



C A M B R I D G E A S S O C I A T E S L L C

GLOBAL MACRO: THE LARGEST CANVAS IN THE INDUSTRY

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Executive Summary

- We believe a thoughtfully constructed allocation to select global macro managers offers various potential benefits to investors, particularly in an increasingly macro-driven environment. As we generally advocate with respect to hedge funds, we recommend that an allocation to macro (assuming it is more than a *de minimis* one) be implemented through a group of macro managers or via a smaller number of macro managers combined with a properly constituted set of other diversifiers in order to dampen the performance volatility of individual funds as well as the potential impact of any blow-up.
- Global macro funds, as represented by various indices, have delivered strong performance as a group in both absolute and relative terms. As a group they have provided significant downside protection in months when equities declined, as well as during financial crises. Global macro returns have exhibited a relatively low correlation to equities and little or no correlation to fixed income, particularly over the past five and ten years. Index data are incomplete and likely include upward bias, but our research suggests that a reasonably sized subset of managers have experienced similar performance characteristics. At the same time, the dispersion of manager performance in this area is significant, as it is for other hedge fund strategies.
- Based on index data, global macro returns also compare favorably with those of other hedge fund strategies. In addition, macro has exhibited the lowest cross-correlation among the major hedge fund strategies. Volatility has been higher than that for event-driven and, even more so, relative value strategies over the full 21-year period for which we have data, but has been the lowest of the major hedge fund strategies over the past five years.
- Global macro is difficult to define precisely, as it covers a broad range of strategies. It is typically characterized as a broad, top-down, absolute return strategy that normally seeks to capitalize on perceived macroeconomic and political trends, and shifts in investor behavior and market positions. Macro managers (unless they are pursuing a purely quantitative strategy) develop views about major themes, such as the price of a commodity, strength of a currency, or shape of a yield curve. They seek to take advantage of mispricings by finding good risk-reward trades with asymmetrical pay-offs and by controlling risk. They are unconstrained by asset class or geography and will implement their strategy through long and short positions and by means of cash, asset purchases (including physical commodities), futures, options, and other instruments. Leverage is often applied and return and volatility targets may vary sharply.
- Global macro strategies can usefully be classified as one of the following: *discretionary* strategies, which involve trading on the basis of managers' subjective opinions; *CTA* or *systematic* strategies, which are based solely on momentum, technical patterns, or rule-based computer-driven trading models; and strategies that *combine* a discretionary and systematic approach. Discretionary managers identify macro themes based upon their analysis of major economic trends, policy considerations, and trade and financial flows and then use the most cost-effective implementation methods. CTA or systematic managers, meanwhile, may apply advanced

econometric models and sophisticated portfolio theory to source and implement investment ideas. They may also base models on fundamental factors including value, growth, flows, and price dynamics.

- As of September 30, 2011, \$434 billion was invested in roughly 1,615 global macro vehicles, representing 19.9% of the \$1.9 trillion in total hedge fund industry assets. While CTA/systematic strategies now account for their largest share of total macro assets under management in a decade (using annual data), roughly the same amount of capital was invested in CTA/systematic and discretionary strategies at the start of 2011 and the relative weights of the two broad strategies have varied sharply since 1990. Blended strategies remain a small percentage of the whole, but are much larger than they were during the 1990s.
- Global macro managers have wide latitude in implementation given that they are not limited by geography, asset class, or type of security. They determine which asset class and which trade/product appear to be the most favorable way to play each investment theme, seeking an asymmetrical risk/return profile (through long volatility, carry, convexity, optionality, etc.). Some managers generally prefer directional trades while others incline toward relative value propositions. Managers establish positions using the instrument best suited to a particular theme and asset class, with liquidity and cost efficiency considerations playing a vital role. Macro managers frequently use options to implement trades.
- Although the amount of risk they are willing to assume can vary dramatically, global macro managers attempt to control their downside, consistent with their general absolute return philosophy. Selling volatility, for example, is

often seen as inconsistent with controlling risk, given the potentially high downside.

This is why macro managers attempt to have a long volatility bias (although positive carry trades are clearly short volatility and have led to some well-documented macro “blow-ups” in the past).

- Most discretionary global macro strategies use stop-loss provisions to manage downside risk. At many firms, traders whose losses reach certain defined percentages will be required to reduce or take off their positions (and may face temporary or permanent cuts in their allocated capital) and may be terminated. Stop-loss provisions are commonly justified as a “live to fight another day” or “don’t fight the market” strategy. Like other hedge fund managers, practitioners of discretionary macro also attempt to manage volatility and downside risk through techniques such as delta hedging, reducing gross exposure or cutting leverage when volatility is high, adjusting the amount of margin posted, and using value at risk models and other risk measurement tools.
- There are four major arguments in favor of global macro:
 - **Diversification.** High-quality global macro managers have demonstrated a consistent ability to provide strong diversification, particularly during sharp market downturns. Thanks to exposure to different asset classes, an ability to exit or short markets, and, in the case of systematic macro, an ability to profit from strong trends, there are good conceptual reasons to think that such managers will continue to provide diversification. To the extent that macro managers are truly “long volatility” players—due to their ability to go short, their efforts to find asymmetric trades and buy volatility when it is cheap,

and, in the case of systematic managers and commodity trading advisers, their ability to avoid behavioral risk—they have the potential to add significant value to heavily equity-centric portfolios that are often “short volatility.”

– **Return Profile/Trading Skills.** Global macro funds have historically delivered competitive returns, been successful during different market cycles, and experienced relatively limited drawdowns as a group. Trading skills appear to be central to global macro managers’ success, in part because of the larger number of trades they put on. Performance analysis also suggests that high-quality managers of this strategy have been quite focused on risk control and capital preservation, particularly over the last decade. A number of global macro firms have a highly successful track record over an extended period, suggesting that the best macro managers, like the top managers of other strategies, can repeat their strong performance.

– **Profit Potential in Uncertain Times.** Notwithstanding macro’s underperformance versus both hedge funds and equities in 2009 and 2010, a strong case can be made that if any environment is conducive to success in global macro, it is the current one. Massive government intervention and legislation in response to the financial crisis and recession, anticipated large fluctuations or shifts in currencies, greater-than-normal risks of deflation or high inflation, and other factors have increased the potential for significant dislocations in financial markets. Such factors may manifest themselves in significant mispricings and good risk-reward trades. This suggests substantial value for those able to formulate a reasonable, informed view of the macro outlook and what the implications of various

scenarios will be on investments and trading strategies.

– **Flexible Deployment of Capital.** Global macro managers can be flexible in the deployment of capital, using all tools available in any market to find the best trades. Moreover, they do not face the liquidity constraints of managers that invest only in equities. They can also allocate capital among different subportfolio managers to use broad skill sets and diversify portfolio bets.

● There are four major arguments against global macro:

– **Transparency.** Positions in macro funds are fluid, and the strategy can shift on a dime. While macro funds provide more information today about their positioning than they did in the past, investors’ knowledge of portfolio exposures at any point in time may be limited. One can certainly argue that this is a strength of global macro, but it also highlights that risk exposures for these managers are unpredictable. Investors must think carefully about how they monitor macro funds, given that the traditional approaches (e.g., quarterly monitoring) may not be the most appropriate. They must also be comfortable with the concept that they will often not be able to incorporate macro manager exposures into their monitoring of total portfolio exposures. Effectively, a portion of tactical positioning will be outsourced to such managers and will be largely independent of any (potentially offsetting) tactical positions applied at the portfolio level.

– **Leverage.** Global macro may involve more leverage than other hedge fund strategies. Macro managers often buy on margin, finance through the repo markets, sell short, and use derivatives, all of which involve leverage (and counterparty risk).

The variety of macro strategies makes the question of leverage very manager-specific. However, as a general matter, the extent of leverage depends on the manager's style, strategy, and exposure (including which asset classes are being traded/levered), and the way in which positions are implemented (including how long a period the manager is leveraged for). Investors should understand how leverage is introduced into the portfolio and the sources of leverage. Monitoring is important and investors may also want to check prospectuses for leverage limitations.

- **High Fees.** Global macro fund fees tend to be in the 2 and 20 range (2% management fee and 20% of profits), although a 1.5 and 20 structure is not uncommon. As with most other hedge funds, a high-water mark is used. A handful of funds do charge 3 and 30 or even more. While such funds may certainly continue to perform well—and will ultimately be judged in large part on their net returns—greater caution should be exercised when considering investments in them. As is the case with other funds with high fee structures (whether marketable or private funds or funds-of-funds), investors should consider whether the fee structure and manager incentives of any global macro fund they are looking at are properly aligned.
- **Attrition.** While the available dataset is incomplete, our analysis has found one-, three-, and five-year attrition rates of 11%, 33%, and 47%, respectively, for global macro funds using data beginning in 2003. Looking at departures over longer time frames, 62% and 53% of managers included in our database in 2000 and 2003, respectively, were gone by the end of 2009. Attrition rates for discretionary and CTA/systematic funds dating from 2000 and 2003 were similar. It is worth noting that

funds that were more than a decade old each had average annual departure rates well under those of funds that were less than five years old. It is also important to keep in mind that attrition rates for global macro funds are not meaningfully different than those for the hedge fund industry as a whole or for long-only managers. ■

Global Macro: The Largest Canvas in the Industry

Twenty-one months from the depths of the financial recession and two years since the end of a most difficult decade,¹ investors are understandably questioning long-held assumptions about policy portfolios and examining different investment strategies. This is partly an effort to both seek out new sources of return and find true diversification that can provide the significant downside protection that most investors lacked in 2008. One area receiving a lot of attention is global macro.

The term “global macro” evokes for some an earlier age when larger-than-life managers, investing on the basis of both detailed analysis and far better access to macroeconomic information than others had, were able to move markets. George Soros’s “breaking” of the pound sterling in 1992 is certainly the most repeated tale in this genre.² Yet by 2000, just a few years after Soros’s billion dollar return, global macro may have appeared archaic in light of the proliferation of a variety of newer hedge fund strategies.

The renewed interest in global macro is evidence that sentiment has shifted once again. We believe that global macro deserves fresh examination given the major and ongoing shifts in the macroeconomic environment. Based on a broad review, which included performance analysis and discussions with various macro managers about their strategies, business operations, and risk controls, we conclude that a thoughtfully

constructed allocation to select global macro managers offers various potential benefits to investors, particularly in an increasingly macro-driven environment. Accordingly, we discuss in this paper what macro is and how its practitioners operate, review its history and performance, and discuss its major attractions and key risks. In an appendix, we then briefly consider issues relevant to implementing an allocation to global macro as well as investors for whom the strategy might not be a good fit.

What Is Global Macro?

Global macro eludes precise definition. It is perhaps easiest to start with what it is not: global macro is *not* bottom-up analysis of individual firms (although some managers may do such analysis as part of their implementation of a broader strategy), *not* a long-only or relative return approach (although it may well be directional), *not* confined to a single asset class, and *often not* a strategy where the direction and makeup of the portfolio are relatively static and knowable from year to year—or even from week to week. Investors that seek only the foregoing characteristics in their investment vehicles would be well advised to stop here and return to their regularly scheduled reading!

Rather, global macro is a broad, top-down, absolute return³ strategy that normally seeks to capitalize

¹ Please see our 2010 report *Reflections on a Decade* for a discussion of returns and economic change during the 2000s, as well as lessons learned and advice for the future.

² Soros and his lieutenant, Stanley Druckenmiller, went all in on a bet that the United Kingdom could not maintain the value of the pound in the face of Germany’s hike in interest rates and the U.K.’s recession, and would therefore have to pull out of the exchange rate mechanism arrangement.

³ We use the term “absolute return” as it has come to be accepted, namely as referring to a range of hedge fund strategies seeking to achieve relatively stable returns with low equity market beta, such as relative value, arbitrage, market neutral, and global macro. The term should not be interpreted to mean such strategies will always produce positive returns. Moreover, as noted later, macro managers, when bullish, may utilize futures, options, and other instruments to turbocharge beta, increasing their risk.

on perceived macroeconomic and political trends, and shifts in investor behavior and market positions. Unless they are pursuing a purely quantitative strategy (more on this later), macro managers develop views about major themes such as the price of a commodity, strength of a currency, shape of a yield curve, or course of monetary policy. They normally take positions that will allow them to profit if such themes prove correct or to exit with a manageable loss if they prove wrong.

Another way of saying this is that macro managers believe there are inefficiencies at the macro level that are reflected in mispricings. They seek to take advantage by finding good risk-reward trades with asymmetrical payoffs and by controlling risk. While some observers tend to associate global macro with a predominantly commodity-based strategy, this perception likely derives from the fact that some well-known macro managers cut their teeth in the commodity sector (at Commodities Corp. in particular) and is true of only a relatively small number of funds today. Most macro managers will seek opportunities in the equity, bond, currency, commodity, and other markets. They are unconstrained by geography and will implement their strategy through long and short positions and by means of cash, asset purchases (including physical commodities), futures, options, and other instruments. Leverage is often applied and return and volatility targets may vary sharply. Global macro is thus the most flexible hedge fund strategy, which encourages supporters and discourages disparagers but, more importantly for our purposes, makes it difficult to generalize about practitioners.

Global macro strategies can usefully be classified as one of the following: *discretionary* strategies, which involve trading on the basis of managers' subjective opinions; CTA or *systematic* strategies,⁴

⁴We generally use the term CTA/systematic in this paper to describe such strategies, but note that this term and our other definitions of other global macro manager

which are based solely on momentum, technical patterns, or rule-based computer-driven trading models; and strategies that *combine* a discretionary and systematic approach.

Global macro is comparable in certain respects to various other investment strategies. For example, some global macro managers establish positions through the sorts of trades favored by so-called relative value hedge funds.⁵ Capital may also be allocated among a number of portfolio managers in larger discretionary firms, as is done in multi-strategy hedge funds (which similarly transact in a number of different asset classes). There are also parallels between macro managers and managers of other hedge funds or long-only strategies that place significant weight on macro (or "top-down") considerations, make tactical bets,⁶ and may employ substantial leverage. Indeed, the macro-type inputs and investment process of systematic macro funds are arguably much more analogous to the purely quantitative, factor-based approach of certain managers running other types of hedge funds or long-only funds than they are to the methodology of discretionary macro managers.

History and Performance

History

While John Maynard Keynes was perhaps the first modern global macro investor, the investment strategy discussed in this paper has its roots in the 1970s, when the collapse of the Bretton Woods Agreement created a world of freely floating currencies and, as a result, a new asset

strategies (see sidebar on the following page) often differ from those of data providers.

⁵Relative value hedge funds use fundamental or quantitative tools to take advantage of perceived valuation discrepancies between (generally related) securities.

⁶For example, global tactical asset allocation (GTAA) funds that are alpha focused, benchmarking against an absolute return cash benchmark, resemble global macro funds.

Our Classification of Global Macro Manager Strategies

- 1. Discretionary:** Managers conduct intensive fundamental research to develop an understanding of macro themes and events. They analyze information from a variety of sources, including central bank publications, survey data, confidence indicators, asset flow statistics, liquidity measures, forecasting agencies, political commentators, and personal contacts. They seek to exploit inefficiencies in global capital markets given current macroeconomic realities and typically have the flexibility to take positions in any asset class (equities, fixed income, commodities, and currencies). Managers may implement positions through a broad range of vehicles, from futures, forwards, options, and swaps to buying the underlying physicals outright. This strategy ultimately involves trading on the basis of managers' subjective opinions and is therefore heavily reliant on their skills and intuition.
- 2. CTA/Systematic:** There is generally very little subjective decision making in the operation of pure systematic or CTA strategies, although judgment enters into the creation of the model. Quantitative models drive virtually all buy and sell signals and entry and exit points. Futures and currency forwards are the most common form of implementation. Portfolios tend to be highly diversified, with allocations to all four major asset classes: equities, fixed income, commodities, and currencies. Optimization models are often used to construct portfolios with the best potential Sharpe ratio and a specific target volatility (most commonly between 10% and 20%). We break down CTA/systematic into "systematic directional" and "systematic diverse strategies." Systematic directional managers employ trend-following strategies, long or short, relying on computer-driven quantitative models to identify and exploit price momentum. Commonly used approaches include moving average strategies, which compare current prices to a smoothed series of lagging prices, or break-out strategies, which focus on identifying the commencement of a new trend. Global macro managers registered with the Commodities Futures Trading Commission to trade commodity futures or options are known as commodity trading advisers (CTAs). Trends are often exploited over different time frames, from a few days to several months. Computer models focus primarily on market-based price and volume data rather than external macroeconomic inputs. Systematic diverse strategies (basically all other systematic macro approaches) employ a broader range of quantitative models and put less emphasis on trend-following strategies, relying on computer-driven quantitative models to identify and invest based on inconsistencies in market movements, such as inconsistent relative moves in prices of related commodities. Managers may also use countertrend, volatility-related, or pattern-recognition strategies, which use various statistical measures to identify range trading, or exploit systematic abnormal market behavior. Strategies may also seek to quantify fundamental and macroeconomic relationships to predict price behavior.
- 3. Discretionary/Systematic Blend:** Managers employ a combination of discretionary and systematic strategies. Managers may run systematic and discretionary portfolios separately and then combine the separate strategies in a single portfolio, or they may combine discretionary views with quantitative models and portfolio optimization techniques to create a single integrated discretionary/systematic portfolio.

class of foreign exchange risk. This led some private investment managers to trade in foreign exchange markets instead of (or in addition to) their traditional long/short equity trading and, in the 1980s, to add bets on bonds, since changes (or anticipated changes) in interest rates could move equity markets. Meanwhile, as commodity prices became increasingly influenced by political actions and as other macroeconomic factors and futures markets developed, another group of managers with a background in physical commodity and futures trading moved naturally into the global macro space.

The rise of global macro investors coincided with the rapid expansion of block trading due to the proliferation of pension funds, insurance funds, and mutual funds—individual investors had dominated the stock market until the 1960s—making trading an important skill set. Michael Steinhardt, the famous macro trader, recalls that “trading went from being a mechanical, insignificant, clerk-like function in the fifties and sixties to a function of great significance in the seventies and eighties.”⁷ By 1990, \$15.3 billion was invested in global macro funds, accounting for over 39% of total hedge fund assets under management, according to data from Hedge Fund Research, Inc. (HFR).

The amount managed by global macro funds increased more than three-fold over the next three years but then leveled off, even as total hedge fund assets under management skyrocketed. Several prominent macro managers returned capital to investors in the middle of the decade, finding themselves unable to use all of their capital effectively. As a result, the \$57 billion run by macro funds in 2000, while well over three times the amount managed ten years earlier, accounted for a record low 11.6% of total hedge fund assets under management. Indeed,

⁷ Quoted in Sebastian Mallaby, *More Money Than God: Hedge Funds and the Making of a New Elite*, p. 54.

the growing popularity of other hedge fund strategies, the huge run-up in equities during the late 1990s, and difficulties in 1998 led many to pronounce global macro dead, with even Soros declaring, “Our days of making big macro bets are over.” Julian Robertson shuttered his famed Tiger Fund in March 2000, just as global indices peaked.

1998 Revisited: Global Macro’s Worst Hour

From 1991 through 1997, global macro performed strongly on both an absolute and a relative basis, despite experiencing its only year in the red (1994) and not participating fully in the upside after the U.S. market, fueled by the technology boom, heated up after 1994. Discretionary macro funds had a very difficult year in 1998, particularly those with high emerging markets exposure. These funds were hurt by the Russian default and Asian debt crisis, as well as the sharp reversal in the USD/JPY ratio (as the yen strengthened) and the failure of Long Term Capital Management. According to HFR data, global macro funds returned 6.2% for the year, thanks to the 24.8% return delivered by systematic diversified macro funds. By comparison, the S&P 500 and the MSCI All Country World Index returned 28.6% and 22.0% (18.9% in local currency terms), respectively, despite enduring a 14%+ fall in August.

HFR data show very large redemptions from discretionary funds during 1998 (even more than had occurred in the difficult year of 1994).^{*} Several well-known managers also decided to close up shop or outsource parts of their portfolios. Meanwhile, other macro funds began paying greater attention to exposures and instituting smaller and more diverse position sizing. One can trace today’s more risk-controlled approach on the part of macro managers generally to these events. As investors’ attention shifted away from global macro, long/short equity funds emerged, especially the alums of Julian Robertson’s Tiger Management, the “Tiger Cubs.”

^{*} HFR data show discretionary thematic assets under management of \$11.8 billion at the end of 1998, compared with the year-earlier figure of \$36.4 billion.

However, global macro fund assets under management grew substantially after 2000 and have accounted for between 15% and 22% of the industry total since 2002. As of September 30, 2011, \$434 billion was invested in roughly 1,615 global macro vehicles, representing 22.1% of the \$2.0 trillion in total hedge fund industry assets.⁸ Assets under management are less than the amount invested in equity hedge, event-driven, and relative value funds—although macro is the second-largest of these four major strategies based on the number of funds (21.6% of the total) (Exhibit 1).

The relative weights of CTA/systematic and discretionary strategies have varied sharply since 1990, although the predominance of the former in the late 1990s/early 2000s is striking.⁹ While roughly the same amount of capital was invested in the two broad strategies at the start of 2011, CTA/systematic strategies now enjoy their largest share of total macro assets under management in a decade (using annual data). Blended strategies¹⁰ remain a small percentage of the whole, but much larger than they were during the 1990s (Exhibit 2).

⁸This does not include the \$639 billion invested through funds-of-funds.

⁹Using the HFR terminology and breakouts, “discretionary thematic” (31.6% of the total as of the end of third quarter 2011) and “systematic diversified” (42.1%) predominate among global macro strategies. The other classifications used by HFR with respect to global macro managers are active trading (3.1%), commodities (5.8%), currency discretionary (2.4%), currency systematic (4.3%), and multi-strategy (10.7%). The HFR database provides performance data only for the global macro category as a whole and for the systematic diversified subcategory of managers. In Exhibit 2, which compares historical assets under management of discretionary and CTA/systematic strategies, we include commodity fund data within the CTA/systematic category so as to be more consistent with our global macro definitions which, as discussed earlier, differ from those of HFR.

