Incorporating Alternative Investments into High-Net-Worth Portfolios

By Scott Welch, CIMA®

Introduction

Alternative investments are playing an increasingly important role in high-net-worth (HNW) portfolios, but many advisors still struggle with incorporating them appropriately within a broader asset allocation context.

The purpose of this article is to support the argument that alternative investments belong in HNW portfolios, to analyze what the appropriate allocation is for them, and to summarize some of the challenges associated with implementing more alternatives within portfolios of different sizes.

“Traditional” investments are defined here as long-only strategies trading in liquid markets—stocks, bonds, and cash. “Alternative” investments are any strategy that a) trades in nonpublic markets (e.g., private equity, private real estate), b) trades in nontraditional asset classes (e.g., commodities or commodities futures, master limited partnerships, real assets), or c) trades with little to no investment constraint (e.g., absolute return, long/short, global macro, relative value, event- or credit-driven, etc.).

The Investment Landscape

It’s uncomfortably apparent that we are going through a fairly volatile market period. But before the past few months, we had been for several years in a “perfect storm” of market conditions. We had low volatility. We had low interest rates. The stock market performed well. The bond market performed reasonably well.

Put all that together with the bull market of the late 1990s, and many investors still have a fairly unrealistic expectation about the performance a diversified portfolio actually can generate in today’s market.

The general consensus for the equity risk premium (ERP) into the foreseeable future, however—depending on whom you believe—is anywhere from 0 percent to 5 percent.1 Compare that with an ERP of roughly 6.5 percent per annum that investors realized in the stock market for the past 50–60 years.

The consequence of lower expected returns is that investors are looking for new ideas, and alternative investments—specifically hedge funds—are the place where these new ideas can best be implemented.

The reason is that traditional long-only (TLO) equity managers are playing, metaphorically speaking, with one hand tied behind their backs. Most TLO managers have to deal with several debilitating investment constraints: an inability to go short, an inability to use leverage within the portfolio, and, in many cases, termination for exhibiting too much tracking error or style drift.

Investment consulting in particular became anchored to the idea of style-box investing. As a result, the managers that gathered the most assets (i.e., were “successful”) were those that didn’t deviate far from benchmarks or style boxes.

But this resulted in performances that largely tracked the indexes. In fact, on average, most managers underperform on a net-of-fee basis over a full market cycle. In some cases this simply may be a lack of manager skill, but in many others it is a function of being constrained.

One consequence of this relative underperformance is the separation of the alpha and beta of a manager’s performance. Indeed, this consequence represents possibly the most important macrotrend in portfolio management. Investors increasingly want to know what proportion of a manager’s overall performance is due to skill and what proportion is due simply to being invested in the market.

A corollary to this separation of alpha and beta is the separation of fee structure—investors no longer are willing to pay active management fees for benchmark-tracking performance. With the tidal wave of passive strategies available in the form of index funds and exchange-traded funds (ETFs), investors now can access market beta quite easily and inexpensively, and they “cost rationalize” active management fees for those strategies they believe actually can add alpha—that is, hedge funds.

Figure 1 illustrates this point. The parallel explosion in assets under management (AUM) in ETFs and hedge funds may be a coincidence, but more likely it is the consequence of investor separation of the alpha and beta components of portfolios.

What does this separation of alpha and beta look like in terms of portfolio construction? It takes the form of increased adoption of a “core-satellite” approach to building portfolios, as shown in figure 2.2

With increasing frequency, investors are moving assets out of the “muddy middle” of traditional active management and into the barbell approach shown in figure 2; i.e., creating more-intelligent and cost-rationalized portfolios by employing very cost- and tax-effective index and index-based strategies to create the core of the portfolio and then filling “the satellites” with more interesting types of manag-
FIGURE 1: THE PARALLEL GROWTH OF ETFS AND HEDGE FUNDS

Sources: MAN Investments and The Investment Company Institute

FIGURE 2: BUILDING A CORE-SATELLITE PORTFOLIO

Cost & Tax Efficiency

Higher

Avoid “The Muddy Middle”
Traditional Long Only
Active Managers

SATELLITE
Alpha-Chasing “Traditional”
✓ All Cap
✓ Long-Extension
✓ Emerging Markets
✓ Micro-Cap
✓ Less Style Constraints
✓ Ability to Leverage
✓ Ability to Go Short
✓ Concentrated Portfolios
Non-Directional Alternatives
Directional Alternatives
Managed Futures
Liquid Real Assets
Private Equity
Private Real Estate

Potential for “Alpha” Generation

Lower

Higher

CORE
ETFs
Index Funds
Tax-Enhanced Index Funds
Non Cap-Weighted Products

Adapted from Jean Brunel, Brunel Associates.
ers. In the current market environment the best way to access those managers is in alternative investments—specifically in hedge funds.

