%	-7.48%	-4.15%	-2.67%
200812	4.05%	2.70%	0.78%	-0.03%	0.15%
200901	2.79%	-6.38%	-8.57%	1.09%	-0.09%
200902	-0.10%	-6.68%	-10.99%	-0.88%	-1.21%
200903	2.32%	10.94%	8.54%	0.65%	1.66%
200904	3.09%	12.35%	9.39%	1.68%	3.60%
200905	-0.35%	3.32%	5.31%	4.06%	5.15%
200906	1.78%	3.42%	0.02%	0.43%	0.25%
200907	1.93%	7.82%	7.41%	2.54%	2.50%
200908	4.48%	1.54%	3.36%	1.53%	1.30%
200909	2.70%	5.64%	3.57%	3.04%	2.79%
200910	-0.31%	-3.64%	-1.98%	0.13%	-0.20%
200911	0.96%	4.86%	5.74%	2.11%	1.52%
200912	0.55%	5.81%	1.78%	0.88%	1.28%
201001	-0.66%	-5.37%	-3.70%	0.17%	-0.76%
201002	-0.27%	4.23%	2.85%	0.68%	0.66%
201003	2.23%	7.14%	5.88%	2.22%	2.49%
201004	2.18%	2.64%	1.48%	1.24%	1.19%
201005	-3.37%	-8.29%	-8.20%	-2.76%	-2.89%
201006	1.39%	-6.55%	-5.39%	-0.84%	-0.95%
201007	1.62%	6.90%	6.88%	1.59%	1.61%
201008	2.02%	-6.24%	-4.74%	0.23%	-0.13%
201009	3.33%	12.04%	8.76%	3.43%	3.48%
201010	2.47%	5.86%	3.69%	1.92%	2.14%
201011	1.03%	-0.37%	-0.23%	-0.18%	0.19%
201012	1.93%	6.19%	6.53%	2.90%	2.95%
201101	-0.41%	1.78%	2.26%	0.69%	0.41%
201102	-0.45%	3.04%	3.20%	1.38%	1.23%
201103	0.92%	-0.04%	-0.10%	0.12%	0.06%
201104	2.31%	3.32%	2.85%	1.80%	1.45%
201105	-0.84%	-1.33%	-1.35%	-0.96%	-1.18%
Average	1.32%	1.19%	0.64%	0.64%	0.66%

DELTA's Beta with:	0.09	0.09	0.25	0.25
DJCS_Hedge's Beta with:	0.25	0.28		
HFRI_FW's Beta with:	0.28	0.32		

Source: Company documents.

Exhibit 9 Cumulative Return Performance of AQR DELTA Strategy versus Market Indices (S&P and NASDAQ) and Hedge Fund Indices (DJCS_Hedge and HFRI_FW), since October 2008



Source: Bloomberg and company documents.

Exhibit 10 Annual Returns of Largest Hedge Funds (%)

Fund Name	Firm Name	Size ($Bil)	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Winton Futures USD Cls B	Winton Capital Management	9.89	7.11	18.34	27.75	22.63	9.73	17.83	17.97	20.99	-4.63	14.46	6.29
Millennium International Ltd	Millennium Intl. Management	8.84	15.26	9.61	10.89	14.68	11.31	16.43	10.99	-3.04	16.28	13.22	8.39
Transtrend DTP - Enhanced Risk (USD)	Transtrend BV	8.38	26.36	26.26	8.48	12.82	5.99	12.04	22.38	29.38	-11.27	14.89	-8.65
The Genesis Emerging Mkts Invt Com A	Genesis Investment Management	6.70	4.62	-1.77	61.98	31.53	37.86	30.22	31.68	-49.30	90.44	25.06	-15.29
Aspect Diversified Programme	Aspect Capital	5.71	15.79	19.19	20.59	-7.72	12.01	12.84	8.18	25.42	-11.24	15.36	4.51
Aurora Offshore Fund Ltd.	Aurora Investment Management	5.56	9.82	1.31	13.58	8.15	9.47	10.95	13.14	-21.69	21.26	7.31	-6.01
Permal Macro Holdings Ltd USD A	Permal Asset Management	5.35	14.66	8.03	12.56	4.86	10.65	9.48	8.90	-5.16	9.83	6.38	-3.27
Canyon Value Realization Cayman Ltd A	Canyon Capital Advisors	5.21	12.69	5.21	21.87	13.56	8.35	14.08	7.52	-28.36	55.20	13.46	-4.66
Permal Fixed Income Holdings NV USD A	Permal Asset Management	4.51	11.50	10.47	17.59	9.37	7.69	10.48	8.42	-18.40	27.32	10.40	-5.28
Absolute Alpha Fund PCC Diversified	Financial Risk Management	4.47	9.33	6.36	8.07	4.06	7.00	8.94	16.33	-23.02	10.51	5.36	-2.06
Caxton Global Investments Ltd	Caxton Associates	4.40	31.41	26.44	8.09	9.97	8.03	13.17	1.06	12.96	5.83	11.42	
GAM U.S. Institutional Trading	GAM Sterling Management	3.57	16.34	10.69	14.74	3.55	4.98	8.68	9.48	7.57	8.32	7.80	-2.40
K4D-10V Portfolio	Graham Capital Management	3.54	6.45	18.76	8.46	5.56	-7.52	5.02	11.62	21.82	1.41	2.46	
K4D-15V Portfolio	Graham Capital Management	3.54	39.31	43.71	21.60	-0.43	-16.97	6.64	16.57	35.67	3.11	4.58	
Orbis Optimal (US$) Fund	Orbis Investment Management	3.43	29.01	12.15	10.84	2.25	8.60	4.95	6.98	-2.49	9.92	-3.93	-2.32
GAM Trading II USD Open	GAM Sterling Management	3.09	14.78	10.55	14.49	3.84	4.80	7.44	7.93	5.78	6.55	5.97	-4.11
Double Black Diamond Ltd (Carlson)	Carlson Capital	2.98	11.94	2.12	7.62	4.70	5.08	21.12	15.96	-12.40	28.34	9.30	-2.67
GoldenTree High Yield Master Fund Ltd	Goldentree Asset Management	2.65	18.30	6.24	31.42	9.89	13.35	13.21	4.60	-38.60	69.94	23.61	
Bay Resource Partners Offshore Fund Ltd	GMT Capital Corp	2.45	29.32	0.03	23.24	27.97	30.95	21.65	19.84	-20.88	56.60	15.90	-4.19
GAM U.S. Institutional Diversity	GAM Sterling Management	2.43	9.56	4.95	14.60	6.14	10.48	16.74	7.76	-13.96	6.78	-1.14	-2.79

Source: Morningstar Hedge Fund Database, accessed January 2012.