¹⁰“Multi-strategy” in the HFR lexicon.

Returns, Performance Statistics and Database Issues

Return information for global macro funds, like that for hedge funds more broadly, is incomplete. It may reflect survivorship, backfill, and lookback biases, all of which would likely skew results upward.¹¹ The HFR database we use in this paper, which goes back the farthest and appears to be the most comprehensive, contains backfill and look-back biases but not survivorship bias. However, it also provides equal-weighted average returns rather than asset-weighted performance numbers. If larger macro funds tend to outperform, as some evidence suggests big funds do in the overall hedge fund universe, this may mean that asset-weighted returns that reflect the average dollars invested are actually *better* than the stated numbers. *This may also mean that a relatively small number of managers dominate the averages, as is true for private equity and venture capital strategies, making manager selection particularly important.*

It is also worth noting that a number of the largest and most successful macro funds are not even included in the HFR database.¹² Academic research on hedge fund manager databases suggests

¹¹Survivorship bias is created when the historical returns of a manager no longer tracked in the database (most likely because it has gone out of existence) are removed from the database. Backfill bias occurs when managers are allowed to provide historical data upon entry into the database. While this arguably makes the dataset more complete, it is also somewhat arbitrary, particularly as the funds may not have met index inclusion criteria during such years and given that funds with relatively poorer past performance are less likely to provide past results. Look-back bias, meanwhile, results from a decision by a poorer performing manager to not provide returns that have led to a decision to close the fund.

¹²HFR’s composite return data for global macro and its substrategies also double count different vehicles used by the same funds. A preliminary analysis done by Cambridge Associates using data on individual funds in the HFR database suggests that removing such double counting may change results significantly (e.g., volatility and drawdowns for individual or groups of managers may be higher than reported by HFR). The same issues are present with respect to the other hedge fund strategies reported on by HFR.

that managers may choose not to report because they raise a lot of capital quickly and see no benefit to reporting or because they have experienced poor performance and seek to hide such returns before ultimately shuttering funds. However, a fund that stops reporting or liquidates has not necessarily lost money, let alone suffered a significant loss. Global macro (or other hedge fund) managers that have difficulty raising funds to meet operating needs often stop reporting and/or choose to close up shop and return capital rather than linger.

With these major caveats in mind, the reported HFR numbers show that global macro funds have delivered strong performance as a group in both absolute and relative terms. According to the HFR data, macro funds generated average annual compound returns (AACRs) of 13.0% (in net terms) from 1990 through September 2011 (Exhibit 3), well above that of U.S. or global equities or bonds. Global macro performance was also impressive if risk, as measured by the standard deviation of monthly returns, is considered. Macro volatility was roughly half that of U.S. or global equities and lower than that of long-term Treasuries, with relative volatility over the past five and ten years even more impressive (Exhibit 4). Although macro funds collectively have been in the black only slightly more often than the S&P 500 (66% of months versus 63%), they have suffered only 15 negative *quarters* since the start of 1990, compared with 27 negative quarters for the S&P 500 (Exhibits 5 and 6).¹³ On a calendar-year basis, macro funds posted a negative return only in 1994, when they were hurt by unexpected Federal Reserve rate hikes. However, they were slightly in the red for 2011 through September (Exhibit 7).

Importantly, global macro funds as a group provided significant downside protection. The maximum drawdown (as well as the worst month

¹³Systematic diversified funds had 23 negative quarters.

of performance) for macro funds as a group was milder than in the case of equities, with (not surprisingly) a quicker recovery (Exhibit 8).¹⁴ Relative performance has been good during the financial crises of the last two decades (Exhibit 9). Whereas macro has lagged significantly during months when equity returns were positive, it has been almost flat on a cumulative basis during months when equity returns were in the red (Exhibit 10). Global macro returns have exhibited a relatively low correlation to equities and little or no correlation to fixed income, particularly over the past five and ten years (Exhibit 11).¹⁵

Global macro also compares favorably with other hedge fund strategies. Among the four major hedge fund strategies for which HFR provides return data (global macro, long/short equity, event driven, and relative value), it has been the best-performing strategy since 1990, slightly ahead of long/short equity mandates. Systematic diversified macro funds¹⁶ underperformed the global macro sector as a whole, but still topped event-driven and relative value strategies, as well as the HFRI Composite.¹⁷ Over the last five and ten years, meanwhile, systematic diversified macro outperformed all four major hedge fund

¹⁴We caution that, as with all strategies, drawdowns for individual funds may be much worse than for the strategy as a whole.

¹⁵Correlations to bond returns, while low, have been higher than in the case of other major hedge fund strategies.

¹⁶Note that HFR reports this category separately from commodity funds or currency systematic strategies and that HFR's categorizations in some cases differ from ours. See footnote 9 for HFR's category breakouts.

¹⁷The Dow Jones Credit Suisse Global Macro Index, which begins in 1994, indicates even higher performance (an AACR of 12.3% versus 8.8% using the HFRI Macro Total Index), as does the Barclays Capital Global Macro Index, which begins in 1997 (an AACR of 9.1% versus 8.4% using the HFRI Macro Total Index and 11.6% using the Dow Jones Credit Suisse Global Macro Index). The Barclays Capital Global Macro Index, however, calculates returns on an asset-weighted basis.

strategies, while global macro in the aggregate was the best performer among the four major strategies (Exhibit 3). From a diversification perspective, global macro has also exhibited the lowest cross-correlation among the major hedge fund strategies.

Volatility for global macro was higher over the full 21-year period than that for event-driven and, even more so, relative value strategies. However, over the last five years, macro has been the least volatile of the major hedge fund strategies (Exhibit 4). As is true in comparison to equities, global macro in the aggregate has also provided downside protection, with lower drawdowns than other hedge fund strategies and impressive relative performance during periods of financial turmoil and months when equity markets fell. While macro funds have experienced cumulative losses over various time frames during the last 21 years, they have protected capital on average better than the other major hedge fund categories (although relative value was a notable outperformer during down equity markets over the full 21-year period) (Exhibits 9 and 10). Even in 2008, macro funds returned 4.8% in the aggregate, although this was not the case for all substrategies; the 18.1% return of systematic diversified strategies kept the average manager performance positive for the year (Exhibit 7). Finally, it is also worth noting the extremely low equity betas of macro funds as a whole (Exhibit 4).

While we have focused in this section on the performance of global macro managers as a whole in order to make comparisons with both other hedge funds and long-only funds, investors obviously do not “eat” aggregate index returns. Industry indices are valuable for benchmarking purposes, but the performance of *individual* global macro managers within their portfolios is ultimately of greatest importance to investors. So, while perhaps implicit in the above analysis, it is worth emphasizing that individual manager

performance will differ, often sharply, from that of managers collectively. Thus, while the median top quartile performance of managers in the HFR database¹⁸ during the full ten-year period ended December 31, 2010, was an annualized 16.0%, 25 of these 43 top quartile funds experienced drawdowns of more than 20%, including 11 with drawdowns of at least 30% (Exhibit 12).¹⁹

Thirteen of the 18 systematic diversified funds in the top quartile had a maximum drawdown of at least 20%, compared with just five of the 11 discretionary thematic funds. However, all five discretionary funds experienced a drawdown of at least 40%. Four of these five funds (as well as a fifth discretionary thematic fund that experienced a maximum drawdown of 10.5% in March 2010) had not regained their high-water marks as of the end of 2010 (Exhibit 12).²⁰

These data lead us to reiterate the importance both of using a diversified group of managers and of manager selection. However, we have no reason to believe this to be *more* important for global macro than for other hedge fund strategies. For example, we compared performance dispersion levels (at both the 5%/95% and 25%/75% levels) among the major four hedge fund categories and found that dispersion among macro managers was comparable to that of other hedge fund managers (Exhibits 13 and 14). Specifically, macro manager performance dispersion was greater than that shown by event-driven and relative value managers, but less than that of long/short funds. Performance dispersion among top quartile discretionary thematic managers was higher than among systematic diversified strategies.

¹⁸ As noted earlier, some macro funds that we track are not included in the HFR database.

¹⁹ The fact that our analysis of HFR covers only managers with ten years of performance in an industry with high attrition rates reinforces our conclusion that drawdowns were meaningful and dispersed even among the best performers.

²⁰ The four funds all reached their lows in January or February 2009.

How Global Macro Managers Operate

Investment Strategy

Given the breadth of strategies within macro as well as the many ways managers seek to build positions, it is difficult to draw generalizations about the way in which managers operate. Some global macro strategies are more trading oriented, others more arbitrage oriented, and others more quant driven. Managers look for mispricings or, in the case of systematic funds, trends. Several of the best known managers run both discretionary *and* systematic funds, sometimes combining the strategies within a single fund.

Discretionary managers identify macro themes based on their analysis of major economic trends, policy considerations, investor behavior, and trade and financial flows and then use the most cost-effective way to implement. They may also use technical data such as price charts as references. The number of themes varies by manager but tends to be fairly limited. Intensive research on supply and demand issues as well as other fundamentals is often conducted to support and test themes; some have labeled this “global micro.” Themes are often expected to play out over a six- to 12-month period while those that take too long to play out will become a cash drain (with uncertain payout). Arguably, the way discretionary managers operate makes them better able than systematic managers to hit the home runs (e.g., subprime housing, shifts in currency regimes).

As noted earlier, many large discretionary macro funds follow a silo or multi-strategy²¹ approach rather than using just one portfolio manager. Under this approach, several different portfolio managers or teams are allocated capital and allocations to these teams are reviewed regularly.

²¹ This should be distinguished from traditional multi-strategy funds.

This approach may be due to fund size or a desire to accommodate different areas of expertise within the fund. Often, subportfolio managers within the large macro funds do not know each others’ trading positions in order to lessen the possibility their trades will mirror each other.

CTA/systematic managers, meanwhile, may apply advanced econometric models and sophisticated portfolio theory to source and implement investment ideas. Models may also be based on fundamental factors including value, growth, flows, and price dynamics. In the extreme, models of CTAs or “managed futures” funds may rely on mean reversion, momentum, pattern recognition, and relative value. Systematic managers generally turn over their positions more quickly and have a much shorter-term outlook than discretionary managers. In other words, they are more tactical.

Implementation

Managers have wide latitude in implementation given that they are not limited by geography, asset class, or type of security. They determine which asset class and which trade/product appear to be the most favorable way to play each investment theme, seeking an asymmetrical risk/return profile (through convexity, optionality, etc.). Some managers generally prefer directional trades (e.g., going long commodities) while others incline toward relative value propositions (e.g., buying Japanese bonds while selling U.S. bonds). A discretionary manager might focus on relative value and arbitrage trades when he—macro managers are overwhelmingly male—believes there is a lot of mispricing, but be more directional when he sees broader, long-term themes. Or he might use tactical event-driven trades on top of a portfolio that rests on a few broad themes. In the case of CTA/systematic managers, while implementation will be effected through a model or models, such model(s) will of course reflect certain qualitative biases and inputs unique to the manager that creates them.

Managers establish positions using the instrument best suited to a particular theme and asset class, with liquidity and cost efficiency considerations playing a vital role. Whereas most currency trades are done with spot and forward contracts, fixed income, commodity, and even equity trades are often done in the futures markets. Swaps will be traded on over-the-counter markets.

Global macro managers frequently use options to implement trades. Options have the added advantage of mitigating the market timing issue associated with entering the market and (if purchased rather than sold) helping quantify the potential downside. They may also be a way to buy volatility when it appears inexpensive. Indeed, in some cases macro may in essence be a means of going long volatility, thereby diversifying equity-centric portfolios that suffer when equity volatility spikes. In buying volatility, options represent a cost, defined by the premium, time decay, and implied volatility.

Position sizing depends on the manager's style and level of conviction. However, macro managers often begin with a relatively small position. If the trade goes in the manager's favor, this is generally seen as a signal to buy more rather than take gains. For example, a manager that bought a call option on the Nikkei 225 Index and saw gains might then buy futures on the index.

Some might view this as analogous to a momentum strategy (and this might be true in the case of some CTA/systematic macro strategies). However, there is a significant difference between *discretionary* global macro and momentum trading, at

least in theory.²² Whereas the momentum fund manager (CTA) will act purely on the basis of market action, the discretionary macro manager will reassess the target price and not increase his position if he has a less positive view of the valuation than when he started the trade. He may abandon the trade if it moves against him, either because the position is leveraged or because of adherence to self-imposed stop-loss limits.

There is no rule of thumb regarding the number of positions that a macro trader will take, although, as noted earlier, at least some CTA/systematic strategies normally entail much higher trading volume than a discretionary approach. Some discretionary macro managers will tend to run concentrated portfolios and others more diversified ones. However, at least some daily trading is the norm for discretionary macro managers notwithstanding the fact that there may be just a few major themes. Trading is not only for profit-taking purposes but also to manage risk or test market liquidity.

Risk Control

Although the amount of risk they are willing to assume can vary dramatically, global macro managers attempt to control their downside, consistent with their general absolute return philosophy. Selling volatility, for example, is often seen as inconsistent with controlling risk, given

²²While we have traditionally viewed momentum trading as generally inconsistent with the idea of investing for the long term, we noted long ago that "investors ignore price momentum at their peril. . . . Even when an asset class appears cheap on the basis of fundamental valuations, one should hesitate to invest heavily if price momentum is strongly negative—better to accumulate gradually, perhaps accelerating purchases on evidence . . . that the negative momentum is exhausted." See our 2000 report *Equity Market Timing, Equity Market Valuation and Momentum Investing*. More recently, we have seen value in momentum trading in active currency strategies and now believe that this strategy more broadly may offer diversification benefits within the global macro space.

the potentially high downside. This is why macro managers attempt to have a long volatility bias. However, the temptation to enter positive carry and therefore short volatility positions (e.g., foreign exchange) has led to well-documented macro “blow-ups.”²³

The small initial position sizes noted above are another risk management tool, particularly for investing in themes that are expected to play out over months or even years. Initially oversizing positions may reduce the gain from investing on a theme that proves correct but does not pay off in the shorter term.

Most global macro managers use stop-loss provisions to manage downside risk. At many firms, traders whose losses reach a certain percentage (e.g., 5% of their initial positions or high-water marks) will need to reduce their positions (and may face temporary or permanent cuts in their allocated capital). If the loss reaches another defined level, the positions must be taken off²⁴ and, potentially, other positions in the portfolio scaled back. At some firms, traders who lose a certain percentage of their allocated capital (say 15%) are terminated.

Stop-loss provisions are commonly justified as a “live to fight another day” or “don’t fight the market” strategy. This approach is very different conceptually from that of value investors or global tactical asset allocation investors that will often *buy* on weakness.²⁵ As always, however, some macro managers are exceptions to the general

²³ Some macro managers will buy options in an attempt to counter any short volatility bias resulting from carry trades or other positions.

²⁴ The manager could potentially re-enter the trade after a cooling off period but, in any event, the initial trade will be taken off.

²⁵ This assumes such value or GTAA managers have not changed their valuation call or do not perceive other opportunities as more attractive, and that new purchases do not violate risk parameters.

rule and may “double down” on trades that are moving against them.

Finally, like other hedge fund managers, practitioners of global macro attempt to manage volatility and downside risk through techniques such as delta hedging,²⁶ reducing gross exposure or cutting leverage when volatility is high, adjusting the amount of margin posted, and using value at risk (VAR) models and other risk measurement tools. VAR methodologies, including the amount a manager is willing to risk on a daily basis, the confidence interval used, and of course the actual model construction, vary considerably by fund. Measuring and managing leverage and risk present significant challenges, as will be discussed later, and a manager’s approach therefore provides insight into his philosophy and processes.

The Major Arguments in Favor of Global Macro

There is no shortage of strong opinions regarding the putative merits or flaws of global macro. We focus here on the major lines of thought.

Diversification

For many, the most important argument for using global macro is its diversification potential. Clearly, as discussed earlier, macro has been a strong source of diversification over the last 21 years, particularly during sharp market downturns (Exhibits 10–12).

Institutional investors’ portfolios tend to be heavily equity centric, with fixed income taking up much of the non-equity allocation. Such

²⁶ Delta refers to the change in the price of an option that results from a change in the price of the underlying security. Delta hedging involves using options to hedge the risk of positions, especially as the value of such positions changes over time.

portfolios are “short volatility,” meaning that they perform poorly in highly volatile environments or when volatility spikes (Exhibit 15). To the extent that global macro managers are generally “long volatility” players—due to their ability to go short, their efforts to find asymmetric trades and buy volatility when it is cheap, and, in the case of systematic managers and CTAs, their ability to avoid behavioral risk—they have the potential to add significant value to a portfolio. This is particularly useful since many hedge fund strategies, such as value-based long/short equity, perform best when volatility is steady or declining.

While the average correlations between global macro and S&P 500 Index returns have historically been relatively low (0.40 and 0.35 for rolling 12- and 36-month periods, respectively), past results are no guarantee of what will happen in the future. Such correlations have risen sharply from late 2008/early 2009 lows, as is true for hedge funds generally, making the pursuit of alpha appear expensive (Exhibit 16). However, there are good conceptual reasons to think that over the longer term, global macro, particularly its top practitioners, will continue to provide diversification to investors with equity-centric portfolios.

A portfolio constructed on the basis of thematic views expressed in different ways through different asset classes seems unlikely to be highly correlated with a traditional equity-centric portfolio. Indeed, some macro managers operate primarily in the commodity and currency markets, with little direct exposure to equities and bonds, the primary components of most long-term investor portfolios. Commodities and currencies (as well as bonds) offer the potential for real diversification from equities. Moreover, in at least some funds that operate with different risk takers (i.e., portfolio managers of subportfolios), managers target low correlations of such sub-managers to each other, to the fund, and to

a relevant benchmark (where appropriate) so that the fund itself offers its own diversified exposure.

In addition, the strategy’s flexibility means there need not be high correlation with the economic cycle or other investment strategies. For example, even when equity markets are falling sharply, other hedge fund strategies, particularly equity long/short managers (the largest subset of hedge funds we follow) generally maintain positive net long positions. By contrast, macro managers, in part because they are not benchmarked to an equity index or that of any other particular asset class, are freer to exit a market—or to short it. This freedom can be useful, not only in a year like 2008, but in any environment in which volatility is rising and/or price discovery turns discontinuous. CTA/systematic macro, meanwhile, is likely to perform well during periods when markets trend strongly, contributing its own kind of diversification to an equity-centric portfolio. *Of course, if global macro trades become very crowded, we would expect the corresponding diversification benefits to decrease (i.e., correlations would rise).*

Is diversification alone a sufficient reason to include global macro in a portfolio? Consistent with our views concerning other asset classes and strategies, we believe that taking some haircut on expected return in exchange for diversification is appropriate, as it can allow the portfolio to compound faster. However, investors need to weigh the expected return for the manager against its expected diversification impact at the total portfolio level. From a historical perspective, global macro strategies have provided competitive returns relative to hedge funds in general and to equities on a risk-adjusted basis. We have little reason to believe this will fail to persist in the future.

Return Profile/Trading Skills

As noted above, global macro funds as a whole have historically delivered competitive returns,

been successful during different market cycles, and experienced relatively limited drawdowns as a group (Exhibits 8 and 10). Generally, this has been the result of relatively tight stop-loss provisions and, more broadly, the willingness of managers to accept the market's (short-term) verdict. As we have written before (with respect in that case to quantitative investing), "essentially, managers will better avoid losses if they can remove unsuccessful short-term bets quickly and let still-incubating, long-term bets hold."²⁷

Moreover, while global macro, particularly its discretionary form, often gets tagged with the "risky" label, performance analysis suggests that high-quality managers have been quite focused on risk control and capital preservation, particularly over the last decade. For example, macro funds' Sharpe ratio since 1990 has been 1.2, better than that of managers running event-driven or equity hedge fund strategies as well as benchmark indices for long-only equities and fixed income funds. Sharpe ratios have been high for systematic diversified macro managers as well. Over the last five and ten years, meanwhile, macro funds have had the highest Sharpe ratios among major hedge fund and long-only equity strategies (Exhibit 4). Macro funds may manage risk more closely today than in past years given the increase in their institutional investor base—although this may also mean less opportunity for blowout returns.

Due diligence we have done suggests that the best managers have strong risk controls.

Trading skills appear to be central to discretionary global macro managers' success, in part because of the larger number of trades they put on, although we note that certain other hedge fund managers we like identify trading as one of their key skills sets. Trading ability is not easy to explain or evaluate—we are reminded of Justice Potter Stewart's famous dictum about hardcore

pornography ("I know it when I see it")—but it would appear to include the ability to find trades on the basis of macroeconomic indicators, structure them so that the potential upside is much greater than the potential downside, manage the associated risk (through hedging, position management, and a disciplined process for cutting losses), and evaluate the reasons for past successes and failures. For many discretionary macro managers, an intuitive feel for market movements is important, while many CTA/systematic managers rely on advanced systems that allow rapid information collection and trading execution. Successful discretionary macro managers have exceptionally good execution skills and are able to keep transaction costs to a minimum.

A number of global macro firms have a highly successful track record over an extended period. This indicates an ability to operate effectively in different macro environments and to manage risk, suggesting that the best macro managers, like the top managers of other strategies, can repeat their strong performance.

Potential to Profit and Protect Capital During Periods of High Macro Uncertainty (Such as the Present)

While capital has hopped rapidly across the globe for at least the last 15 years (as a financial archaeologist searching the rubble from popped asset bubbles over this period could attest) it seems today to move more quickly than ever. This suggests substantial value in the ability to formulate a reasonable, informed view of the macro outlook and what the implications of various scenarios will be on investing and trading strategies. Many of the long-only and hedge fund managers with whom we speak now find it much more necessary than before to monitor what is happening in the world's capitals, including through discussions with policymakers and regulators.