The “cool kids” portfolio

The endowment portfolios of Yale, Harvard, and other elite universities provide anecdotal evidence of this way of thinking. In today’s market these portfolios represent the “cool kids” portfolio that everyone would like to have.

These portfolios carry a heavy allocation to alternative and nontraditional asset classes, as shown in figure 3.

It may not be appropriate for HNW investors to adopt this type of portfolio, because an endowment doesn’t pay taxes and has a more-or-less infinite timeframe and therefore a high tolerance for illiquidity—a substantially higher tolerance than most individuals.

But this is the type of portfolio that HNW investors are interested in. And why not? Consider table 1, which is adapted from the September 27, 2007, issue of the Wall Street Journal. The numbers are only one year of performance, but the numbers are impressive.

The numbers are just as impressive if you review annualized performance over the past 10–20 years, as shown in table 2.

Further anecdotal evidence shows that this core-satellite portfolio approach, with its corresponding heavy allocation to alternatives, is increasingly being adopted by ultra-HNW investors. The Institute for Private Investors (IPI) and the Family Office Exchange (FOX) are two consortiums of HNW families and their advisors. Every year these organizations survey members and get a snapshot of how the ultra-wealthy are investing their money.

Figures 4 and 5 show the results. Ultra-HNW families are investing a higher percentage of their portfolios in alternatives than traditional long-only equities. (What is not shown, but what I believe based on personal experience, is that a significant percentage of

![Figure 3: Emulating the Endowments](image-url)

**TABLE 1: TOP OF THE CLASS: YALE UNIVERSITY’S RETURNS AGAIN HAVE BEATEN OTHER MAJOR ENDOWMENTS**

<table>
<thead>
<tr>
<th>University</th>
<th>Return *</th>
<th>Assets in billions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yale</td>
<td>28%</td>
<td>$22.5</td>
</tr>
<tr>
<td>University of Virginia</td>
<td>25%</td>
<td>4.3</td>
</tr>
<tr>
<td>Harvard</td>
<td>23%</td>
<td>34.9</td>
</tr>
<tr>
<td>Massachusetts Institute of Technology</td>
<td>22%</td>
<td>9.9</td>
</tr>
<tr>
<td>Johns Hopkins University</td>
<td>19%</td>
<td>2.8</td>
</tr>
<tr>
<td>The University of Texas Management</td>
<td>18%</td>
<td>23.3</td>
</tr>
<tr>
<td>(University of Texas, Texas A&amp;M)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Average return for foundation or endowment

17.5%

* Fiscal year ended June 30, 2007
Sources: Universities; Wilshire Trust Universe Comparison Service

**TABLE 2: THE YALE AND HARVARD ENDOWMENT PORTFOLIOS PERFORM WELL OVER SHORT & LONG TIME PERIODS**

<table>
<thead>
<tr>
<th>School</th>
<th>2007</th>
<th>10-Year</th>
<th>20-Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yale</td>
<td>28%</td>
<td>17%</td>
<td>16%</td>
</tr>
<tr>
<td>Harvard</td>
<td>23%</td>
<td>15%</td>
<td>14%</td>
</tr>
</tbody>
</table>

All performance numbers are annualized returns over the time period indicated.

Sources: Yale Endowment Report
Harvard Management Company Annual Report
the long-only equity allocation is being filled with ETFs and other passively managed strategies.)

Putting Hedge Fund Investing in Proper Perspective

Why do endowments and ultra-HNW investors allocate so heavily to alternatives? The dangerous answer is “to enhance returns,” though that often may be the reason cited, at least by individuals. Consider the performance of hedge funds over the recent bull market from 2003–2006 (table 3). Index returns for the most-popular strategies were not especially impressive relative to the broad market index returns, and the result was a slowing of new dollars invested into hedge funds by individual investors (evidence that the wealthy are not immune to the “hot dot” syndrome of chasing recent performance).

