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ACTIVE CURRENCY AS AN ASSET CLASS: IS CURRENCY THE NEW LONG VOLATILITY STRATEGY?

2011

Christine Opitz
Simon Hallett
Jonathan Wilcox
Lisa Miller
Cressida Barrett

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Executive Summary

As modern portfolios evolve, investors continue to seek new ways to diversify exposures and mitigate volatility. Currency exposure, once thought of exclusively as a risk to be hedged away, is today being embraced by some in mandates designed to generate returns. The form of such a mandate may vary widely, from a discrete, active strategy, to an emerging markets cash fund, to an unfunded overlay strategy. In this paper we focus on the discrete mandate, noting that significant overlap with an overlay strategy exists.

It was only in the 1990s that the current perceptions about the role of currency began to take form, influenced by both deepening FX markets and a stream of academic work on the topic. As a result, the universe of active currency managers is quite small relative to other asset classes. By one measure, there are just 117 funds available today. This number is likely to continue growing as awareness about the potential role of FX expands and investment managers seek to further diversify product offerings.

In the recent financial crisis, some currency managers actually fared quite well on a relative basis, and soon thereafter began promoting active currency as having long volatility characteristics; that is to say, expected to have highly defensive properties in times of market stress. The main focus of this paper is to explore this claim in detail to determine how reliably active currency should be expected to serve in this function. We conservatively apply the label "volatility neutral" to this asset class, as results may vary widely depending on the manager(s) selected and the type of strategy employed, as well as the macro environment.

Central to this analysis is the issue of carry-trade exposure. Carry strategies, in which a manager will go long high-yielding currencies and short low-yielding ones, are clearly short volatility. Like other risk assets, carry-trade exposure will generally provide positive returns in benign (low interest rate, low volatility) environments, only to fall precipitously in times of elevated stress. This contrasts notably with other currency strategies (momentum and value), which show somewhat the opposite pattern and do offer more reliable long volatility characteristics. We thus find that a diversified approach to active currency—specifically, one that is not excessively dependent on carry strategies—is likely to have at minimum a neutral relationship to volatility, making it a potentially powerful and defensive diversifier. Should the investor choose to remove carry from the mix, or implement tactical shifts skillfully, the long volatility potential is enhanced.

As with other alternative strategies, manager selection is particularly important when constructing an active currency allocation as the range of potential risk and return outcomes on an individual manager basis, regardless of strategy, can be quite wide. Further, investors will want to discern between the manager's use of leverage and the application of investment skill when evaluating fee options. Given the high fees typically charged by active currency managers (often on par with hedge fund managers), it will be particularly important to assess not only consistency of performance but also how returns are generated. In sum, implementation is challenging as there is a relatively small opportunity set of managers, with a narrow subset of the universe meeting our investment criteria. We continue to evaluate the manager landscape in search of high-quality managers. ■

Active Currency as an Asset Class: Is Currency the New Long Volatility Strategy?

As modern portfolios evolve, investors continue to seek new ways to diversify exposures and mitigate risk. Currency exposure, once thought of exclusively as a risk to be hedged away, is today being embraced by some in mandates designed to generate returns. The form of such a mandate may vary widely, from a discrete, active strategy, to an emerging markets currency fund, to an unfunded, active overlay strategy. In Exhibit 1 we provide a summary of the approaches available to investors today, briefly describing their unique objectives and expected payoffs. In this paper, however, we focus exclusively on the discrete mandate, noting that significant overlap with an overlay strategy exists.

What would an active currency product look like and why might it be an attractive component of a diversified portfolio? At the simplest level currency exposures are achieved via forward or spot contracts promising to deliver a certain amount of the relevant currency at a point in time. For example, a sterling-based currency manager might purchase dollars for three-month delivery against sterling if bullish on the dollar/sterling exchange rate. Similarly, the manager might sell yen against sterling if bearish on the yen. In practice, trades are often made between currency pairs *unrelated to the investor's home currency*—in this example, from yen straight into dollars. An active currency fund can thus be seen as a series of "pair trades," each of which is a position allocated some of the strategy's risk budget.

As we discuss below, there are multiple reasons an investor might incorporate an active currency strategy into a portfolio. We believe the most important of these is diversification, and that a diversified currency strategy or program can be considered "volatility neutral" over the long term. The evidence we have gathered suggests that active currency not only shows low correlation with traditional equities and bonds over time, but also tends to deliver its best relative results at times of stress when other risk assets (constituting the bulk of most portfolios) do badly. While some currency managers would go so far as to label active strategies as long volatility, we would be hesitant to rely too heavily on currency to serve in this role without careful consideration as to portfolio construction and manager skill.