²⁷ Please see our 2006 report *Demystifying Quantitative Investing*.

Notwithstanding macro's underperformance versus both other hedge funds and equities in 2009 and 2010, a strong case can be made that if *any* environment is conducive to success for global macro, it is the current one. Over the last few years, we have witnessed massive government intervention and legislation in response to the financial crisis and recession.²⁸ Developed markets face daunting and unprecedented structural challenges in the years ahead as well as the likely continued rise of emerging markets economies. Foreign reserves held by emerging markets central banks and sovereign wealth funds have grown enormously. The strategic or tactical use of such reserves could certainly roil markets—even the hint of a change in policy has impacted markets significantly.

A Bloomberg writer noted last year that “rarely have global economic conditions been so ripe for betting on currency fluctuations. Most traders agree they haven't seen such a difference between outlooks for different countries in at least a decade, and exploiting that gap is how currency speculators make money.” We believe this is still true.

Moreover, China's hard line on currency re-valuation, which affects many Asian countries that are in essence linked to the yuan, may just delay a violent shift sometime into the future. Already, currency volatility has spiked in response to factors such as structural weakness in the Eurozone and efforts by a number of countries to weaken their currencies to boost exports. These efforts, together with new trade restrictions, are reminiscent of the 1930s.

Other factors that could cause a seismic shift in markets include deflation or high inflation, both of which appear to be much more likely possibilities than normal, and the outcome of stepped-up

competition among sovereigns to secure natural resources. The huge growth of the derivatives market and the proliferation of investment vehicles such as exchange-traded funds are also changing the investment landscape in profound ways.

All of these factors have increased the potential for significant dislocations in financial markets, meaning that macro conditions may continue to overwhelm fundamentals and may manifest themselves in significant mispricings and good risk-reward trades. In some ways, today's environment is reminiscent of periods such as the 1970s, when the Bretton Woods regime collapsed, major oil crises occurred, and government and central bank actions heavily impacted investment markets. One writer has analogized to the early 1990s, when deeper currency markets destroyed central banks' ability to intervene successfully and broader bond markets made it much more difficult for governments to control or even anticipate changes in long-term interest rates.²⁹

Flexible Deployment of Capital

Proponents of global macro argue that the ability of macro managers to use all tools available in any market allows them to find the best trades. Moreover, they do not face the liquidity constraints of, say, managers that invest only in equities. Indeed, three of the most famous global macro managers of yesteryear—Julian Robertson, George Soros, and Michael Steinhardt—are said to have adopted a global macro strategy by necessity in order to deploy all of their substantial capital bases.

Equity-oriented investors should be aware that, at \$55 trillion, the investable equity market globally is considerably smaller than the \$91 trillion bond market and dwarfed by both the commodity and currency markets.³⁰ Daily currency trading

²⁸ Please see our August 2009 Market Commentary *Uncharted Waters: The U.S. Policy Response to the Fiscal and Economic Crisis* for a discussion of such issues in the United States.

²⁹ Mallaby, *op. cit.*, p. 186.

³⁰ There are, of course, some constraints within markets. For example, while there is ample liquidity in gold,

hit \$4 trillion in April 2010, much higher than the amount traded in U.S. Treasuries and U.S. equities.³¹ The liquidity of the markets in which global macro managers trade (and the instruments such managers use to implement their positions) ostensibly means monthly or quarterly liquidity for their investors, better than what they see in the case of most other hedge fund strategies.

As one manager has pointed out, it is telling that during 2008 “there was never a panic in any of the commodity markets, and they continued to trade in a very robust fashion compared to many other financial markets.”³² In addition, the volatility spike in the currency market, as measured by implied volatility, was significantly less than that experienced in the equity market. At the same time, the liquidity of global macro means that managers may experience large outflows when investors need cash; this scenario occurred in 2008 and helps explain macro managers’ increased interest in longer-term institutional money. However, investors should not make the mistake of assuming that liquidity will always be present in large, highly traded markets. For example, the hit to macro managers’ bond positions by the Fed’s surprise rate hike in 1994 was magnified because fixed income trades had become crowded. The point is that larger, more traded markets are less likely to experience liquidity issues.

The ability to allocate capital among different subportfolio managers is arguably another sign of flexibility, allowing the key portfolio manager to use the broad skill sets of his risk takers and diversify portfolio bets, increasing the chances of fund success. This is analogous to what multi-

silver, oil, natural gas, copper, aluminum, and maybe zinc, certain commodities such as “softs” do not provide such liquidity. Figures for the size of the investable equity and bond markets are for 2010 and 2009, respectively.

³¹ Daily trading of U.S. Treasuries and U.S. equities was \$456 billion and \$134 billion, respectively, in April 2010.

³² Quoted in Steven Drobny, *The Invisible Hands: Hedge Funds Off the Record—Rethinking Real Money*, p. 218.

strategy funds do, although macro funds are much more willing to tilt heavily to particular strategies than are multi-strategy funds, which will generally maintain positions in all of their strategies even as they shift allocations at any point in time. Of course, allocating capital creates another layer of complexity for investors seeking to understand how their funds are being managed, who is managing them, and what the risks are. Although this issue may not be unique to macro funds—one sees it in the case of funds-of-funds as well as multi-strategy funds—it is something with which interested investors need to get comfortable.

The Major Arguments Against Global Macro

Skeptics of global macro tend to cite issues involving transparency, levels of leverage, fees, and attrition.

Transparency

While macro funds have historically provided little information about their positioning, this is less true today. However, despite improved transparency, the fact that positions are fluid and, in particular, that strategy can shift on a dime means that investors’ knowledge of portfolio exposures at any point in time may be limited. For example, one manager told us his fund had once liquidated 80% of its portfolio in two days. Another told us that, in response to a rise in correlations, his fund cut each of its positions in half in the space of two-and-a-half hours.

One can certainly argue that this is a strength of global macro, indicating the highly liquid, flexible, and nimble nature of the strategy, but these examples also highlight that risk exposures for these managers are unpredictable. Investors must think carefully about how they monitor macro funds, given that the traditional approaches (e.g., quarterly monitoring) may not

be the most appropriate. They must ask themselves not only whether they are prepared to live with these sorts of dramatic portfolio shifts, but also consider their potential impact on the overall portfolio both in terms of its basic structure and its performance. While much depends on the relative size of any allocation to macro, investors with sizeable allocations could find themselves uncomfortably over- or underweight different asset classes as a result of a shift in their macro managers' strategies. Rebalancing decisions, which entail certain costs, also become more difficult.

In short, investors must be comfortable with the concept that they will often not be able to incorporate macro manager exposures into their monitoring of total portfolio exposures. Effectively, a portion of tactical positioning will be outsourced to such managers and will be largely independent of any (potentially offsetting) tactical positions applied at the portfolio level.

Leverage

Global macro may involve more leverage than other hedge fund strategies. Macro managers often buy on margin, finance through the repo markets, sell short, and use derivatives, all of which involve leverage (and counterparty risk). The more leveraged an investment, the more sensitive it will be to market moves. Leverage can also create or exacerbate liquidity issues during periods of market stress. It can make return analysis more difficult too. For example, a 20% return on the amount of assets "controlled" in a levered portfolio looks less impressive than the same return on the manager's actual assets under management.

The variety of macro strategies makes the question of leverage very manager-specific. However, as a general matter, the extent of leverage depends on the manager's style, strategy, and exposure (including which asset classes are being traded/

levered), and the way in which positions are implemented (including how long a period the manager is leveraged for). For example, directional strategies will normally use much less leverage than relative value approaches, which rely upon small, arbitrageable differences in asset prices. Further, different asset classes vary in margin requirements, and hence leverage, with currencies requiring little margin (i.e., they involve high leverage) while equity positions are on the high end of margin requirements. The amount of leverage thus can change rapidly, mirroring portfolio shifts.

Perhaps the key question, however, is how leverage is introduced into the portfolio. If the manager buys on margin, leverage on individual positions is high, but portfolio risk depends on the number and sum of margin positions (as well as the extent to which they are correlated to each other). If the manager levers up by purchasing options, maximum losses are capped and knowable (the price of the options plus any unrealized gains). However, if the manager buys or sells cash instruments the potential downside is, in the first instance, 100% of capital and, in the second, (theoretically) infinite.³³ Investors should also understand the source of leverage, with borrowing through repurchase agreements or from prime brokers (whose terms can change quickly) representing one end of the spectrum and cash from secured lines of credit or long-term structured financing vehicles the other. In addition, the leverage may be generated solely by the financial instruments (futures) themselves without the need for additional borrowing. And finally, leverage may *reduce* the overall risk in the portfolio when financing is used to take advantage of relative mispricing.

Such considerations help us not only better evaluate the risk entailed by a particular macro

³³ In practice, of course, managers will mix these implementation choices.

manager's use of leverage, but also compare such risk with the leveraged structures used by other money managers. Thus, a highly leveraged macro manager whose downside is quantifiable could be less risky than a long/short manager with low net exposure (especially if the latter does not maintain stop orders). Likewise, the bigger a hedge fund manager's (of whatever stripe) gross exposure, the higher the risk that it may have inadequate funds available to cover short positions in the event of a sharp price rise.

Given the above and the fact that leverage ratios do not necessarily account for swaps or options or differentiate between hedged and un-hedged positions, leverage needs to be understood not in isolation, but within the context of a broader risk management strategy. Indeed, some argue that measures such as gross or net exposure more realistically represent potential loss. As noted earlier, managers also use methodologies such as VAR, stress testing, and scenario analysis to measure (and control) risk.

While we know from investment history that these and other risk management metrics and methodologies all have their own flaws, it is important to understand them, the manner in which they are employed (e.g., how often and by whom), and how the manager responds when it perceives that risk is too high. These are the crucial elements of a risk-controlled portfolio. For example, global macro managers often have procedures to de-lever or "de-risk" the portfolio in such situations to preserve capital. At the end of the day, leverage remains a significant consideration in evaluating global macro funds. Monitoring is therefore important and investors may also want to check prospectuses for leverage limitations.

High Fees

Some argue that global macro manager fees are too high. The charge is true—*if one believes this is true of hedge funds generally*. Global macro fund fees

tend to be in the 2 and 20 range (2% management fee and 20% of profits), although some funds offer more attractive terms. A 1.5 and 20 structure is not uncommon. As with most other hedge funds, a high-water mark is used.

However, a handful of funds charge 3 and 30 or even more. They are able to do so because, like several highly successful hedge funds pursuing other strategies,³⁴ they have delivered strong and consistent returns over many years.³⁵ While such funds may certainly continue to perform well—and will ultimately be judged in large part on their net returns—greater caution should be exercised when considering investments in them. A 3 and 30 structure means that the fund must earn a 16.9% gross return just to return 9.4% (the historical average return of U.S. equities since 1900) to investors. By contrast, under a 2 and 20 structure, the fund's gross return would need to be "only" 14.0%. One reason for the high fee structure is the fact that macro firms with different risk takers tend to net overall performance, meaning that investors pay fees based on overall fund performance rather than the results of individual managers—the firms pay successful sub-managers out of their own pockets even if the overall fund is negative in any particular year so as to retain talent; this should ultimately benefit the investor.

Certainly, as in the case of other funds with high fee structures (whether marketable or private funds or funds-of-funds), investors should consider whether the fee structure and manager incentives of any global macro fund they are looking at are properly aligned. The less manager income depends on actual performance,

³⁴ Some managers of other hedge fund strategies also charge an assortment of fees (such as deal expenses) on top of a management fee and carried interest.

³⁵ It is also important to recognize that these high fee levels were the industry norm when such macro managers began their funds.

the more wary we are of any particular fee structure.

Attrition Rates

High attrition rates are another reason for concern. While the available data are incomplete, we analyzed information on global macro funds included in the HFR database together with information contained in our own, but not the HFR, database.³⁶ For managers in our new combined database as of 2003, the subsequent one-, three-, and five-year attrition rates were 11%, 33%, and 47%, respectively (Exhibit 17).³⁷

Looking at departures over longer time frames, 62% and 53% of managers included in the database in 2000 and 2003, respectively, were gone by the end of 2009; this translates into average annual attrition rates of 10% and 12%. Attrition was similar among discretionary and systematic funds (Exhibit 18).

While attrition rates were high across the board, funds more than a decade old had average annual departure rates well under those of funds less than five years old. Thus, 54% of managers with more than ten years of operating history in 2000, and 32% of managers that had been operating for more than a decade by 2003, went out of business by 2009 versus 64% and 59% of managers with less than five years of history in 2000 and 2003, respectively (Exhibit 18).

It is important to keep in mind that attrition rates for global macro funds are not meaningfully

³⁶ Our analysis covered systematic diversified, discretionary thematic, active trading, and multi-strategy funds, but excluded commodity and currency funds (using HFR terminology). We sought to eliminate the double counting in the HFR database (see footnote 12) with respect to funds that used multiple investment vehicles. Our analysis included backfill data.

³⁷ Attrition data in this section refer to data beginning on the date on which returns for particular managers are first reported, rather than the date on which funds were inceptioned.

different than those for the hedge fund industry as a whole *or for long-only managers*. In 2008, *The Economist* cited academic studies suggesting that almost half of hedge funds lasted less than five years. This is consistent with the aforementioned five-year attrition rate of 47% we found for global macro funds in our combined database in 2003. Similarly, HFR data show that just under 50% of hedge funds as a whole are five years old or younger. Indeed, HFR reports that hedge funds three years of age or less accounted for more than one-quarter of all hedge funds. Among long-only managers, meanwhile, 62% of U.S. large-cap growth equity managers in our database at the beginning of 2000 were gone by the end of 2009, exactly the same attrition rate as global macro managers! Other categories of long-only managers also had high attrition rates over this period, although they were lower than those for macro managers (Exhibit 19).

Conclusion

One difficulty in evaluating the arguments for and against global macro is that it can be hard to generalize from industry-level data when dealing with such a plethora of asset classes, implementation options, and trading styles. Yet with one significant exception, the arguments really come down to a familiar trade-off: reward (high returns through ostensibly repeatable skills and the ability to take various positions in different markets) versus risk (less transparency given strategies that can shift quickly, potential use of significant leverage, and the high fees and attrition associated with—although certainly not unique to—macro funds). The exception, of course, is the diversification the strategy (particularly its top managers) has provided to equity- and bond-centric portfolios in the past (and which it arguably will deliver in the future), thereby reducing volatility (and enhancing returns).

It is arguable that the low volatility exhibited by global macro as a whole reflects the significant diversification of its substrategies and masks high volatility on the part of individual funds. While we take this argument seriously, we believe it is best addressed by understanding the risk tolerance and risk controls of individual managers and by using a diverse group of macro managers or combining a smaller number of macro managers with a properly constituted set of other diversifiers. An investor should then consider how the volatility of the global macro allocation might be expected to increase or decrease the volatility of the total portfolio as well as any “bucket” in which it might be included (e.g., absolute return or diversifier). As discussed, we anticipate that such an allocation would dampen total portfolio volatility. In other words, we advocate the same sort of approach as we do for hedge fund and other allocations generally.

A number of global macro managers have produced impressive results over the long term, with an enviable consistency as well as low volatility and strong results in down markets. Indeed, the successful firms have been as, if not more, successful in making calculated estimates of future prices in a number of macro areas as many traditional managers have been in predicting company earnings and share prices. They have also demonstrated that they can generate good net returns in a risk-controlled way that are not correlated with equity markets. This may be due to the ability to find asymmetrical trades, ride trends, or otherwise use superior trading acumen, but these are valuable, specialized skills that should be recognized.

We therefore believe that for many investors a thoughtfully constructed allocation to select global macro managers offers various potential benefits, particularly in an increasingly macro-driven environment. This should be regarded as a diversifying, absolute return strategy with the

potential to provide important benefits in high-volatility environments. As we advocate with respect to hedge funds generally, we recommend that an allocation to macro (assuming it is more than a *de minimis* one) be implemented through a group of macro managers or via a smaller number of macro managers combined with a properly constituted set of other diversifiers in order to dampen the performance volatility of individual funds as well as the potential impact of any blow-up.³⁸ ■

³⁸ Implementation issues are addressed briefly in the Appendix.

Appendix: Implementing an Allocation to Global Macro

While we offer some brief, general thoughts here on implementing an allocation to global macro, this should be the subject of a detailed discussion among an investment committee, staff, and investment consultants that takes into account an investor's size, spending needs, risk tolerance, exposure to other diversifying assets, and other considerations. As with other asset classes and investment strategies, an investor must also determine how much it theoretically is willing to give up in a rising equity market, given that macro managers may well lag in such an environment.

Strategic or Tactical?

While both strategic and tactical allocations to global macro would rest heavily on the strategy's perceived diversification attributes and return potential, such allocations would have different drivers. In the former case, the investor would seek permanent uncorrelated exposures that theoretically dampen volatility and perhaps prove particularly supportive in high-volatility environments. A tactical move, on the other hand, would be a response to markets when macro conditions are perceived to overwhelm fundamentals or those where the sorts of asymmetric risk-reward trades sought by macro managers are plentiful and cheap, such as environments when volatility is low and hence options are relatively inexpensive. Generally, we perceive an allocation to macro as strategic, but something that could be tactically ramped up or down depending on the economic environment. How the allocation fits within the portfolio depends on the investor's particular circumstances and needs.

Some Investors for Whom Global Macro Might Not Be a Good Fit

Investors considering global macro must think long and hard about whether they are comfortable with the fact that portfolios can shift quickly, meaning they will lack knowledge about portfolio positioning at any point in time, even with frequent communication. A substantial allocation to macro funds may result in less certainty about the total portfolio during periods between meetings/reports. Likewise, investors in global macro must be able to understand and tolerate the potential risk associated with leverage employed by macro managers.

In addition, strategies like global macro that involve greater amounts of trading can be relatively tax inefficient for taxable investors. While this is an issue for hedge fund strategies generally, it is likely to be a bigger issue in the case of global macro funds. At the same time, it may be less of a problem for certain taxable investors.

Global macro funds could also potentially violate the policy mandates of socially responsible investors. True, the macro managers would normally not deal in individual names. However, they could trade instruments that include names unacceptable to such investors. As this sort of potential conflict is very investor-specific, we merely flag it here as a possible problem.

Return Expectations/ Measures of Success

We consider global macro an absolute return strategy. This means that managers pursuing this strategy seek positive returns, with some focus on capital preservation and generally without reference to any equity market benchmark. This does *not* mean investors should anticipate there will be no years of negative returns. As with other hedge

fund strategies, investors should expect lower volatility and less participation in both the upside and the downside of equity returns. Benchmarking absolute return strategies is fraught with difficulty, but investors should probably seek to earn a return equal to the rate on short-term cash (e.g., 91-day Treasury bills) plus an additional increment; the sum of the two should realistically reflect the strategy's return potential and risks. Certainly, investors should be prepared to sacrifice some return for the potential diversification and downside protection offered by global macro.

The measure of success of an allocation to macro goes beyond pure returns, however. It is also related to the allocation's correlation with other strategies (which should be low) as well as whether it serves to decrease the correlation of the portfolio as a whole with that of the broader equity market. Other key measures of success are whether global macro serves its intended purposes of good relative returns and provision of liquidity during periods of macroeconomic uncertainty, high volatility, and heightened tail risk.

What Should One Look for in a Global Macro Manager?

As with other hedge fund managers, investors looking at macro managers should seek to understand clearly the particular value proposition that is being offered (i.e., what the manager sees as its edge). In the case of global macro, it may include an ability to trade in different assets, operate effectively in different markets and regions, ride momentum, and anticipate economic trends, as well as an ability to find and implement asymmetric trades. Or it may be a better quantitative system/model. Understanding the viability of the value proposition is central to evaluating whether a successful macro manager can continue to outperform.

A Changing of the Guard?

Some of the best-known macro managers have retired in recent years. Others have or may limit capacity or are at an age (or have achieved a level of wealth) where they might conceivably be expected to retire or scale back their trading in the next few years. This has implications for investors. One traditional method of protection is a "key man" clause that allows quick exit in the event of a manager retirement. While such a clause is standard in hedge fund agreements, investors should feel comfortable enough with the broader fund team within managers in which they are invested to not worry about suffering (undue) losses during the period between providing notice of redemption (following a retirement announcement) and receiving their investments back.

The bigger challenge is likely one of identifying other high-quality managers that can take the place of retiring managers and/or those who limit capacity. These "new" managers may well be those who take the reins at funds where the founder/leader retires. Or they could spin out from such funds, setting up on their own. This makes it doubly important to understand the major risk takers in global macro funds, even eponymous ones. We also consider it important to identify up and coming high-quality global macro managers.

Global macro strategies are very manager specific, making the due diligence process particularly important. Although a full discussion of such matters is beyond the scope of this paper, we list below some of the things investors should examine:

- **Manager expertise in different asset classes.** Given that one of macro managers' key advantages is their ability to trade different asset classes and markets, it is essential to understand the background of the principals in each particular fund and how the firm has evolved (e.g., in which asset classes does the fund have the greatest exper-

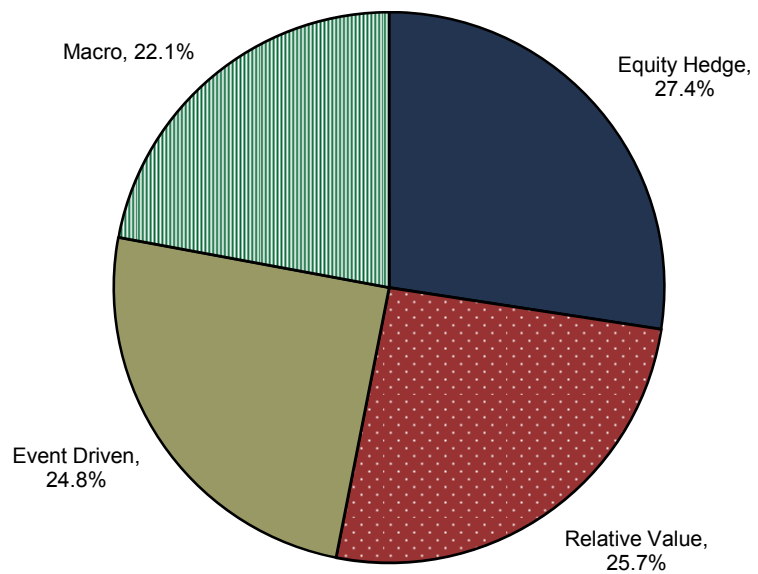
tise/most often trade and how/why did the fund evolve into a global macro fund if it did not begin as such).