Compare these returns, however, with those realized in the bear market of 2000–2002 and to the volatile market of 2007 (table 4). The attraction of hedge funds becomes readily apparent.

Hedge funds (or, more broadly, alternatives) then are best seen as providing ballast to the overall portfolio, i.e., adding consistency to the overall portfolio return. The other primary benefit of alternatives is their relative lack of correlation to more-traditional markets, as shown in table 5.

The proper perspective for investing in hedge funds, then, can be summarized as follows:

- potential for enhanced performance
- consistency of return
- power of compounding
- lack of correlation to more-traditional investment opportunities

Put another way, including alternatives within portfolios begs for a broader (and nonacademic) definition of the term alpha. Rather than defining alpha simply as the excess idiosyncratic return of a given strategy or manager, alpha is better defined as any of a number of ways of improving overall portfolio performance. This improvement might,
### TABLE 3: HEDGE FUND PERFORMANCE DURING A BULL MARKET

In 2006, the HFRI Fund Weighted Composite Index returned 12.85% vs. 15.8% total return for the S&P 500.

<table>
<thead>
<tr>
<th>Index</th>
<th>2006</th>
<th>2005</th>
<th>2004</th>
<th>2003</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hennessee HF Index</td>
<td>11.36%</td>
<td>7.85%</td>
<td>8.25%</td>
<td>18.78%</td>
</tr>
<tr>
<td>Long/Short Equity</td>
<td>11.23%</td>
<td>6.78%</td>
<td>7.77%</td>
<td>19.45%</td>
</tr>
<tr>
<td>Arbitrage/Event Driven</td>
<td>12.05%</td>
<td>5.21%</td>
<td>8.47%</td>
<td>13.88%</td>
</tr>
<tr>
<td>Global Macro</td>
<td>10.50%</td>
<td>14.23%</td>
<td>8.72%</td>
<td>27.56%</td>
</tr>
<tr>
<td>S&amp;P 500</td>
<td>13.62%</td>
<td>3.00%</td>
<td>8.99%</td>
<td>26.38%</td>
</tr>
<tr>
<td>Russell 2000</td>
<td>18.35%</td>
<td>4.56%</td>
<td>18.32%</td>
<td>45.39%</td>
</tr>
</tbody>
</table>

* Source: Hedge Fund Research
** Hennessee Group LLC

### TABLE 4: HEDGE FUND PERFORMANCE DURING BEAR AND VOLATILE MARKETS

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Hennessee HF Index</td>
<td>11.64%</td>
<td>–2.89%</td>
<td>4.35%</td>
<td>8.16%</td>
</tr>
<tr>
<td>Long/Short Equity</td>
<td>12.08%</td>
<td>–6.46%</td>
<td>2.89%</td>
<td>10.21%</td>
</tr>
<tr>
<td>Arbitrage/Event Driven</td>
<td>7.78%</td>
<td>2.16%</td>
<td>8.99%</td>
<td>9.49%</td>
</tr>
<tr>
<td>Global Macro</td>
<td>15.59%</td>
<td>–1.45%</td>
<td>1.50%</td>
<td>1.34%</td>
</tr>
<tr>
<td>S&amp;P 500</td>
<td>5.49%</td>
<td>–23.37%</td>
<td>–13.04%</td>
<td>–10.14%</td>
</tr>
<tr>
<td>Russell 2000</td>
<td>–1.55%</td>
<td>–21.57%</td>
<td>1.03%</td>
<td>–4.21%</td>
</tr>
</tbody>
</table>

Sources: Hennessee Group, LLC and Hedge Fund Research, Inc.

* In 2007, the HFRI Fund Weighted Composite Index returned 10.24% vs. 5.49% for the S&P 500.

### TABLE 5: CORRELATIONS: HEDGE FUND STRATEGIES AND TRADITIONAL ASSETS, 1990–2005

<table>
<thead>
<tr>
<th>Index</th>
<th>S&amp;P 500 Index</th>
<th>Lehman Aggregate Bond Index</th>
<th>Lehman High Yield</th>
<th>Change in Stock Volatility*</th>
<th>Change in Bond Volatility**</th>
</tr>
</thead>
<tbody>
<tr>
<td>CISDM Equal Weighted Hedge Fund Index</td>
<td>0.70</td>
<td>0.10</td>
<td>0.56</td>
<td>–0.36</td>
<td>–0.13</td>
</tr>
<tr>
<td>CISDM Equity Market Neutral Index</td>
<td>0.65</td>
<td>0.24</td>
<td>0.42</td>
<td>–0.18</td>
<td>–0.10</td>
</tr>
<tr>
<td>CISDM Convertible Arbitrage Index</td>
<td>0.35</td>
<td>0.24</td>
<td>0.47</td>
<td>–0.07</td>
<td>–0.02</td>
</tr>
<tr>
<td>CISDM Distressed Securities Index</td>
<td>0.49</td>
<td>0.10</td>
<td>0.53</td>
<td>–0.24</td>
<td>–0.08</td>
</tr>
<tr>
<td>CISDM Event Driven Multi-Strategy Index</td>
<td>0.63</td>
<td>0.06</td>
<td>0.66</td>
<td>–0.37</td>
<td>–0.07</td>
</tr>
<tr>
<td>CISDM Merger Arbitrage Index</td>
<td>0.47</td>
<td>0.10</td>
<td>0.56</td>
<td>–0.30</td>
<td>–0.06</td>
</tr>
<tr>
<td>CISDM Emerging Markets Index</td>
<td>0.49</td>
<td>0.04</td>
<td>0.46</td>
<td>–0.22</td>
<td>–0.04</td>
</tr>
<tr>
<td>CISDM Equity Long/Short Index</td>
<td>0.76</td>
<td>0.12</td>
<td>0.55</td>
<td>–0.35</td>
<td>–0.09</td>
</tr>
<tr>
<td>CISDM Global Macro Index</td>
<td>8.43</td>
<td>0.28</td>
<td>0.37</td>
<td>–0.18</td>
<td>–0.15</td>
</tr>
<tr>
<td>S&amp;P 500 Index</td>
<td>1.00</td>
<td>0.15</td>
<td>0.48</td>
<td>–0.31</td>
<td>–0.01</td>
</tr>
<tr>
<td>Lehman Aggregate Bond Index</td>
<td>0.15</td>
<td>1.00</td>
<td>0.24</td>
<td>–0.02</td>
<td>–0.16</td>
</tr>
<tr>
<td>Lehman U.S. Corp High Yield Bond Index</td>
<td>0.49</td>
<td>0.24</td>
<td>1.00</td>
<td>–0.32</td>
<td>–0.08</td>
</tr>
</tbody>
</table>

* Intramonth Volatility of the S&P 500 Index
** Intramonth Volatility of the Lehman Aggregate Bond Index
Source: CISDM
Indeed, come in the form of enhanced return, but it also might come in the form of improved portfolio diversification, tax-efficiency, or “cost rationalization.” This broadened definition makes it easier and more intuitive for investors to understand why alternatives are being incorporated in their portfolios.

Another slightly more-subtle allure to hedge funds is the simple fact that, under the current compensation paradigm, hedge funds are where the skilled managers operate. A one-line summary to the best-selling book *Freakonomics* is that “people do what they have incentive to do.” If you accept that premise and then ask yourself, “Where can a really smart money manager make the most money today?” the answer is, of course, hedge funds. Hence there is a real “brain drain” going on away from traditional managers and into alternative investments.

**Incorporating Alternatives into Portfolios**

How do you include alternative investments in HNW portfolios? Let’s define terms by breaking down the alternative space into the following six fundamental buckets:

1. Nondirectional strategies (also referred to as absolute-return strategies). These are strategies that target very consistent return streams with low relative volatility.
2. Directional strategies, which includes hedged equity (long/short) and other strategies that have a higher “beta component” to their returns. These strategies target equity-like returns with less volatility than the broad markets.
3. Commodity trading advisors (CTAs), which tend to be systematic, trend-following traders of a variety of different futures contracts.
4. Liquid real assets, which invest in things like energy master limited partnerships (MLPs), real estate investment trusts, commodities, and timber.
5. Private equity, which includes venture capital, leveraged buyouts, mezzanine financing, and distressed investments.
6. Private real estate.