- **Track record.** While we believe that this is important for all managers, it may be especially relevant for macro managers, who need to prove their ability to operate in different market environments (particularly in down markets) and also show they are not one-trick ponies (i.e., all of their success is due to having gotten one or two themes right).
- **Transparency.** Although investors must recognize that macro portfolios can shift abruptly, position information should be provided more frequently than in the case of most other hedge fund managers so that investors can get a better sense of how the macro manager is operating and how macro allocations generally relate to other parts of the investors' portfolios. Investors must also be able to understand who manages what in the portfolio.
- **Risk controls.**
 - The amount and type of leverage should be examined and understood, as well as the manner in which leverage is funded.
 - Given the risks associated with macro strategies, particularly the potentially higher leverage used, managers must exhibit a robust risk control system. This will likely include provisions to manage volatility and counterparty risk and to cut losses. Investors should clearly understand the authority of risk managers versus the main portfolio manager.
- **Consistency.** This refers not to performance, but to managers sticking to investment philosophy (notwithstanding the flexibility of implementation), as well as guidelines on volatility, risk, etc.
- **Liquidity.** Positions should be highly liquid and fund terms should be liberal regarding redemption of investor interests. ■

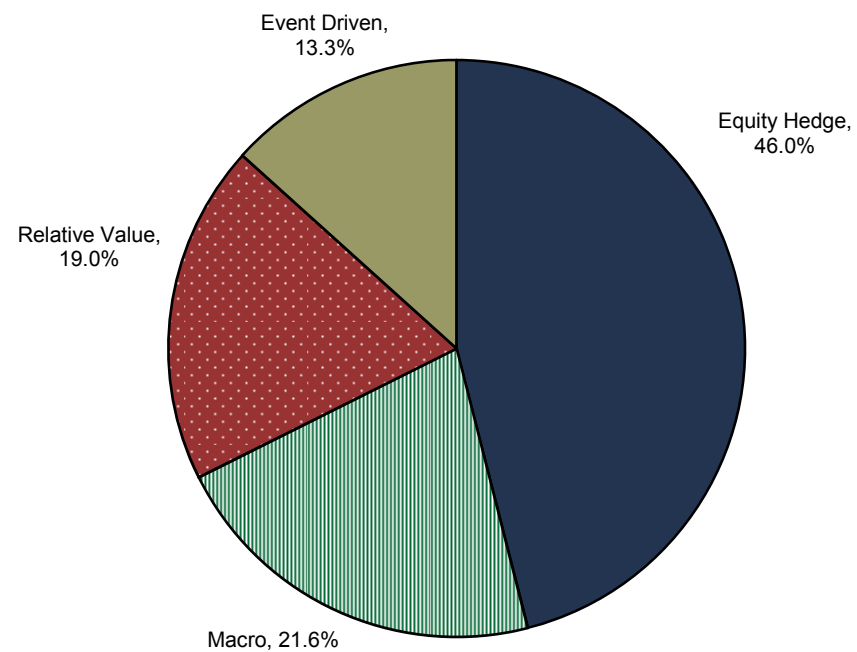
EXHIBITS

Exhibit 1
Strategy Composition of Hedge Funds
September 30, 2011

Assets Under Management



Number of Funds

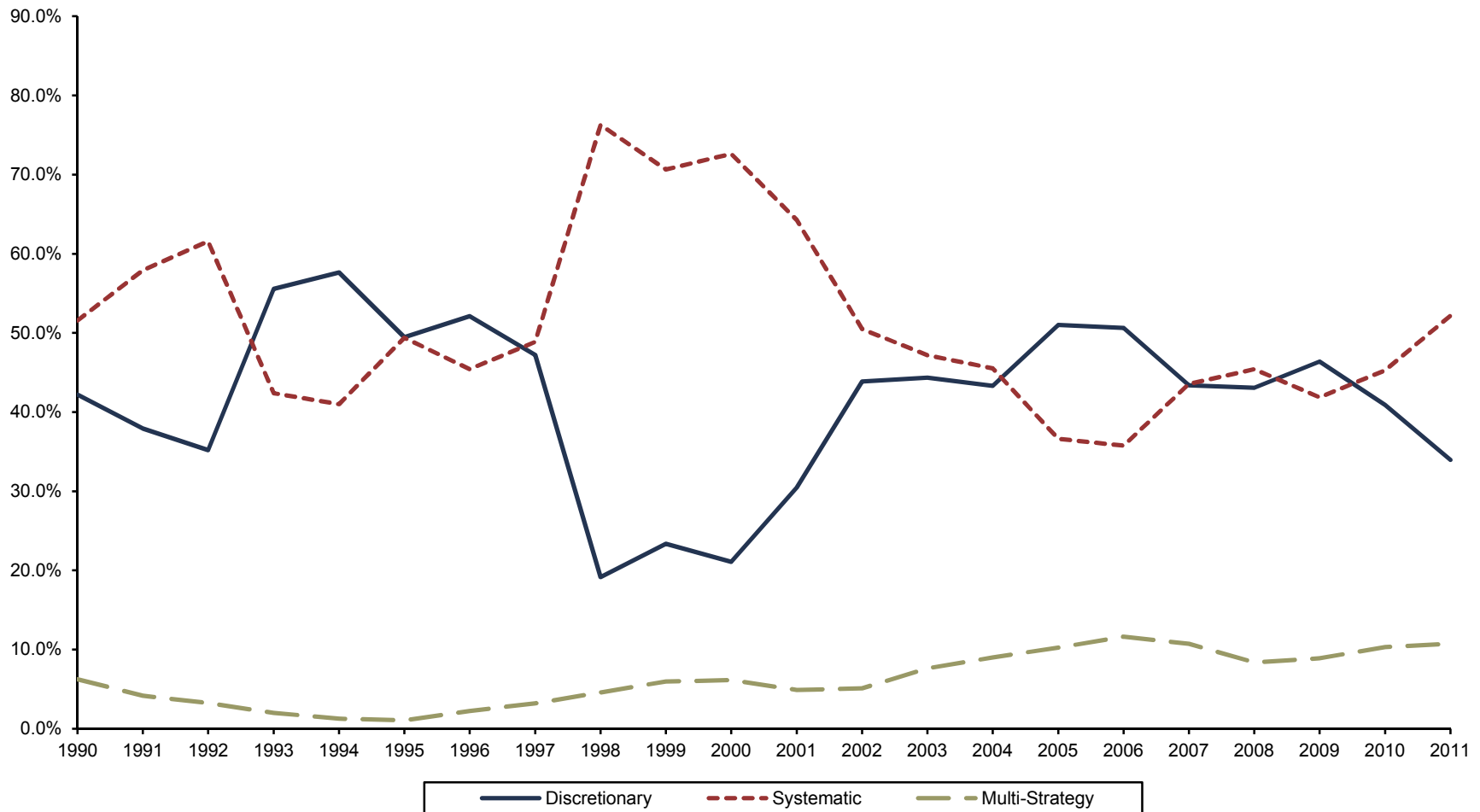


Source: Hedge Fund Research, Inc.

Exhibit 2

Discretionary, Systematic, and Multi-Strategy as Percentages of Total Macro Assets Under Management

December 31, 1990 – September 30, 2011



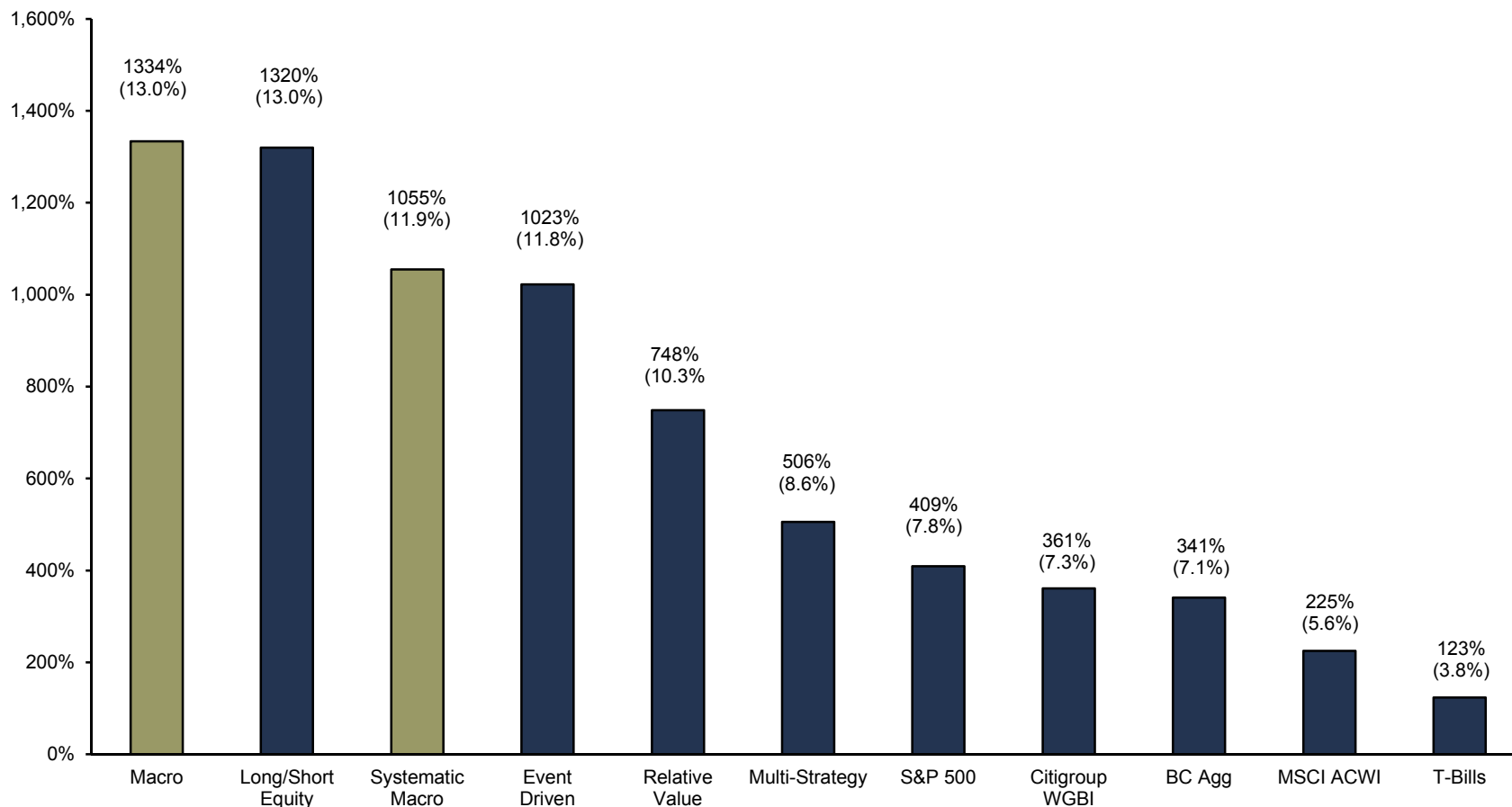
Source: Hedge Fund Research, Inc.

Notes: Data are annual. Data for 2011 are as of September 30. Systematic includes data for "Commodity-Agriculture," "Commodity-Energy," "Commodity-Metals," and "Commodity-Multi" in the HFR database. Sum does not equal 100% because this breakdown excludes active trading strategies.

Exhibit 3
Global Macro Performance

January 1, 1990 – September 30, 2011

Full Period Cumulative Performance and AACR

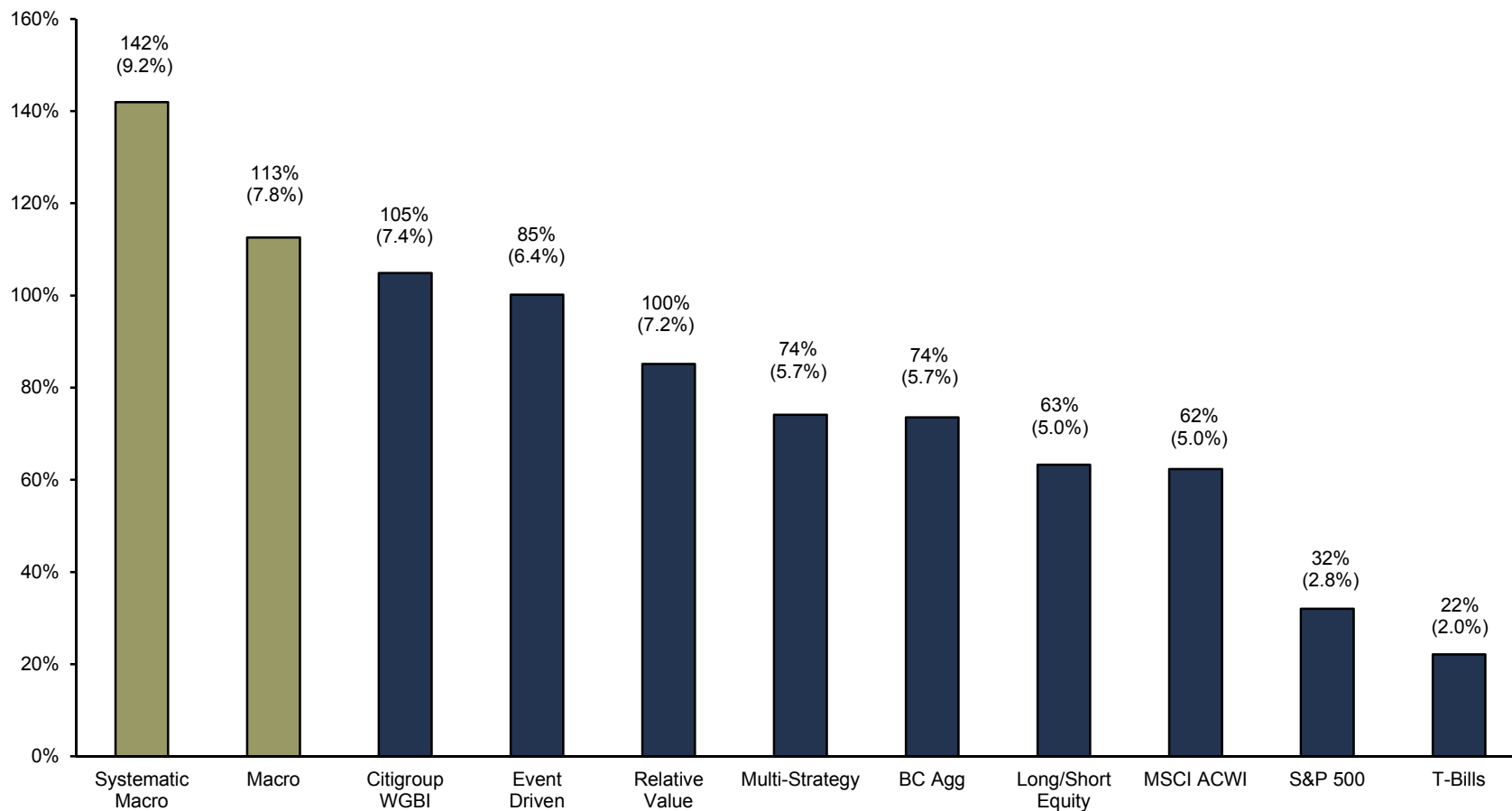


Sources: BofA Merrill Lynch, Barclays Capital, Citigroup Global Markets, Federal Reserve, Hedge Fund Research, Inc., MSCI Inc., Standard & Poor's, and Thomson Datastream. MSCI data provided "as is" without any express or implied warranties.

Notes: Hedge fund returns are equal weighted while non-hedge fund returns are capitalization weighted. All HFRI returns are net of fees.

Exhibit 3 (continued)
Global Macro Performance
 October 1, 2001 – September 30, 2011

Ten-Year Cumulative Performance and AACR

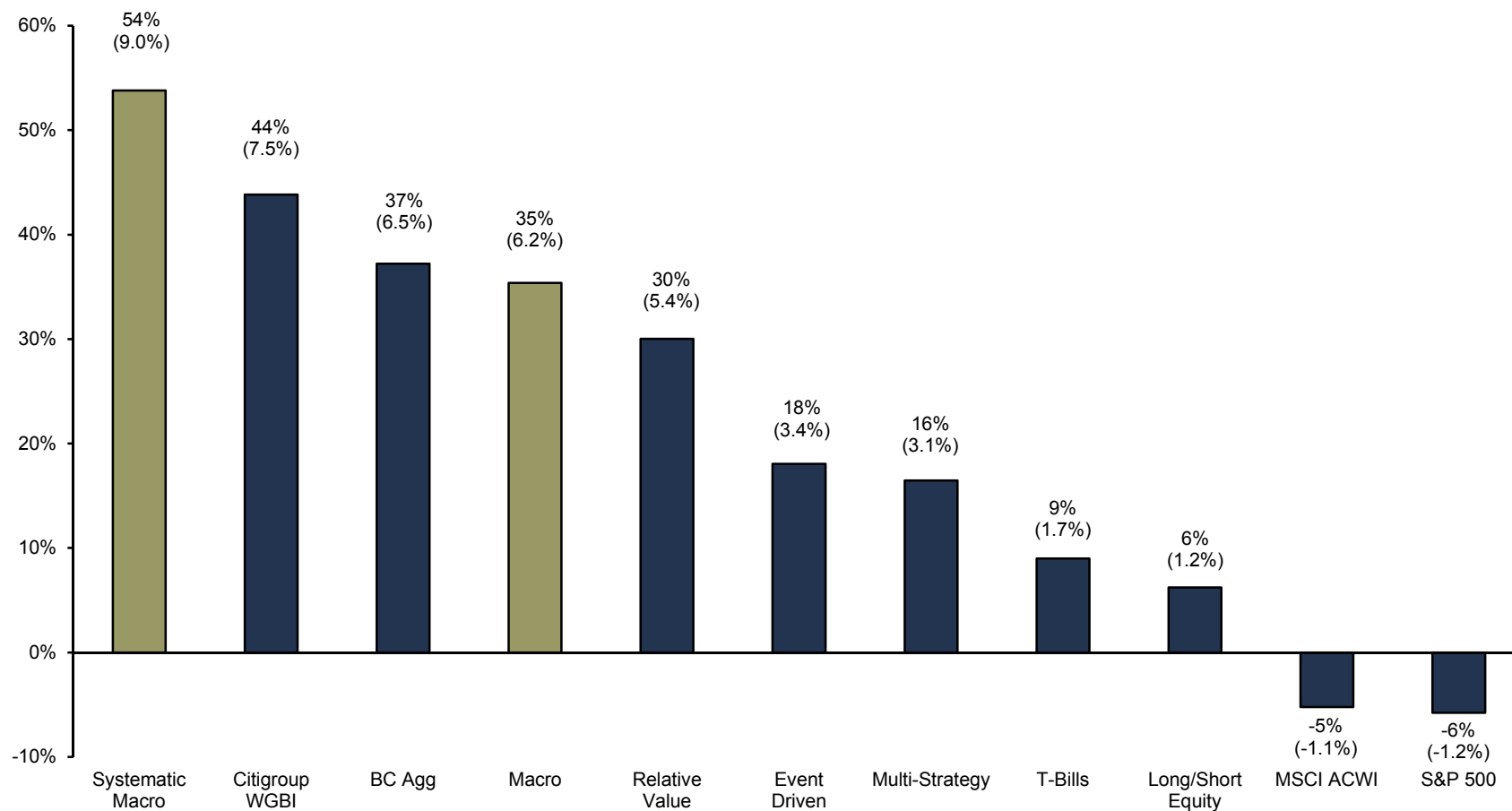


Sources: BofA Merrill Lynch, Barclays Capital, Citigroup Global Markets, Federal Reserve, Hedge Fund Research, Inc., MSCI Inc., Standard & Poor's, and Thomson Datastream. MSCI data provided "as is" without any express or implied warranties.

Notes: Hedge fund returns are equal weighted while non-hedge fund returns are capitalization weighted. All HFRI returns are net of fees.