Think of these strategies collectively as the satellite investments shown in figure 2. The traditional asset classes represent the core of the portfolio (and can be fulfilled with both passive and active traditional managers) and should be used to create the overall strategic asset allocation for the client. The satellite strategies are added based on the investor’s specific objectives and tolerance for risk, illiquidity, time horizon, and nontransparency. Because satellite managers and traditional managers

---

**Figure 6: Allocating Alternatives to Portfolios via a Core-Satellite Approach**

- **MLPs**
- **Commodities**
- **Timber**
- **REITs**

**Strategic Asset Allocation**

- **“Passive Core”**
  - US LC
  - US SC
  - Int’l LC
  - Index funds
  - ETFs
  - TEI* Products
  - Cap weighted
  - RAFI

- **“Active Core”**
  - US LC/SC
  - US All Cap
  - Micro-Cap
  - Int’l LC/SC
  - Int’l All Cap
  - Emerging Mkt.

* TEI = Tax-Enhanced Index

© 2008 Investment Management Consultants Association. Reprint with permission only.
historically have been uncorrelated, and because most hedge fund strategies have fewer investment constraints, investment in alternatives implies abdicating some control over the overall portfolio asset allocation.

Given our assumptions regarding the expected return, volatility, and cross-correlations of the various alternative “buckets,” our analysis indicates that, depending on the liquidity needs of the investor, an allocation in alternatives of up to 40 percent of the overall portfolio is justified, as shown in figure 6.

The resulting portfolio shows both enhanced returns and lower volatility relative to portfolios that are made up of primarily more-traditional asset classes (again, based on our assumptions and model constraints). Figure 7 shows the evolution of the efficient frontier as more nontraditional asset strategies are added to the portfolio.

The biggest boost in portfolio risk-return characteristics comes with the inclusion of the two most-actively employed alternative strategies: nondirectional (absolute return) and directional (hedged equity and other higher beta strategies). This is represented in the jump from the green line to the orange line.

Figure 7 also shows the significant diversification benefits realized from including CTAs and liquid real assets in the jump from the orange line to the royal blue line. This improved diversification is intuitive given the historical lack of correlation between real assets (commodities and commodity-based trading strategies, etc.) and financial assets (stocks and bonds).

Finally, the addition of private equity and private real estate (shown by the jump from the royal blue line to the red line) add some degree of diversification benefit to the portfolio but do not significantly enhance the expected return. This may seem at odds with the common expectation for high returns with these strategies. This result is driven by an assumption that the average investor will generate an asset-class average return. If an investor can access the top-quartile managers in these respective asset classes (something that is difficult for the average investor to do), then the expected portfolio return may jump significantly.

The 40-percent allocation to alternatives is in line with both the endowment portfolios and the ultra-wealthy portfolios represented in the IPI and FOX surveys. This further indicates that these portfolios are defensible quantitatively and attractive to existing and prospective HNW investors.

Challenges Associated with Incorporating Alternatives into Portfolios

The attractiveness of incorporating alternatives into HNW portfolios is compelling, but challenges remain. These challenges can be categorized broadly, as follows:

Access. Table 6 summarizes the three primary ways that an investor can access hedge fund or hedge fund-like strategies.

Recalling the Freakonomics premise that people do what they have incentive to do, the first challenge becomes clear. The most-skilled managers naturally will be drawn to opening and running 3c(7) funds because the structure provides the
best opportunity to maximize AUM and, therefore, compensation. But these funds are limited to very high-net-worth investors—a growing but still relatively small slice of the overall market.

The choices available to smaller investors—the 3c(1) and registered or “40 Act” funds (hedge fund strategies that are structured and traded like mutual funds) have, historically, shown performance inferior to the 3c(7) funds. Given this, is including them in portfolios still justified?

A corollary to this issue is that the minimum investment requirements can run as high as $1 million or more for top-quality funds. Even very wealthy investors may find these minimums hard to meet, especially when the allocation to alternatives is only a portion of the total portfolio.

The good news is that as demand for alternative investments has grown and "trickled down" to the "merely wealthy," the variety and quality of registered products has improved, and investors with portfolios of $1 million or more can find attractive hedge fund-like strategies in which to invest.

**Fees.** As providers of hard-to-find alpha, hedge fund managers command—and charge—very high fees. According to the Hennessee Group, the bulk of hedge fund managers charge an average of a 1 percent to 2 percent per annum management fee and a 20-per-cent performance-based fee.³

This fee issue is compounded by the investment minimum discussed above. With an average minimum of $1 million or more, the access vehicle of choice for the bulk of HNW investors is the fund of funds, i.e., third-party managers who invest in a diversified portfolio of underlying strategies. The AUM in funds of funds represents roughly 30 percent to 35 percent of overall hedge fund AUM.

While funds of funds managers provide valuable services such as access to the world class of lower investment minimums (usually ~ $250,000–$500,000), manager due diligence, portfolio construction, and risk management, these services come at a price. The average fund of funds fee is a 1 percent per annum management fee and a 10-percent performance-based fee, all on top of the underlying managers’ fees. There is a legitimate question of whether or not, on a net-of-fee basis, hedge funds (and especially funds of funds) deliver on the promise of enhanced portfolio performance. These high fee structures mean manager selection is critical.

Other challenges are associated with investing in hedge funds, including relative illiquidity, relative lack of transparency, and relatively light regulatory oversight. While these issues are important to note and understand, they are of secondary importance to the issues of access and cost.

All these challenges bring to the forefront the agent–fiduciary conflict that faces all investment consultants and advisors. As an agent of a financial institution, the advisor is compensated and rewarded for gathering assets for the firm. As a fiduciary to the client, however, the advisor is expected to put the interest of the client first.

In the context of incorporating alternatives into HNW portfolios, this conflict plays out in the following ways:

1. **The “right” answer may not be salable:** Given the access, fee structure, and liquidity issues described above, investors with portfolios of less than $2 million to $3 million may be better off avoiding alternative investments and sticking to more traditional diversified portfolios. In today’s market environment, however, advisors may find that this conclusion results in losing existing or prospective business; not offering alternative investments rapidly is becoming a negative differentiator in the marketplace.

2. **The salable answer may not be in the client’s best interest:** To win or retain business, advisors may feel pressured to include in a client’s portfolio alternative investments that don’t deliver expected risk–return characteristics. Given the high fee structure of alternatives, it is critical to access and employ top-quartile managers, i.e., managers delivering median-level gross performance will deliver subpar net performance. Investors thus may not realize the expected benefits of including these strategies. With improvement in the variety and quality of registered products, this is becoming less of an issue, but it still needs to be considered.

**Summary and Conclusions**

When speaking with investors, the argument for incorporating alternative investments into HNW portfolios can be summarized as follows:

1. In an increasingly globalized world, investors need to consider more non-traditional investment strategies in order to achieve an appropriate level of overall portfolio diversification.
2. Alternative investments offer an attractive potential for enhanced performance due to a) fewer investment constraints and b) the reality of a “brain drain” from traditional strategies due to respective compensation structures.
3. An investor reasonably can expect higher risk-adjusted performance from alternative investments as compensation for less liquidity, less transparency, fewer investment constraints, and a longer investment time horizon.
4. The primary benefit of incorporating alternatives into portfolios is an improvement in the consistency of returns, i.e., alternatives can help stabilize performance in down or volatile markets. Because of the power of compounding, losing less money in down markets is more important than outperforming in up markets. From the advisor’s (i.e., practice management) perspective:
   1. When and where appropriate, alternative investments can play a
vital role in creating truly diversified HNW portfolios.
2. Inclusion of alternatives is both defensible and salable (the “cool kid” factor).
3. The high cost, high minimums, relative illiquidity, and relative lack of transparency associated with alternatives mean they are not for everyone.

Alternative investments, then, are not really alternative. They increasingly are understood, accepted, and demanded by high-net-worth investors. In the future, not offering a comprehensive platform of high-quality and accessible alternative investments will be a distinct negative differentiator in growing a successful wealth management practice.

Scott Welch, CIMA®, is senior managing director for investment research and strategy at Fortigent, LLC, in Rockville, MD. He earned a B.S. in mathematics from the University of California, Irvine, and an M.B.A. in finance from the University of Massachusetts Amherst. Contact him at scott.welch@fortigent.com.

Endnotes
1 See, for example:
2 This graphic, as well as the phrase “muddy middle,” was adapted from Jean Brunel, “A Tax-Efficient Portfolio Construction Model,” The Journal of Wealth Management (fall 2001): 43–49.
4 Steven D. Levitt and Stephen J. Dubner, Freakonomics: A Rogue Economist Explores the Hidden Side of Everything (William Morrow, 2006).
5 Average Hedge Fund Fee Information, The Hennessey Group, LLC. Available at http://www.hennesseygroup.com/information/info/fees.pdf.