Exhibit 3 (continued)
Global Macro Performance
 October 1, 2006 – September 30, 2011

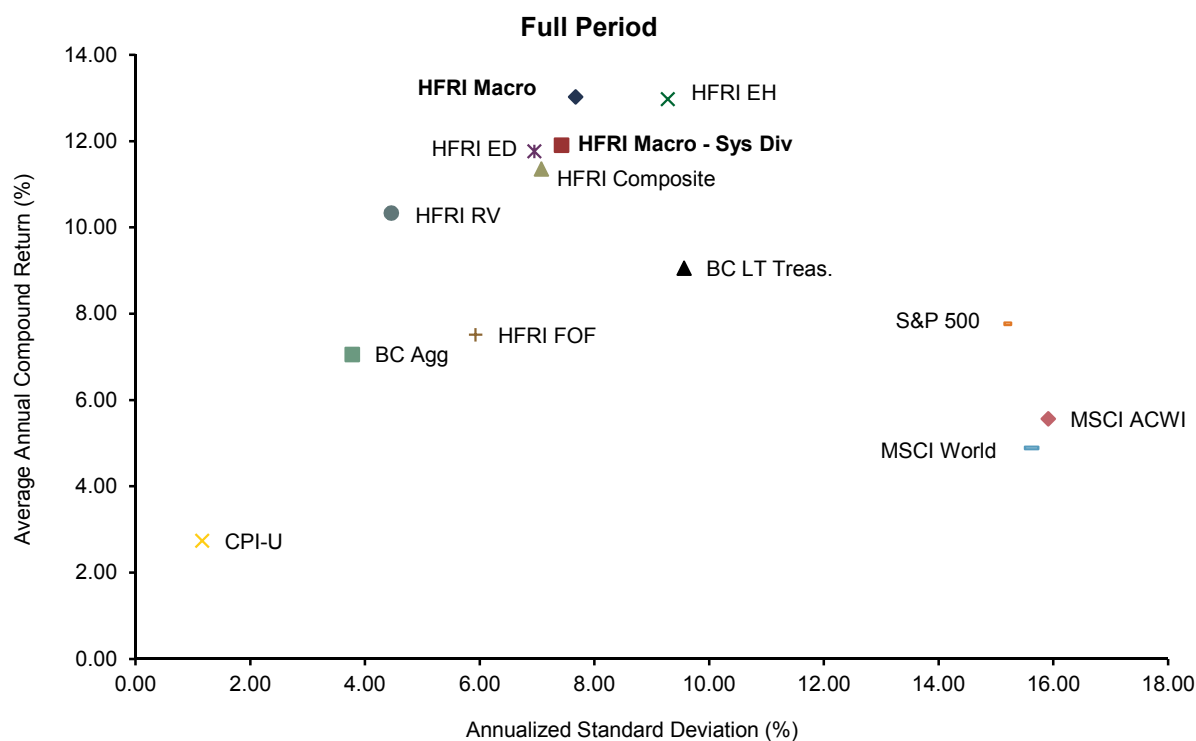
Five-Year Cumulative Performance and AACR



Sources: BofA Merrill Lynch, Barclays Capital, Citigroup Global Markets, Federal Reserve, Hedge Fund Research, Inc., MSCI Inc., Standard & Poor's, and Thomson Datastream. MSCI data provided "as is" without any express or implied warranties.

Notes: Hedge fund returns are equal weighted while non-hedge fund returns are capitalization weighted. All HFRI returns are net of fees.

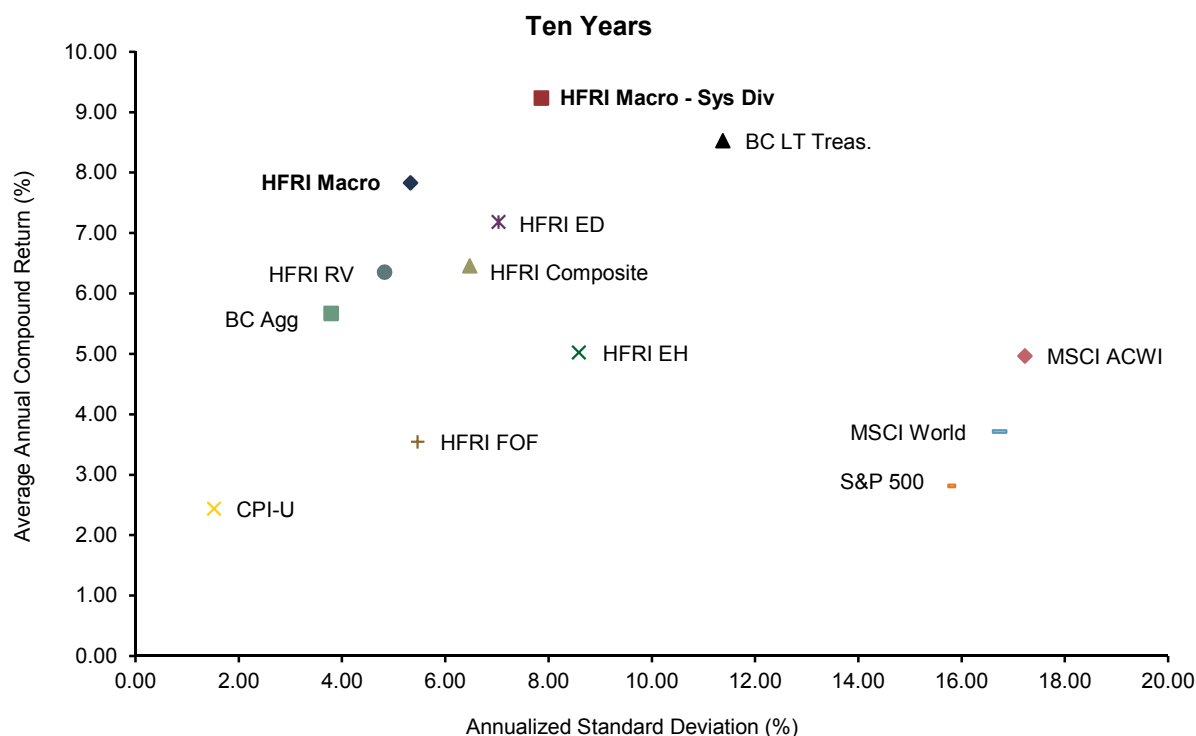
Exhibit 4
Risk/Return Analysis
 January 1, 1990 – September 30, 2011



	<u>Average Annual Compound Return (%)</u>	<u>Annualized Standard Deviation</u>	<u>Sharpe Ratio</u>	<u>Beta vs MSCI ACWI</u>
<u>Macro Indices</u>				
HFRI Macro	13.02	7.67	1.16	0.19
HFRI Macro - Sys. Div.	11.90	7.42	1.06	0.22
<u>Other HF Indices</u>				
HFRI Composite	11.35	7.08	1.04	0.34
HFRI Equity Hedge	12.97	9.28	0.97	0.43
HFRI Event Driven	11.76	6.95	1.11	0.31
HFRI Relative Value	10.33	4.46	1.40	0.15
HFRI FOF	7.51	5.93	0.63	0.22
<u>Indices</u>				
S&P 500	7.77	15.15	0.33	--
MSCI World	4.89	15.62	0.15	--
MSCI ACWI	5.57	15.91	0.19	--
BC Agg	7.06	3.78	0.85	--
BC LT Treasury	9.06	9.56	0.57	--
CPI-U	2.74	1.16	--	--

Sources: Barclays Capital, Hedge Fund Research, Inc., MSCI Inc., Standard & Poor's, Thomson Datastream, and U.S. Department of Labor - Bureau of Labor Statistics. MSCI data provided "as is" without any express or implied warranties.
 Note: Calculations are based on monthly data and are in US\$ terms.

Exhibit 4 (continued)
Risk/Return Analysis
 October 1, 2001– September 30, 2011

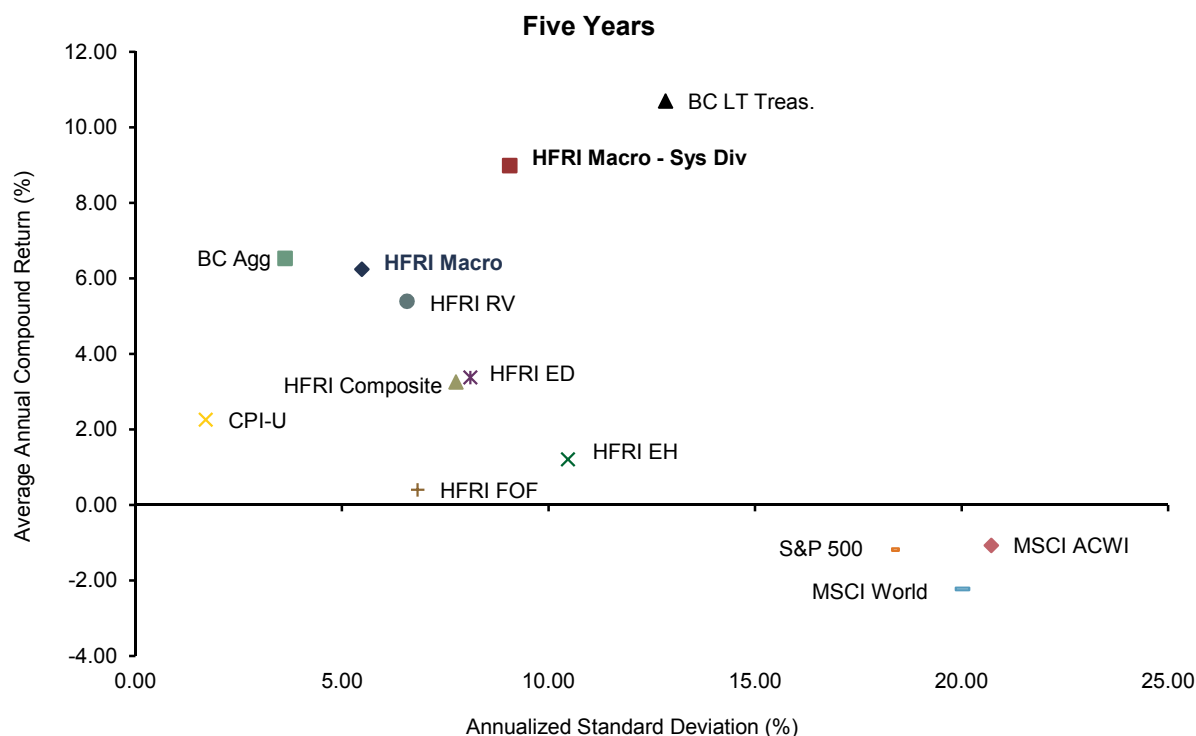


	Average Annual Compound Return (%)	Annualized Standard Deviation	Sharpe Ratio	Beta vs MSCI ACWI
<u>Macro Indices</u>				
HFRI Macro	7.83	5.33	1.07	0.10
HFRI Macro - Sys. Div.	9.24	7.86	0.91	0.15
<u>Other HF Indices</u>				
HFRI Composite	6.46	6.47	0.69	0.33
HFRI Equity Hedge	5.02	8.59	0.38	0.45
HFRI Event Driven	7.19	7.03	0.74	0.35
HFRI Relative Value	6.35	4.82	0.89	0.20
HFRI FOF	3.54	5.47	0.30	0.24
<u>Indices</u>				
S&P 500	2.82	15.75	0.13	--
MSCI World	3.71	16.74	0.18	--
MSCI ACWI	4.96	17.23	0.25	--
BC Agg	5.67	3.79	0.95	--
BC LT Treasury	8.53	11.38	0.60	--
CPI-U	2.44	1.52	--	--

Sources: Barclays Capital, Hedge Fund Research, Inc., MSCI Inc., Standard & Poor's, Thomson Datastream, and U.S. Department of Labor - Bureau of Labor Statistics. MSCI data provided "as is" without any express or implied warranties.
 Note: Calculations are based on monthly data and are in US\$ terms.

Exhibit 4 (continued)
Risk/Return Analysis

October 1, 2006 – September 30, 2011

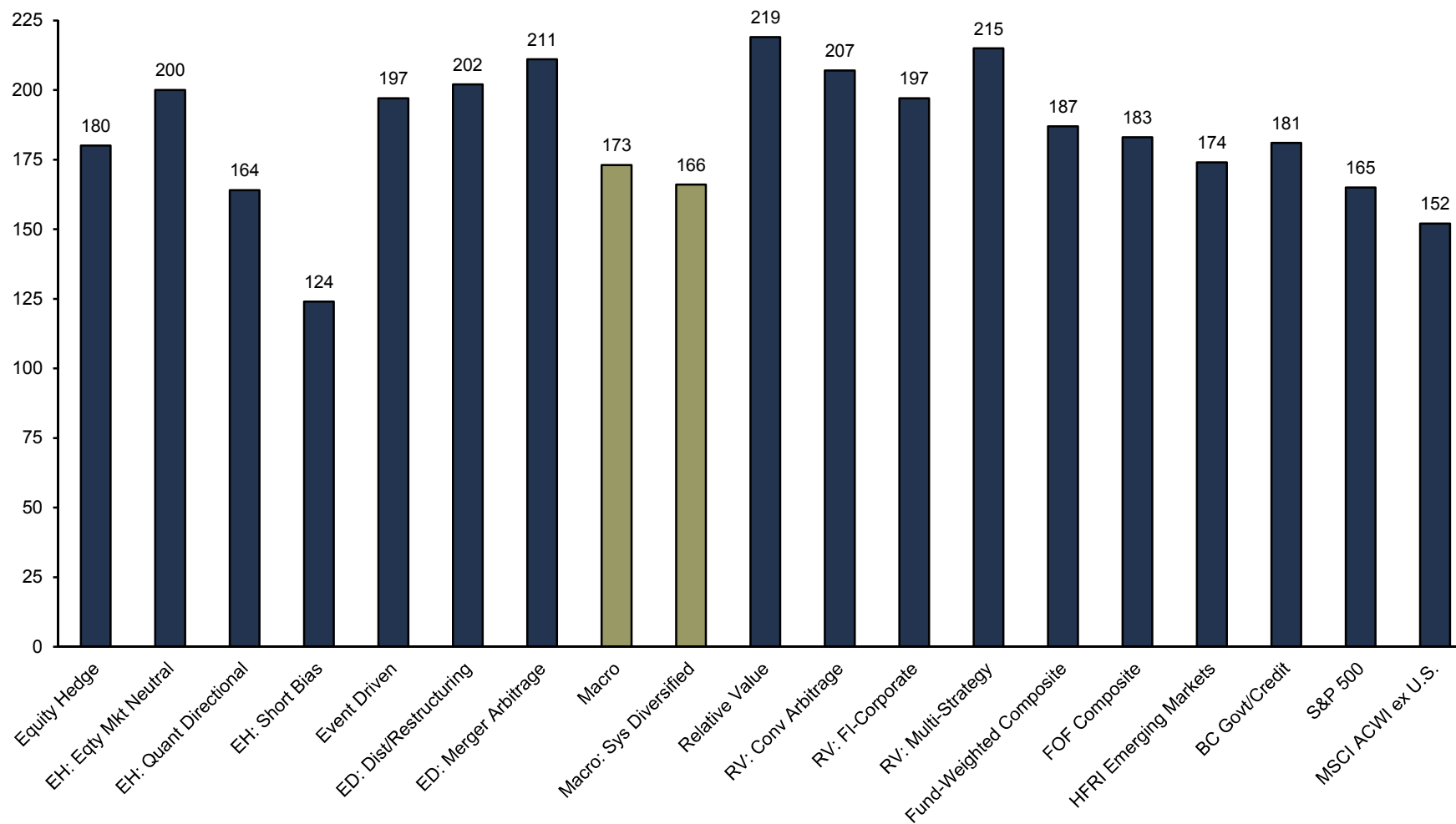


	Average Annual Compound Return (%)	Annualized Standard Deviation	Sharpe Ratio	Beta vs MSCI ACWI
<u>Macro Indices</u>				
HFRI Macro	6.24	5.48	0.82	0.10
HFRI Macro - Sys. Div.	8.99	9.06	0.81	0.06
<u>Other HF Indices</u>				
HFRI Composite	3.26	7.76	0.23	0.34
HFRI Equity Hedge	1.21	10.47	0.00	0.47
HFRI Event Driven	3.37	8.11	0.24	0.34
HFRI Relative Value	5.39	6.58	0.57	0.25
HFRI FOF	0.40	6.83	-0.16	0.26
<u>Indices</u>				
S&P 500	-1.18	18.32	-0.07	--
MSCI World	-2.23	20.02	-0.10	--
MSCI ACWI	-1.07	20.72	-0.03	--
BC Agg	6.53	3.62	1.29	--
BC LT Treasury	10.69	12.83	0.72	--
CPI-U	2.26	1.70	--	--

Sources: Barclays Capital, Hedge Fund Research, Inc., MSCI Inc., Standard & Poor's, Thomson Datastream, and U.S. Department of Labor - Bureau of Labor Statistics. MSCI data provided "as is" without any express or implied warranties.
 Note: Calculations are based on monthly data and are in US\$ terms.

Exhibit 5
Positive Monthly Performance: Over 261 Months

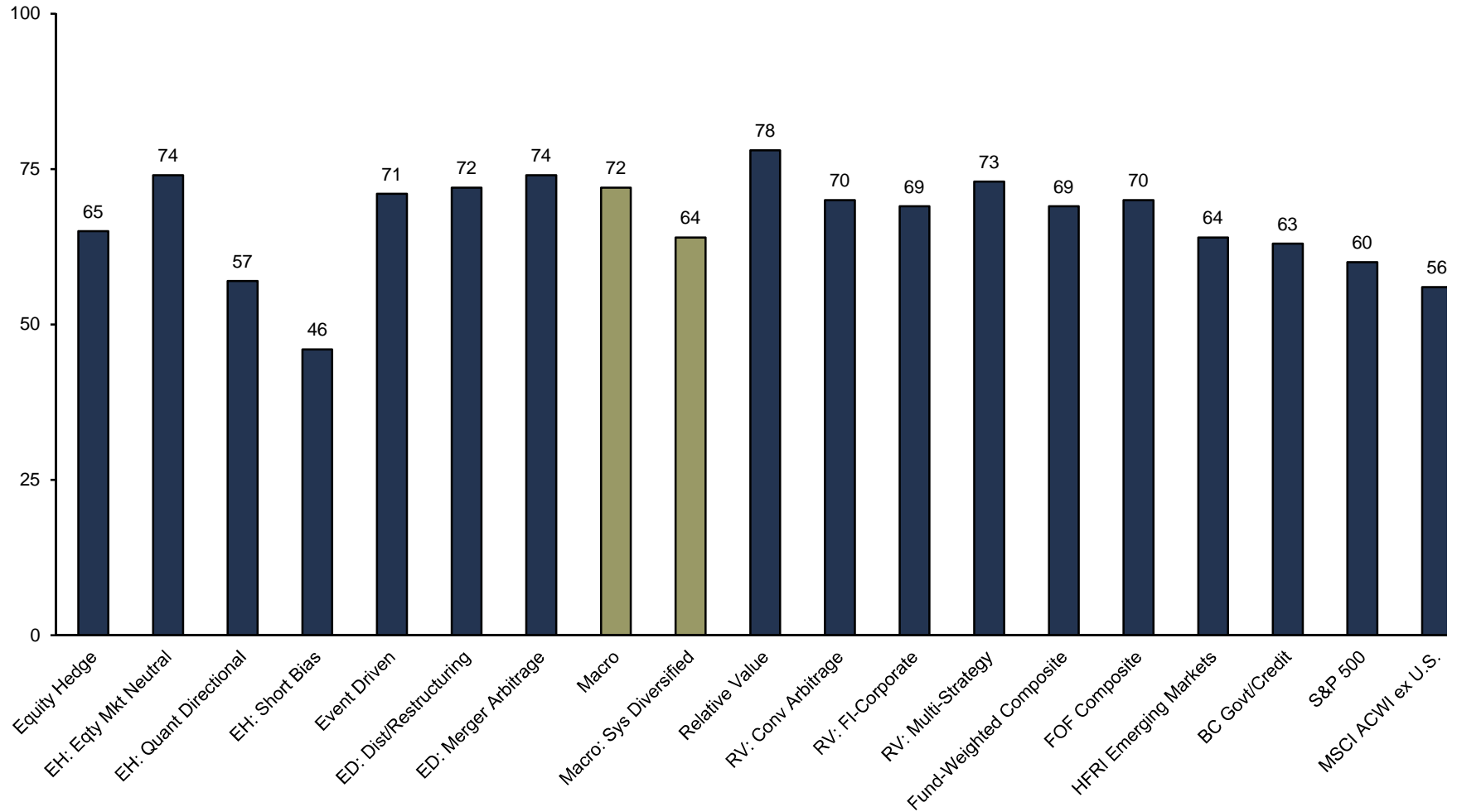
January 1, 1990 – September 30, 2011



Sources: Barclays Capital, Hedge Fund Research, Inc., MSCI Inc., Standard & Poor's, and Thomson Datastream. MSCI data provided "as is" without any express or implied warranties.

Exhibit 6
Positive Quarterly Performance: Total of 87 Quarters

January 1, 1990 – September 30, 2011



Sources: Barclays Capital, Hedge Fund Research, Inc., MSCI Inc., Standard & Poor's, and Thomson Datastream. MSCI data provided "as is" without any express or implied warranties.

Exhibit 7
Annual Total Returns
1990–2011

	<u>1990</u>	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011*</u>
<u>Macro Indices</u>																						
HFRI Macro	12.6	46.7	27.2	53.3	-4.3	29.3	9.3	18.8	6.2	17.6	2.0	6.9	7.4	21.4	4.6	6.8	8.2	11.1	4.8	4.3	8.1	-1.7
HFRI Macro - S.D.	13.5	23.1	7.7	24.2	3.5	12.6	13.5	13.6	24.8	26.2	11.8	4.1	-3.3	15.4	6.4	14.4	16.8	10.3	18.1	-1.7	9.8	0.5
<u>Other Hedge Fund Indices</u>																						
HFRI Composite	5.8	32.2	21.2	30.9	4.1	21.5	21.1	16.8	2.6	31.3	5.0	4.6	-1.4	19.6	9.0	9.3	12.9	10.0	-19.0	20.0	10.2	-5.4
HFRI Equity Hedge	14.4	40.1	21.3	27.9	2.6	31.0	21.8	23.4	16.0	44.2	9.1	0.4	-4.7	20.5	7.7	10.6	11.7	10.5	-26.7	24.6	10.5	-9.5
HFRI Event Driven	-0.5	27.4	19.5	28.2	6.0	25.1	24.8	21.2	1.7	24.3	6.7	12.2	-4.3	25.3	15.0	7.3	15.3	6.6	-21.8	25.0	11.9	-4.4
HFRI Relative Value	13.4	14.1	22.3	27.1	4.0	15.7	14.5	15.9	2.8	14.7	13.4	8.9	5.4	9.7	5.6	6.0	12.3	8.9	-18.0	25.8	11.4	-0.4
HFRI FOF	17.5	14.5	12.3	26.3	-3.5	11.1	14.4	16.2	-5.1	26.5	4.1	2.8	1.0	11.6	6.9	7.5	10.4	10.3	-21.4	11.5	5.7	-5.3
<u>Other Indices</u>																						
S&P 500	-3.1	30.5	7.6	10.1	1.3	37.6	23.0	33.4	28.6	21.0	-9.1	-11.9	-22.1	28.7	10.9	4.9	15.8	5.5	-37.0	26.5	15.1	-8.7
MSCI World	-17.0	18.3	-5.2	22.5	5.1	20.7	13.5	15.8	24.3	24.9	-13.2	-16.8	-19.9	33.1	14.7	9.5	20.1	9.0	-40.7	30.0	11.8	-12.2
MSCI ACWI	-16.5	19.9	-4.2	24.9	5.0	19.5	13.2	15.0	22.0	26.8	-13.9	-15.9	-19.0	34.6	15.8	11.4	21.5	12.2	-41.8	35.4	13.2	-13.2
BC Agg	8.9	16.0	7.4	9.7	-2.9	18.5	3.6	9.7	8.7	-0.8	11.6	8.4	10.3	4.1	4.3	2.4	4.3	7.0	5.2	5.9	6.5	6.7
BC LT Treasury	6.3	18.5	8.0	17.2	-7.6	30.7	-0.9	15.1	13.5	-8.7	20.3	4.2	16.8	2.5	7.7	6.5	1.8	9.8	24.0	-12.9	9.4	27.5
CPI-U	6.1	3.1	2.9	2.7	2.7	2.5	3.3	1.7	1.6	2.7	3.4	1.6	2.4	1.9	3.3	3.4	2.5	4.1	0.1	2.7	1.5	3.5

Sources: Barclays Capital, Hedge Fund Research, Inc., MSCI Inc., Standard & Poor's, Thomson Datastream, and U.S. Department of Labor - Bureau of Labor Statistics. MSCI data provided "as is" without any express or implied warranties.

* Data for 2011 are as of September 30.

Exhibit 8
Maximum Drawdown (Peak to Trough)

January 31, 1990 – September 30, 2011

Macro Indices	Returns Inception Date	Maximum Drawdown (Peak to Trough)					Recovery by	Time to Recover	Absolute Worst Perf	Month of Absolute Worst Perf
		From	To	Duration	Return					
HFRI Macro	Jan-90	Feb-94	Apr-94	3 mos	-10.7%	Jul-95	15 mos	-6.4%	Feb-94	
HFRI Macro - S.D.	Jan-90	Dec-09	Jan-10	2 mos	-5.8%	Sep-10	8 mos	-4.4%	Nov-07	
Other Hedge Fund Indices										
HFRI Equity Hedge	Jan-90	Nov-07	Feb-09	16 mos	-30.6%	Feb-11	24 mos	-9.5%	Oct-08	
HFRI Event Driven	Jan-90	Nov-07	Feb-09	16 mos	-24.8%	Apr-10	14 mos	-8.9%	Aug-98	
HFRI Relative Value	Jan-90	Jan-08	Dec-08	12 mos	-18.0%	Oct-09	10 mos	-8.0%	Oct-08	
HFRI FOF	Jan-90	Nov-07	Dec-08	14 mos	-22.2%	N/A	N/A	-7.5%	Aug-98	
Other Indices										
S&P 500	Jan-90	Nov-07	Feb-09	16 mos	-50.9%	N/A	N/A	-16.8%	Oct-08	
MSCI World	Jan-90	Nov-07	Feb-09	16 mos	-54.0%	N/A	N/A	-19.0%	Oct-08	
MSCI ACWI	Jan-90	Nov-07	Feb-09	16 mos	-54.6%	N/A	N/A	-19.8%	Oct-08	
BC Agg	Jan-90	Feb-94	Jun-94	5 mos	-5.1%	Feb-95	8 mos	-3.4%	Jul-03	
BC LT Treasury	Jan-90	Jan-09	Dec-09	12 mos	-12.9%	Aug-10	8 mos	-8.9%	Jul-03	
CPI-U	Jan-90	Aug-08	Dec-08	5 mos	-4.4%	Jan-11	25 mos	-1.9%	Nov-08	

Sources: Barclays Capital, Hedge Fund Research, Inc., MSCI Inc., Standard & Poor's, Thomson Datastream, and U.S. Department of Labor - Bureau of Labor Statistics. MSCI data provided "as is" without any express or implied warranties.

Notes: Indices with "N/A" in the "Recovery by" column have yet to recover from their lowest trough. Calculations are based on monthly data.

Exhibit 9

Performance of Global Macro During Periods of Market Turmoil

January 31, 1990 – September 30, 2011

	Dates		Market Conditions	MSCI ACWI	MSCI World	HFRI: EH	HFRI: ED	HFRI: RV	HFRI Macro	HFRI Macro: SD
Peso Crisis	Nov-1994	Jan-1995	MSCI EM (-22)	-6.0	-4.9	-0.5	0.7	1.3	-1.5	-1.2
Asian Currency Crisis	Aug-1997	Dec-1997	MSCI EM Asia (-49)	-5.3	-4.1	8.0	7.6	6.6	2.8	3.5
	May-1998	Aug-1998	MSCI EM Asia (-41)	-14.1	-9.0	-2.9	-10.2	2.6	-5.8	-12.6
Russian Default/LTCM	May-1998	Jun-1998	MSCI Russia (-52)	-0.1	1.1	-0.8	-0.9	0.5	0.7	1.9
	Aug-1998	Sep-1998	MSCI Russia (-76)	-12.3	-11.8	-4.7	-9.5	-5.6	-4.2	0.3
Tech Bust*	Apr-2000	Sep-2001	Nasdaq* (-67)	-34.6	-34.2	-7.8	8.8	15.4	1.9	-1.8
	Feb-2002	Sep-2002	Nasdaq* (-39)	-22.8	-23.2	-6.8	-8.6	2.1	5.7	-2.2
Credit Crisis	Nov-2007	Feb-2009	S&P 500 Fin (-76)	-54.6	-54.0	-30.6	-24.8	-15.8	4.7	13.5
European Debt Crisis	May-2011	Sep-2011	MSCI Eur ex UK (-30)	-20.3	-19.6	-12.7	-8.7	-3.5	-3.4	-2.1

Sources: Hedge Fund Research, Inc., MSCI Inc., and Thomson Datastream. MSCI data provided "as is" without any express or implied warranties.

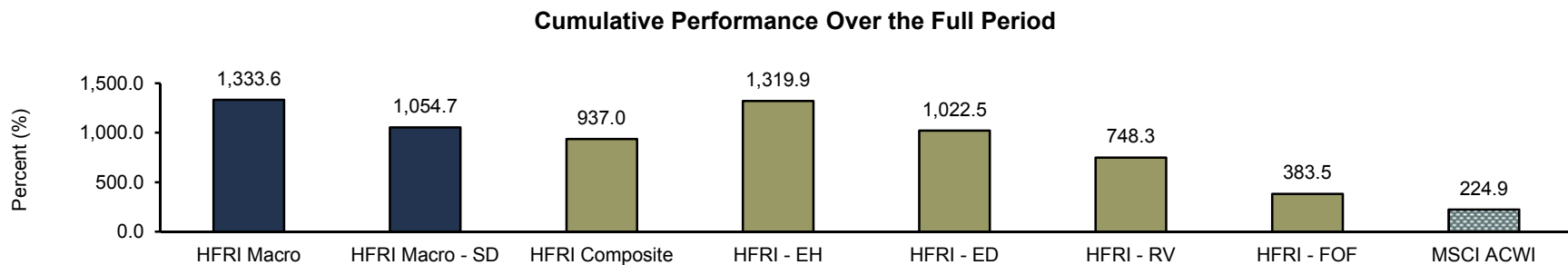
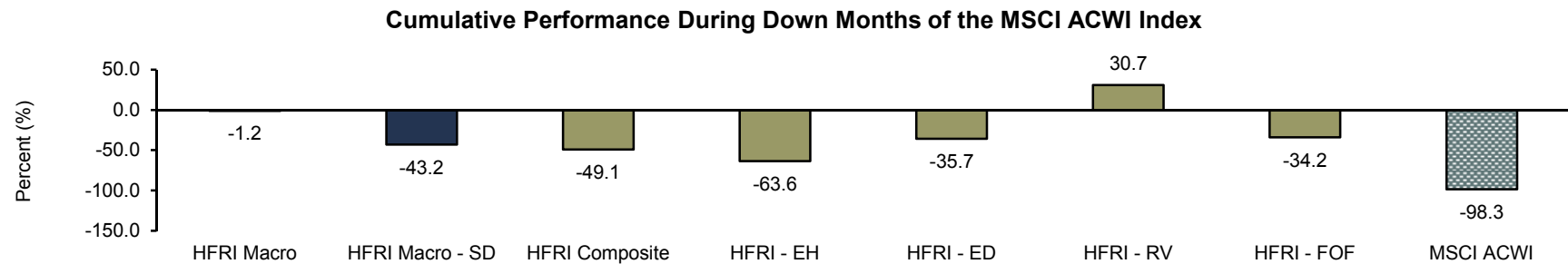
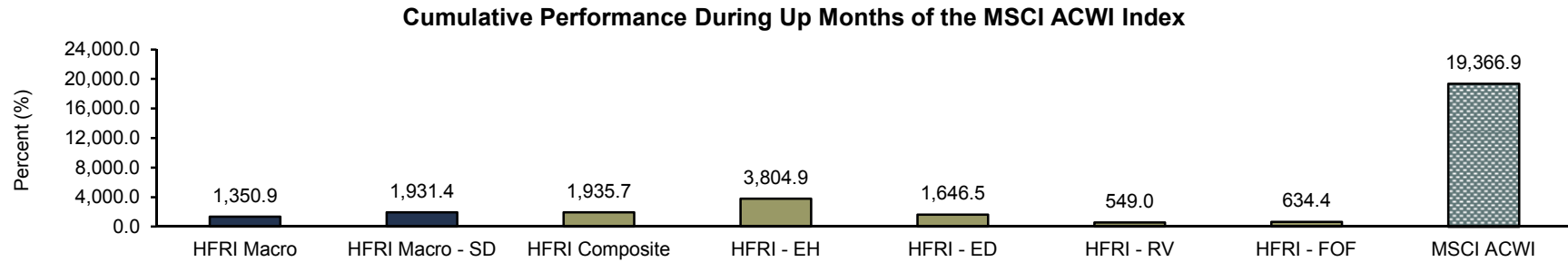
Note: All returns are shown in percentage terms.

* Capital change only.

Exhibit 10

Cumulative Up/Down Markets

January 1, 1990 – September 30, 2011 (Full Period)



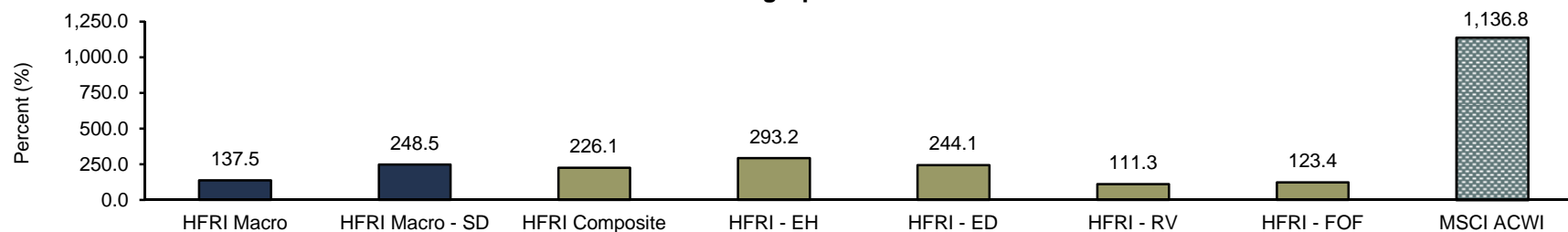
Sources: Hedge Fund Research, Inc., MSCI Inc., and Thomson Datastream. MSCI data provided "as is" without any express or implied warranties. Note: Calculations are based on monthly data.

Exhibit 10 (continued)

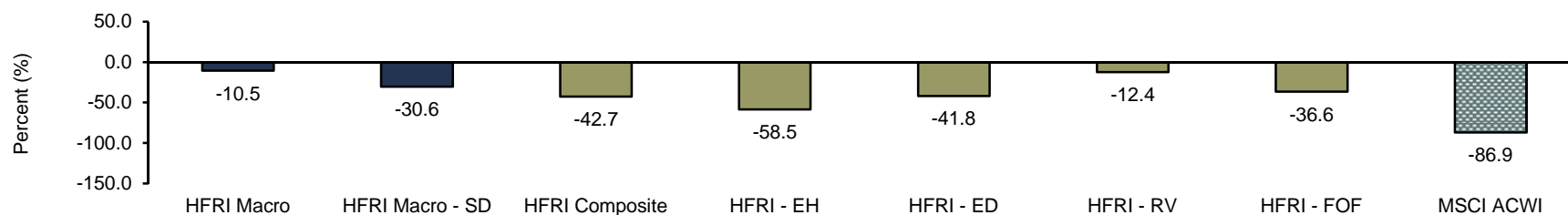
Cumulative Up/Down Markets

October 1, 2001 – September 30, 2011 (Ten Years)

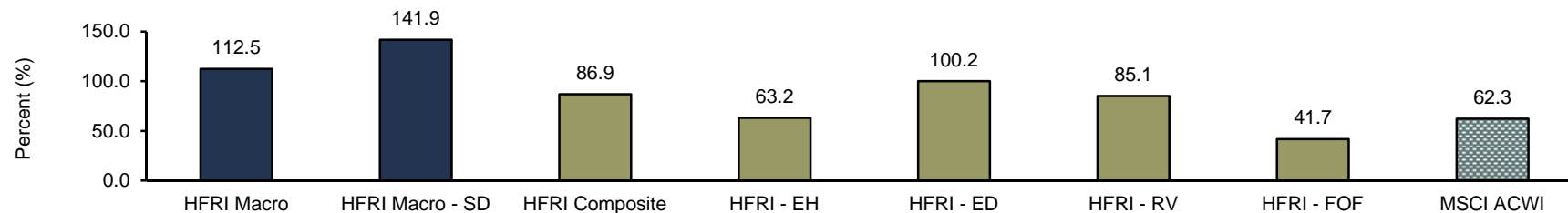
Cumulative Performance During Up Months of the MSCI ACWI Index



Cumulative Performance During Down Months of the MSCI ACWI Index



Cumulative Performance Over Ten Years



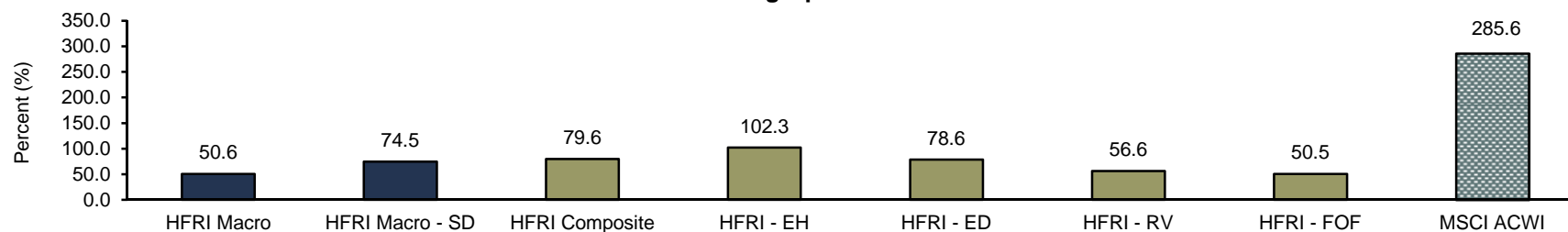
Sources: Hedge Fund Research, Inc., MSCI Inc., and Thomson Datastream. MSCI data provided "as is" without any express or implied warranties.
 Note: Calculations are based on monthly data.

Exhibit 10 (continued)

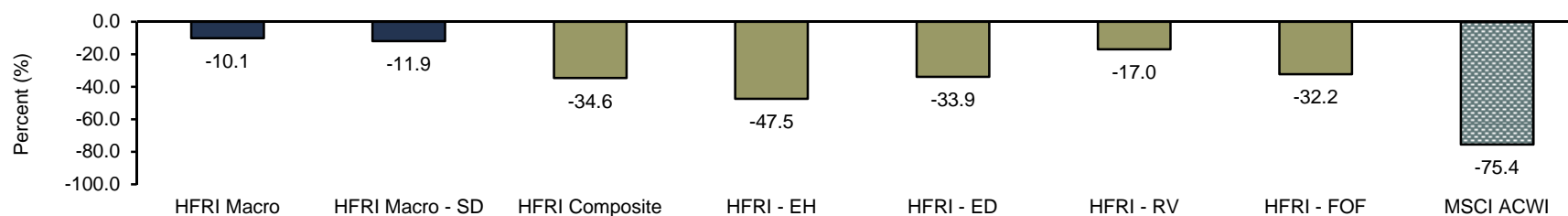
Cumulative Up/Down Markets

October 1, 2006 – September 30, 2011 (Five Years)

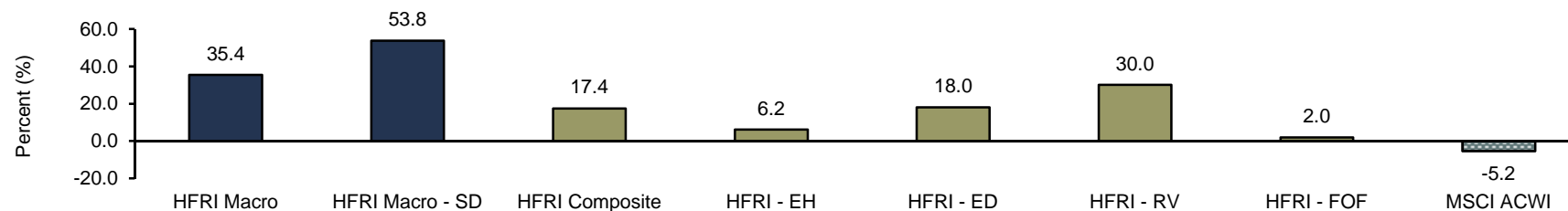
Cumulative Performance During Up Months of the MSCI ACWI Index



Cumulative Performance During Down Months of the MSCI ACWI Index



Cumulative Performance Over Five Years



Sources: Hedge Fund Research, Inc., MSCI Inc., and Thomson Datastream. MSCI data provided "as is" without any express or implied warranties.
 Note: Calculations are based on monthly data.

Exhibit 11
Correlation Matrix

January 1, 1990 – September 30, 2011

Full Period Correlations

	<u>Macro Indices</u>		<u>Other Hedge Fund Indices</u>					<u>Other Indices</u>					
	<u>HFRI Macro</u>	<u>HFRI Macro - Sys Div</u>	<u>HFRI Composite</u>	<u>HFRI EH</u>	<u>HFRI ED</u>	<u>HFRI RV</u>	<u>HFRI FOF</u>	<u>S&P 500</u>	<u>MSCI World</u>	<u>MSCI ACWI</u>	<u>BC Agg</u>	<u>BC LT Treasury</u>	<u>CPI-U</u>
<u>Macro Indices</u>													
HFRI Macro	1.00												
HFRI Macro - Sys Div	0.58	1.00											
<u>Other Hedge Fund Indices</u>													
HFRI Composite	0.65	0.59	1.00										
HFRI Equity Hedge	0.57	0.55	0.95	1.00									
HFRI Event Driven	0.51	0.41	0.90	0.83	1.00								
HFRI Relative Value	0.34	0.17	0.72	0.67	0.75	1.00							
HFRI FOF	0.67	0.48	0.87	0.82	0.75	0.66	1.00						
<u>Other Indices</u>													
S&P 500	0.35	0.46	0.74	0.73	0.70	0.50	0.53	1.00					
MSCI World	0.38	0.47	0.75	0.72	0.69	0.53	0.56	0.90	1.00				
MSCI ACWI	0.39	0.48	0.76	0.73	0.70	0.54	0.58	0.90	1.00	1.00			
BC Agg	0.28	0.05	0.08	0.07	0.06	0.09	0.07	0.14	0.12	0.11	1.00		
BC LT Treasury	0.19	0.03	-0.11	-0.13	-0.15	-0.15	-0.10	-0.05	-0.08	-0.09	0.87	1.00	
CPI-U	-0.08	-0.10	0.05	0.07	0.06	0.19	0.14	-0.03	-0.02	-0.02	-0.15	-0.23	1.00

Sources: Barclays Capital, Hedge Fund Research, Inc., MSCI Inc., Standard & Poor's, Thomson Datastream, and U.S. Department of Labor - Bureau of Labor Statistics. MSCI data provided "as is" without any express or implied warranties.

Note: Data are monthly.

Exhibit 11 (continued)
Correlation Matrix

October 1, 2001 – September 30, 2011

Ten-Year Correlations

	<u>Macro Indices</u>		<u>Other Hedge Fund Indices</u>					<u>Other Indices</u>					
	<u>HFRI Macro</u>	<u>HFRI Macro - Sys Div</u>	<u>HFRI Composite</u>	<u>HFRI EH</u>	<u>HFRI ED</u>	<u>HFRI RV</u>	<u>HFRI FOF</u>	<u>S&P 500</u>	<u>MSCI World</u>	<u>MSCI ACWI</u>	<u>BC Agg</u>	<u>BC LT Treasury</u>	<u>CPI-U</u>
<u>Macro Indices</u>													
HFRI Macro	1.00												
HFRI Macro - Sys Div	0.73	1.00											
<u>Other Hedge Fund Indices</u>													
HFRI Composite	0.56	0.45	1.00										
HFRI Equity Hedge	0.49	0.39	0.99	1.00									
HFRI Event Driven	0.41	0.32	0.95	0.94	1.00								
HFRI Relative Value	0.27	0.08	0.84	0.83	0.85	1.00							
HFRI FOF	0.58	0.43	0.95	0.92	0.90	0.87	1.00						
<u>Other Indices</u>													
S&P 500	0.21	0.26	0.80	0.83	0.80	0.63	0.64	1.00					
MSCI World	0.32	0.31	0.88	0.90	0.85	0.70	0.74	0.97	1.00				
MSCI ACWI	0.33	0.32	0.89	0.91	0.85	0.72	0.76	0.96	1.00	1.00			
BC Agg	0.10	-0.10	-0.03	-0.07	-0.07	0.10	-0.01	-0.07	-0.02	-0.01	1.00		
BC LT Treasury	0.02	-0.07	-0.31	-0.35	-0.34	-0.25	-0.27	-0.30	-0.28	-0.28	0.85	1.00	
CPI-U	-0.08	-0.14	0.11	0.11	0.16	0.25	0.19	0.03	0.05	0.05	-0.23	-0.27	1.00

Sources: Barclays Capital, Hedge Fund Research, Inc., MSCI Inc., Standard & Poor's, Thomson Datastream, and U.S. Department of Labor - Bureau of Labor Statistics. MSCI data provided "as is" without any express or implied warranties.

Note: Data are monthly.

Exhibit 11 (continued)
Correlation Matrix

October 1, 2006 – September 30, 2011

Five-Year Correlations

	<u>Macro Indices</u>		<u>Other Hedge Fund Indices</u>					<u>Other Indices</u>					
	<u>HFRI Macro</u>	<u>HFRI Macro - Sys Div</u>	<u>HFRI Composite</u>	<u>HFRI EH</u>	<u>HFRI ED</u>	<u>HFRI RV</u>	<u>HFRI FOF</u>	<u>S&P 500</u>	<u>MSCI World</u>	<u>MSCI ACWI</u>	<u>BC Agg</u>	<u>BC LT Treasury</u>	<u>CPI-U</u>
<u>Macro Indices</u>													
HFRI Macro	1.00												
HFRI Macro - Sys Div	0.90	1.00											
<u>Other Hedge Fund Indices</u>													
HFRI Composite	0.54	0.27	1.00										
HFRI Equity Hedge	0.47	0.19	0.99	1.00									
HFRI Event Driven	0.36	0.12	0.96	0.95	1.00								
HFRI Relative Value	0.24	-0.03	0.90	0.88	0.94	1.00							
HFRI FOF	0.56	0.30	0.96	0.93	0.93	0.90	1.00						
<u>Other Indices</u>													
S&P 500	0.25	0.05	0.83	0.87	0.83	0.72	0.70	1.00					
MSCI World	0.35	0.12	0.89	0.92	0.87	0.78	0.78	0.98	1.00				
MSCI ACWI	0.36	0.13	0.91	0.93	0.88	0.79	0.79	0.97	1.00	1.00			
BC Agg	-0.01	-0.05	0.05	0.04	0.01	0.13	0.01	0.12	0.16	0.17	1.00		
BC LT Treasury	-0.10	-0.01	-0.36	-0.39	-0.41	-0.32	-0.36	-0.25	-0.25	-0.25	0.77	1.00	
CPI-U	-0.08	-0.17	0.23	0.22	0.32	0.34	0.30	0.16	0.15	0.15	-0.28	-0.33	1.00

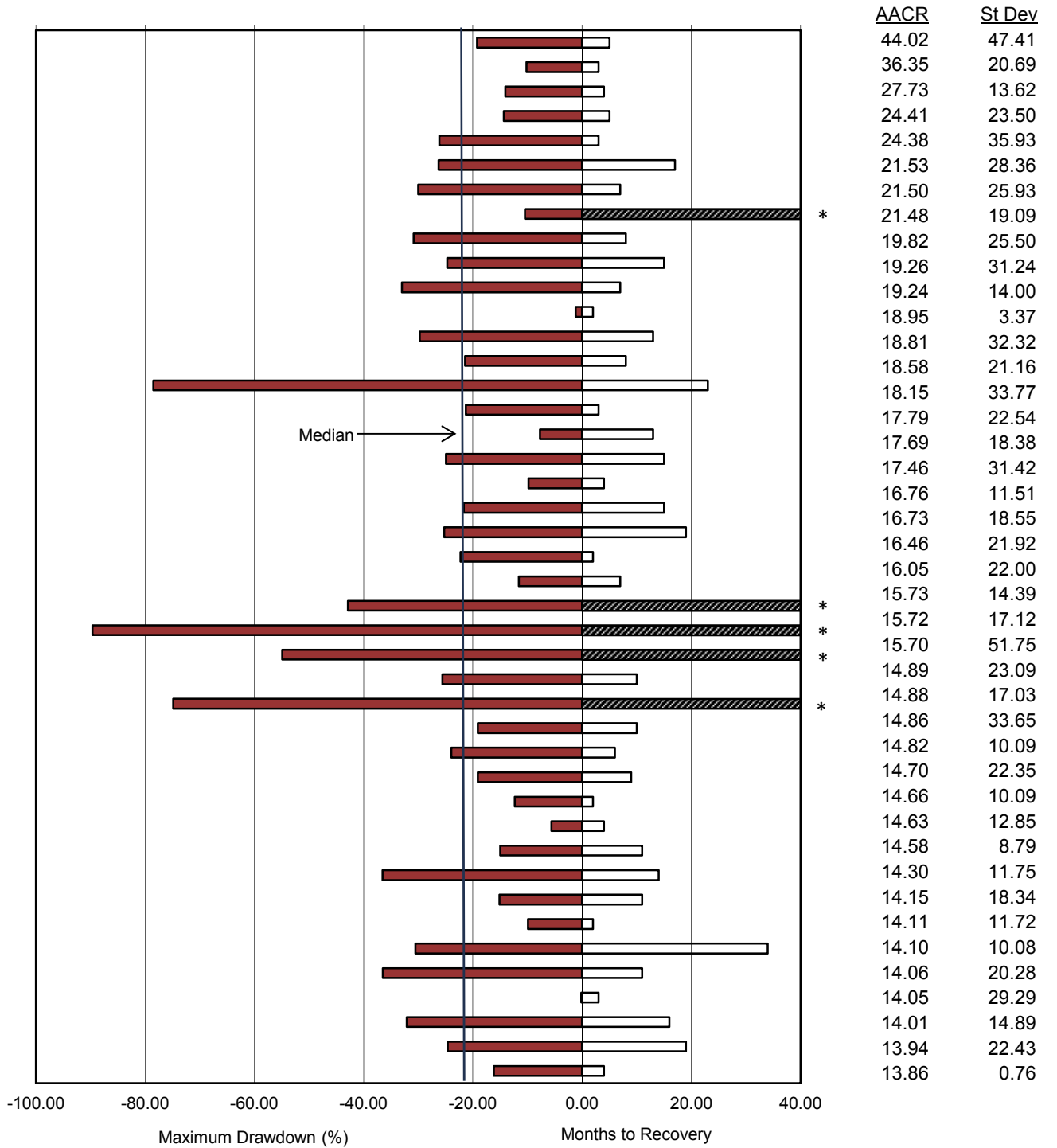
Sources: Barclays Capital, Hedge Fund Research, Inc., MSCI Inc., Standard & Poor's, Thomson Datastream, and U.S. Department of Labor - Bureau of Labor Statistics. MSCI data provided "as is" without any express or implied warranties.

Note: Data are monthly.

Exhibit 12
Global Macro Drawdowns and Subsequent Recoveries
 January 31, 2001 – December 31, 2010

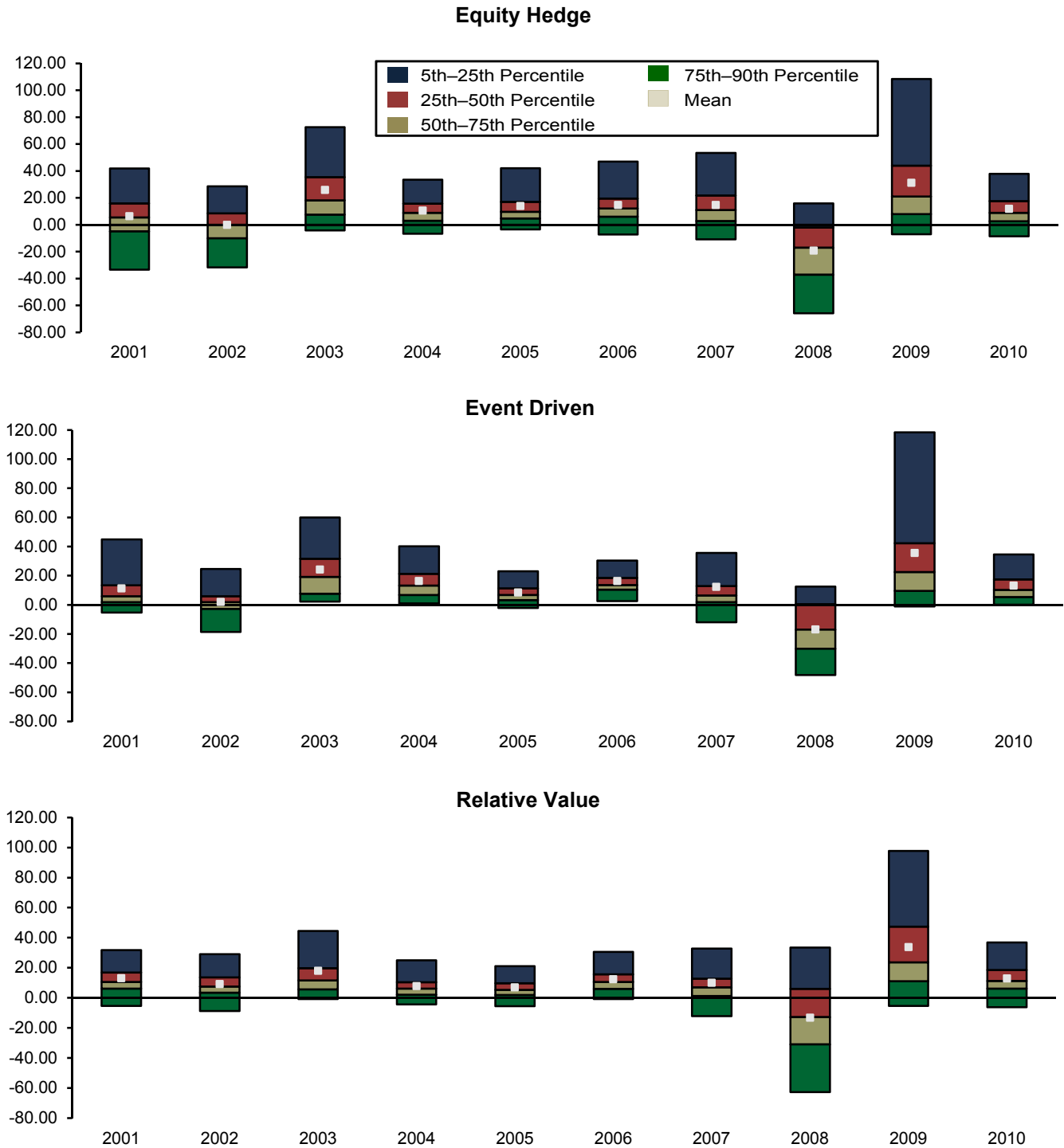
Global Macro Managers (n=43)

Ten-Year Annualized



Notes: This chart shows the maximum drawdown and months to recovery for the top quartile global macro managers from January 31, 2001, through December 31, 2010 (based on ten-year ACR) that survived the entire period (e.g., had monthly returns in every month of this period). Data are taken from the HFR database of global macro managers. Duplicate funds have been removed from the graph.
 * Striped bars indicate that recovery had not yet taken place by December 31, 2010.

Exhibit 13
Hedge Fund Returns and Dispersion
 2001–10



Source: Hedge Fund Research, Inc.

Exhibit 13 (continued)
Hedge Fund Returns and Dispersion
2001–10

Equity Hedge

	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>
5th Percentile	41.88	28.60	72.57	33.54	42.07	46.95	53.51	15.94	108.40	37.83
25th Percentile	15.89	8.54	35.34	15.71	17.07	19.58	21.78	-2.10	43.86	17.67
Mean	6.28	-0.13	25.93	10.48	13.85	14.64	14.73	-19.37	31.13	11.81
Median	5.52	-0.27	18.14	8.82	9.60	12.14	10.99	-17.15	21.04	8.89
75th Percentile	-5.01	-10.17	7.53	3.02	4.61	5.94	2.83	-37.16	7.94	2.57
95th Percentile	-28.33	-31.71	-4.26	-6.61	-3.43	-7.29	-10.91	-65.73	-7.06	-8.63
Number of Funds	1,239	1,439	1,569	1,796	2,055	2,261	2,307	2,080	1,939	2,050

Event Driven

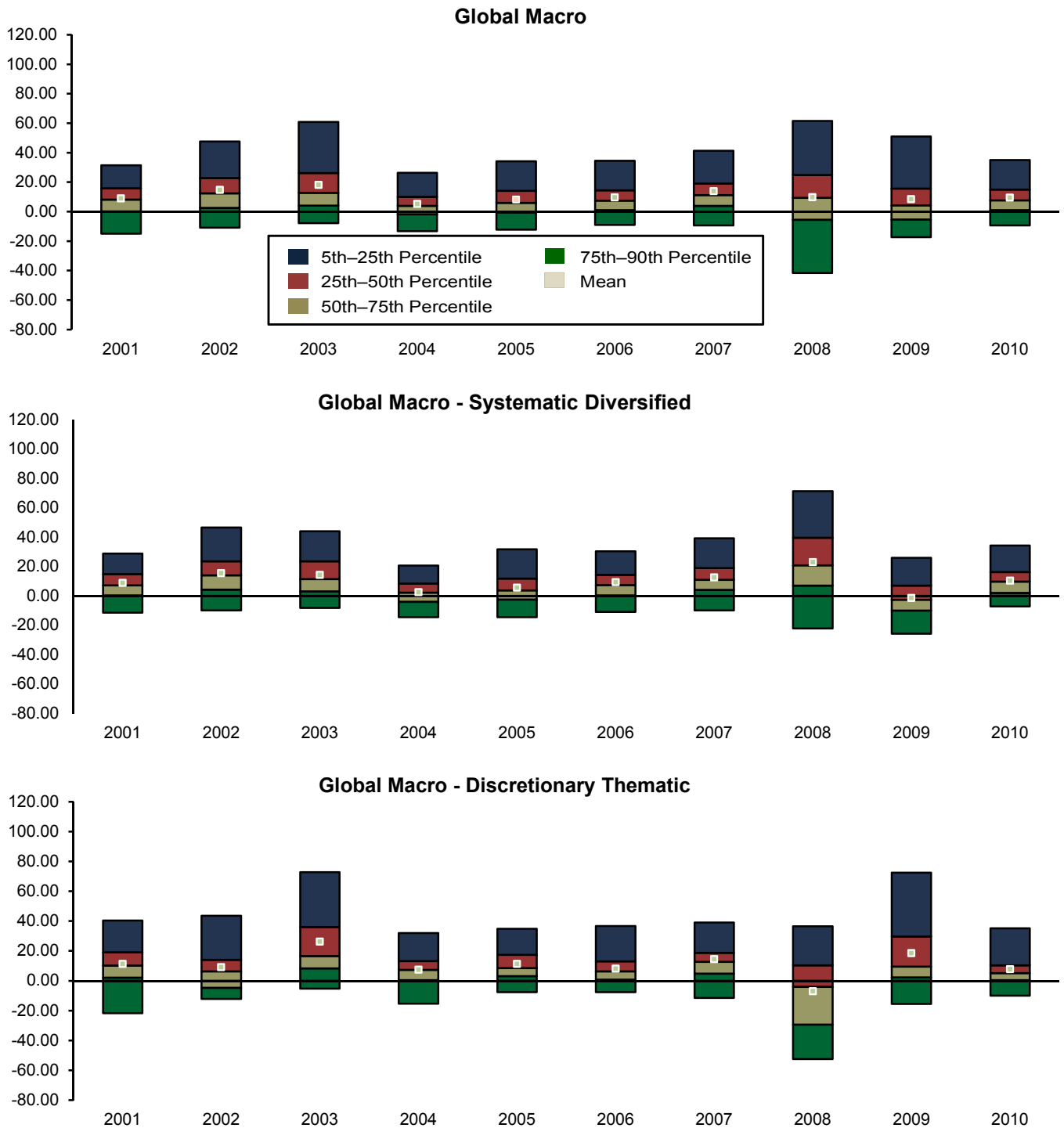
	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>
5th Percentile	44.82	24.54	59.94	40.18	23.05	30.44	35.68	12.56	118.41	34.58
25th Percentile	13.37	5.86	31.60	21.31	11.22	18.44	12.91	0.50	42.29	17.46
Mean	11.23	1.96	24.15	16.25	8.36	16.30	12.27	-16.95	35.45	13.05
Median	5.93	1.80	19.14	13.26	6.66	13.65	6.31	-17.04	22.57	10.32
75th Percentile	1.82	-2.79	7.71	6.68	3.30	10.44	1.83	-30.11	9.56	5.41
95th Percentile	-5.33	-18.57	2.13	0.93	-2.21	2.56	-11.96	-48.26	-1.05	0.15
Number of Funds	265	305	343	383	437	467	484	405	391	435

Relative Value

	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>
5th Percentile	31.75	29.09	44.47	24.99	21.06	30.53	32.74	33.45	97.76	36.82
25th Percentile	16.85	13.54	19.67	10.36	9.68	15.68	12.80	5.97	47.37	18.48
Mean	13.09	9.12	17.99	7.68	6.82	12.29	9.90	-13.35	33.62	12.86
Median	10.50	7.54	11.58	6.15	5.23	10.47	6.96	-12.87	23.66	11.25
75th Percentile	6.07	3.46	5.58	2.05	1.94	5.91	1.30	-31.04	11.12	6.08
95th Percentile	-5.37	-8.75	-0.83	-4.43	-5.59	-0.81	-12.13	-62.78	-5.35	-6.32
Number of Funds	346	427	524	629	738	831	834	698	659	771

Source: Hedge Fund Research, Inc.

Exhibit 14
Global Macro Returns and Dispersion
 2001–10



Source: Hedge Fund Research, Inc.

Exhibit 14 (continued)
Global Macro Returns and Dispersion
2001–10

Global Macro

	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>
5th Percentile	31.42	47.54	60.85	26.42	34.22	34.53	41.33	61.57	51.00	35.09
25th Percentile	15.78	22.84	26.16	10.12	14.06	14.51	19.05	24.77	15.67	14.91
Mean	8.96	14.76	18.09	5.27	8.27	9.57	13.86	9.73	8.51	9.48
Median	8.14	12.51	12.78	3.97	6.01	7.55	11.30	9.40	4.32	7.68
75th Percentile	0.20	2.58	4.15	-1.93	-0.63	1.05	4.01	-5.57	-5.50	0.98
95th Percentile	-14.94	-10.94	-7.83	-13.22	-12.28	-8.92	-9.41	-41.57	-17.33	-9.38
Number of Funds	452	507	584	698	790	848	894	898	856	1,000

Global Macro - Systematic Diversified

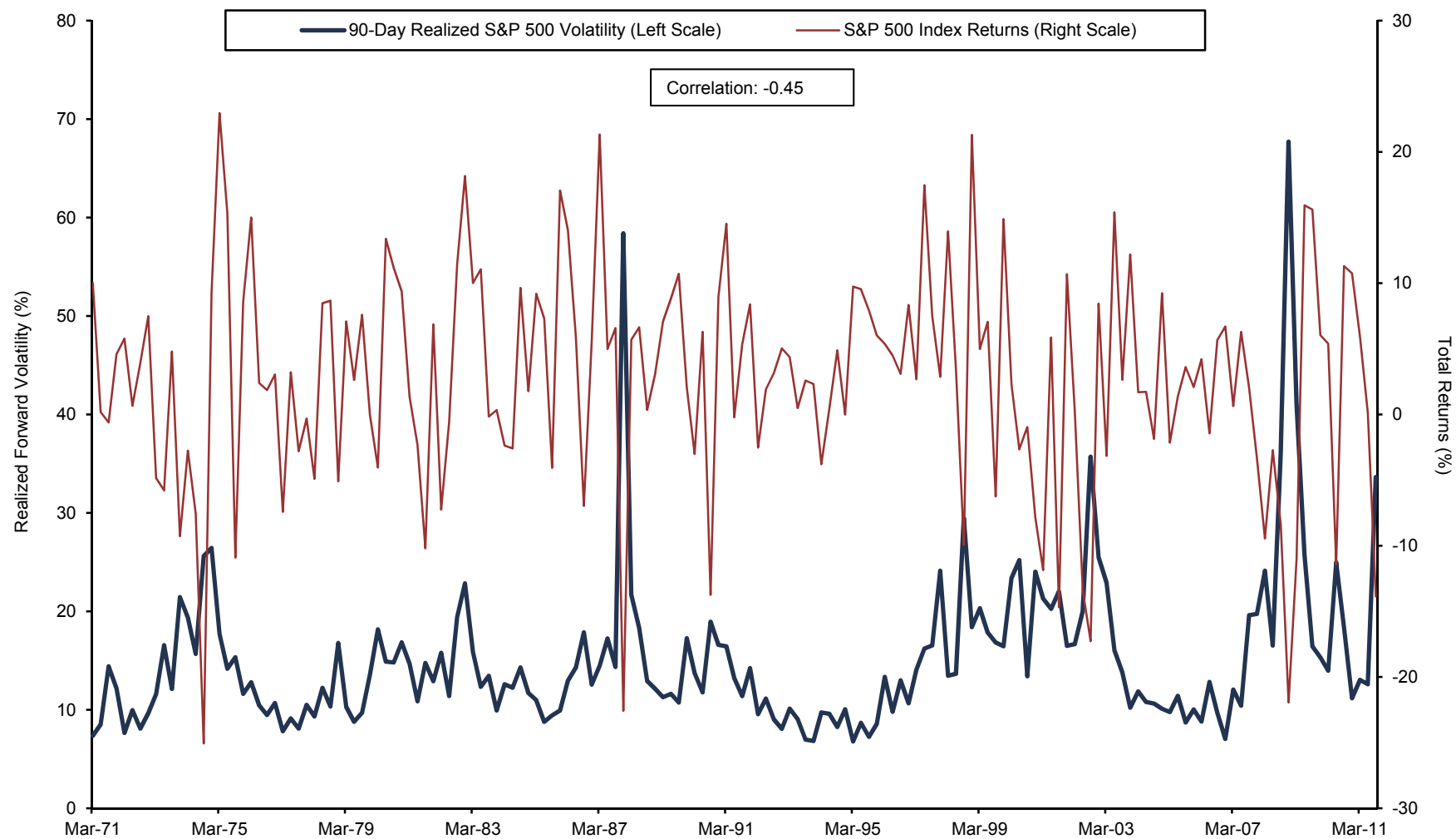
	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>
5th Percentile	28.85	46.47	43.97	20.60	31.71	30.34	39.25	71.31	25.94	34.32
25th Percentile	14.84	23.57	23.54	8.37	11.76	14.25	18.87	39.54	7.02	16.26
Mean	8.75	15.37	14.16	2.44	5.45	9.28	12.49	22.99	-1.43	10.30
Median	7.16	14.04	11.33	2.22	3.66	7.24	10.83	20.83	-2.71	9.64
75th Percentile	0.31	4.16	3.03	-4.04	-2.61	0.39	4.02	7.03	-10.10	2.00
95th Percentile	-11.41	-9.90	-8.17	-14.48	-14.47	-10.90	-9.88	-22.21	-25.82	-7.15
Number of Funds	252	280	292	311	334	328	324	320	296	328

Global Macro - Discretionary Thematic

	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>
5th Percentile	40.34	43.62	72.78	31.92	34.87	36.65	39.10	36.58	72.45	35.12
25th Percentile	19.14	13.98	35.94	13.22	17.44	13.02	18.70	10.39	29.61	10.37
Mean	11.29	9.01	26.21	7.44	11.22	8.09	14.41	-7.10	18.40	7.66
Median	10.16	6.27	16.55	7.24	8.52	6.35	12.72	-4.03	9.41	5.13
75th Percentile	2.09	-4.79	8.27	0.34	3.16	0.68	4.74	-29.41	2.23	0.50
95th Percentile	-21.71	-12.24	-5.31	-15.37	-7.65	-7.59	-11.47	-52.50	-15.58	-9.97
Number of Funds	95	102	136	175	195	196	195	180	173	202

Source: Hedge Fund Research, Inc.

Exhibit 15
Realized S&P 500 Volatility Versus Equity Returns
 March 31, 1971 – September 30, 2011



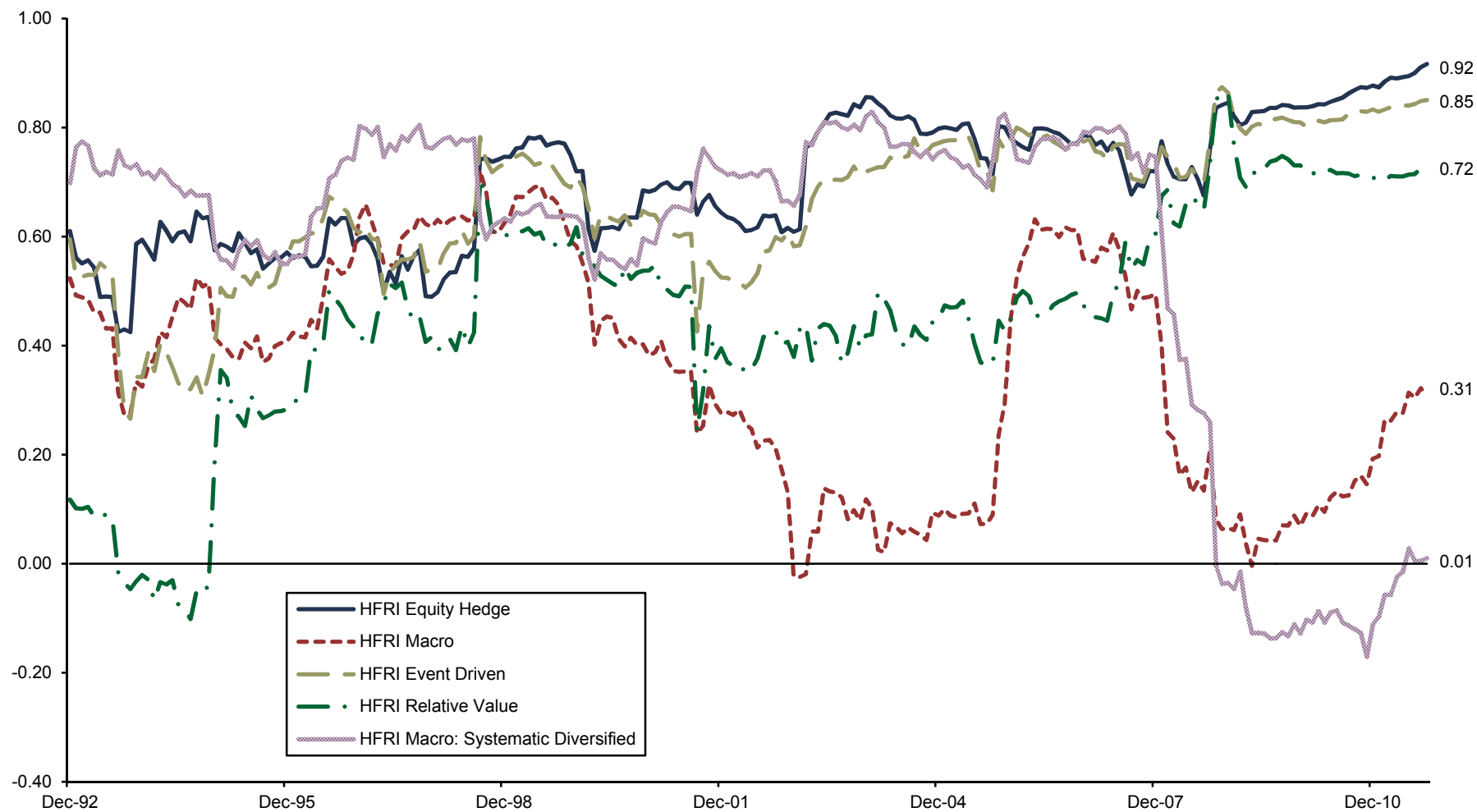
Sources: Cambridge Associates LLC, Standard & Poor's, and Thomson Datastream.
 Note: Data are quarterly.

Exhibit 16

Correlation Between S&P 500 and Hedge Fund Returns

January 1, 1990 – September 30, 2011 • U.S. Dollar

Rolling 36-Month Correlations

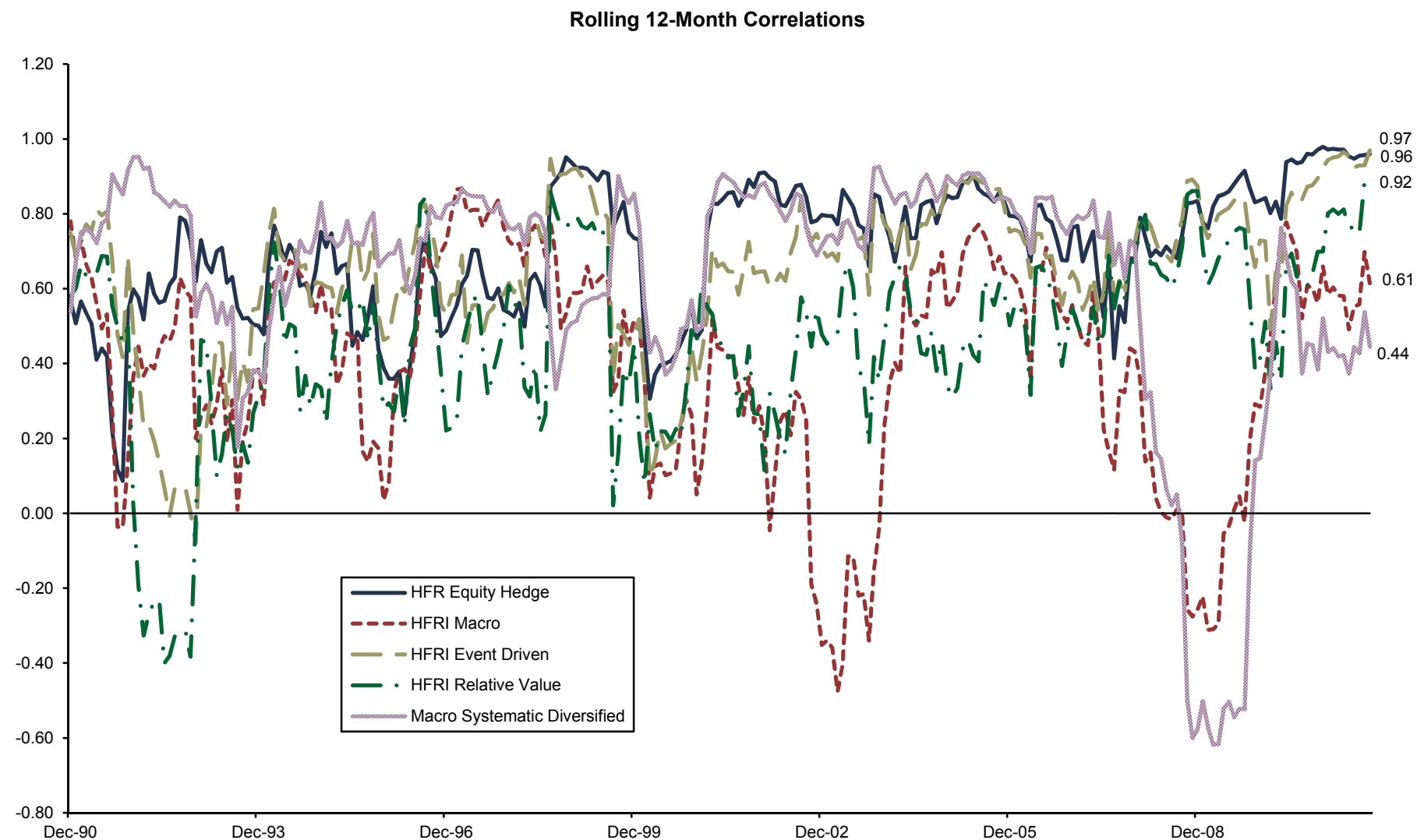


Sources: Hedge Fund Research, Inc., MSCI Inc., Standard & Poor's, and Thomson Datastream. MSCI data provided "as is" without any express or implied warranties.

Exhibit 16 (continued)

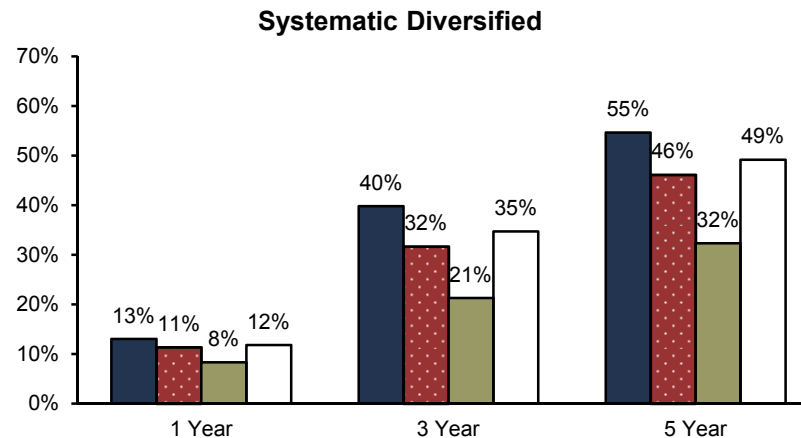
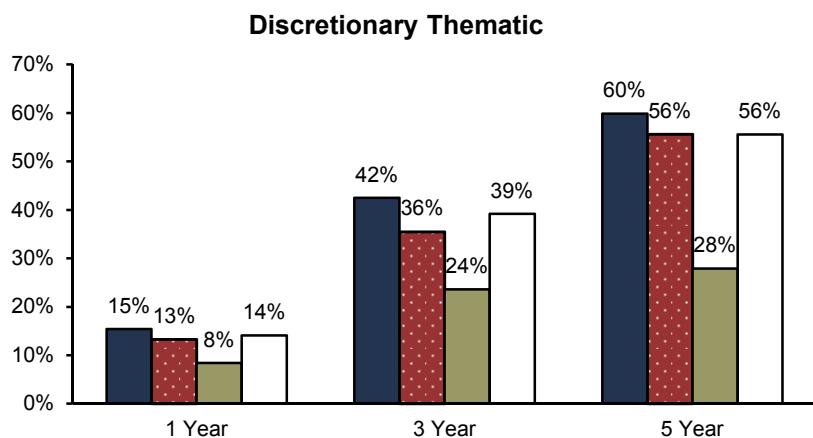
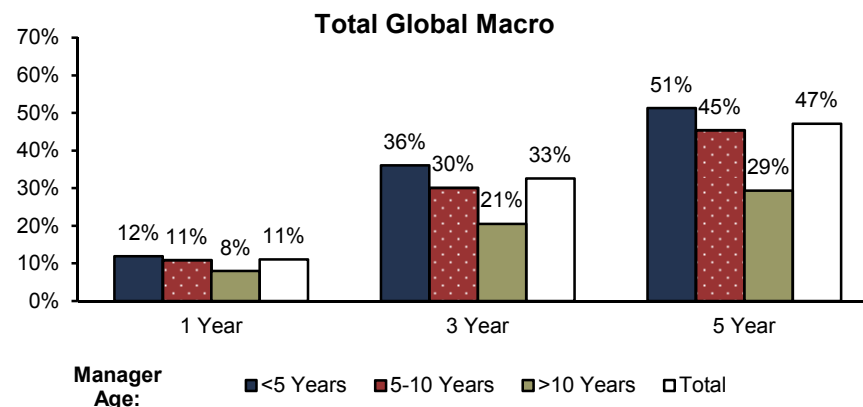
Correlation Between S&P 500 and Hedge Fund Returns

January 1, 1990 – September 30, 2011 • U.S. Dollar



Sources: Hedge Fund Research, Inc., MSCI Inc., Standard & Poor's, and Thomson Datastream. MSCI data provided "as is" without any express or implied warranties.

Exhibit 17
Manager Attrition Rates
 2003–09



Sources: Cambridge Associates LLC Investment Manager Database and Hedge Fund Research, Inc.

Notes: Discretionary and systematic diversified funds do not represent the total global macro universe. The universe is made up of managers reporting from January 1, 2003, through December 31, 2009, with data taken from the HFR database of global macro managers and Cambridge Associates' manager database. Some data are backfilled. The departure rate is calculated as the average of departure rates from an annual look through. To make this calculation, the manager group is frozen at December 31, 2003, the managers' ages are measured, and then this group is held static and quantified for 2004–09. For example, a four-year-old manager in 2003 is counted in the <5 year group for the entire time period. The one-year departure rate is calculated as 1 – (managers <5 years in 2004 divided by managers <5 years in 2003). The three-year departure rate is calculated as 1 – (managers <5 years in 2006 divided by managers <5 years in 2003), etc. This process is then repeated beginning in 2004. All managers are measured by their age at December 31, 2004, and then these groups are held static to derive the one-, three-, and five-year departure rates for this static vintage year. To derive the average departure rates above, the one-year departure rates from the static vintage year groups 2003–08 are averaged, and likewise the three-year departure rates from the static vintage years 2003–06 are averaged, etc.

**Exhibit 18
Manager Attrition Rates**

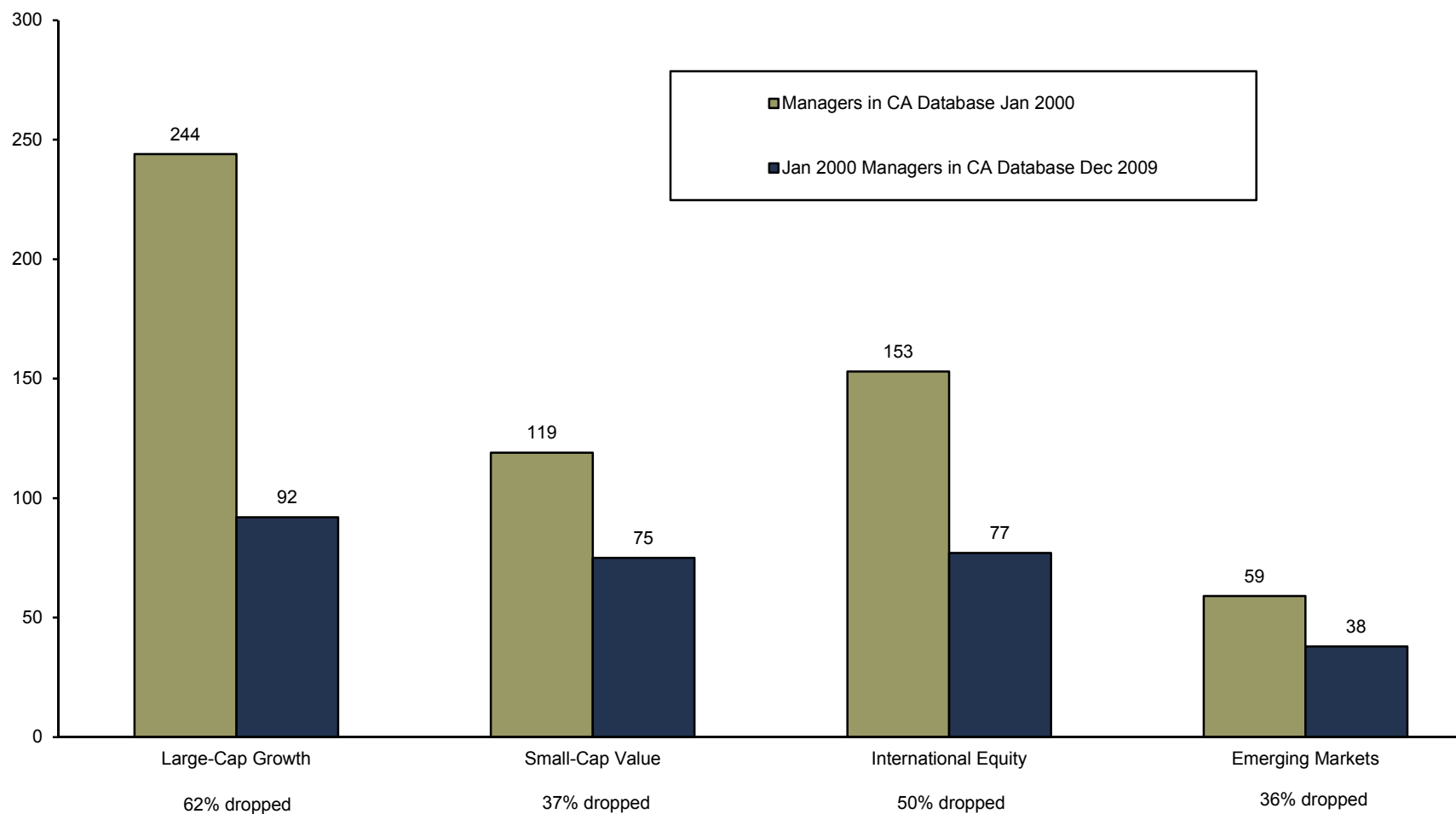
Manager Age in 2000	2000–09			Manager Age in 2003	2003–09		
	Total GM	Discretionary	Systematic Diversified		Total GM	Discretionary	Systematic Diversified
<5 Years	64%*	71%	66%	<5 Years	59%	67%	61%
5-10 Years	61%	58%	65%	5-10 Years	49%	57%	51%
>10 Years	54%	50%	58%	>10 Years	32%	29%	36%
Total	62%	66%	65%	Total	53%	61%	55%

Sources: Cambridge Associates LLC Investment Manager Database and Hedge Fund Research, Inc.

Notes: Discretionary and systematic diversified funds do not represent the total global macro universe. The universe is made up of managers reporting from January 1, 2000, through December 31, 2009, and January 1, 2003, through December 31, 2009, respectively, with data taken from the HFRI database of global macro managers and Cambridge Associates' manager database. Some data are backfilled. The departure rate is calculated as the average of departure rates from an annual look through. To make this calculation, the manager group is frozen at December 31, 2000, the managers' ages are measured, and then this group is held static and quantified for 2001–09. For example, a four-year-old manager in 2000 is counted in the <5 year group for the entire time period. The ten-year departure rate is calculated as 1 – (managers <5 years in 2009 divided by managers <5 years in 2000). All managers are measured by their age at December 31, 2000, and then these groups are held static to derive the departure rates for this static vintage year. The same process is used for the manager group as of December 31, 2003.

* This signifies that of the managers in the database as of 2000 that had reported for less than five years, 64% were no longer in the database as of the end of 2009.

Exhibit 19
Attrition Rates Across Long-Only Equity Managers



Source: Cambridge Associates LLC Investment Manager Database.