Before we begin our discussion, a note on the data. Since currency forwards have no formal collateral requirement, substantial leverage is potentially available for such strategies. For simplicity's sake, the analytics shown in the attached exhibits and discussed in this paper generally assume fully funded positions whereby an investor's initial cash outlay equals the notional exposure desired, unless otherwise noted.

A Brief History of Active Currency Management

With the collapse of the Bretton Woods agreement in 1971, the global system of flexible exchange rates was born. Investors were thus able to incorporate currency into their portfolio strategy; however, at that time the universe of currency-related products was extremely limited. Further, currency was not widely seen as a source of alpha but rather as a source of secondary risk.

By the 1990s, the idea of currency as a source of alpha began to gain traction. This was fostered by two factors. The first was an increasing stream of research in the investment community

supporting the idea that managed currency exposure could contribute to portfolio returns. In his seminal 1989 work "Universal Hedging: Optimizing Currency Risk and Reward in International Equity Portfolios," Fischer Black challenged the predominant notion that currency was inevitably a zero sum game and asserted that investors could actually increase their returns by incorporating currency exposure. Soon thereafter, work by Roger Clarke and Mark Kritzman further validated the idea of currency as a source of return, not just risk.[1] In 1998, Brian Strange published an article[2] summarizing his research on currency manager returns and noting that a group of 152 individual currency overlay programs surveyed (managed by 11 firms) produced, on average, a small but positive return to investors.

The second factor that contributed to the proliferation of actively managed currency strategies was the evolution of the currency markets themselves. Currency options first started trading actively in the 1970s and 1980s on listed futures and options markets, but were constrained to a handful of major exchange rates. However, by the 1990s currency turnover had grown dramatically, prompting the development of a more liquid over-the-counter interbank market, with options trading expanded to the full range of exchange rates. Today, the FX options market is a global, 24-hour market. It is the largest market by trading volume, with an average daily turnover of nearly $4 trillion according to the most recent Bank for International Settlements survey. Thus, as industry leaders began to re-evaluate the potential of currency contribution in a portfolio and the currency market evolved to allow for round-the-clock trading in multiple currencies, strategies emerged and by the late 1990s it was largely accepted that currency could provide a source of return as well as risk. The number of currency funds grew from 44 in 1993 to 117 in 2011, using the constituents of the BarclayHedge Currency Traders Index as a measure. Growth in the number of managers/strategies available has been most notable in the last few years, as the larger investment firms have begun to develop currency products to compete in a market formerly dominated by niche players.

The Rationale for an Investment in Currency

There are four fundamental and oft-referenced reasons for a discrete investment in currency: market dynamics, consistent returns, diversification, and program customization. We outline each briefly here and provide greater detail in the sections that follow.

1. **Market dynamics:** Given that many buyers and sellers of currency tend to be liquidity-seeking rather than profit-seeking, the market is inefficient, offering investors potential for alpha.

2. **Consistent returns:** Currency strategies offer *relatively* consistent, though potentially modest, performance over time and relative to other active strategies, at reasonable levels of volatility. In this sense they can be thought of in a similar vein to hedge funds (more specifically, absolute return funds), though some important differences exist as we point out throughout this paper.

3. **Diversification:** Active currency strategies have historically shown low correlations with traditional and alternative asset classes. Some have gone so far as to say that currency strategies not only diversify but offer a long volatility characteristic, rising in value in

[1] Roger Clarke and Mark Kritzman, *Currency Management: Concepts and Practices*, The Research Foundation of the Institute of Chartered Financial Analysts, 1996.
[2] Brian Strange, "Do Currency Managers Add Value?," *Pensions and Investments,* May 1998.

periods of broad market stress. We conservatively categorize currency to be overall more of a neutral volatility strategy, as outlined below.

4. **Customization and flexibility of strategies:** Active currency strategies can be customized to target desired levels of volatility and tracking error. The options range from fully funded strategies with more hedge fund–like risk-reward profiles to a highly levered strategy with characteristics more on par with equities.

Market Participants and Market Efficiency

At first glance, the idea that currency markets offer inefficiencies that investors can exploit to generate returns would appear counterintuitive and inconsistent with the description of the market offered above. As the largest, most liquid market in the world, one might understandably assume that the FX market is extremely efficient. Indeed, as Ronald Layard-Liesching[3] states, "Not only is the currency market much more liquid than other markets, but all the information of a fundamental and technical nature is freely available to all participants, fulfilling on paper all the conditions of an efficient market."

However, the composition of market participants, biased largely to passive traders, is an important characteristic of the FX market and arguably does foster inefficiencies. There is no definitive way of knowing exactly how many passive versus active participants exist since the currency trades on an over-the-counter market, and there is thus no centralized source of data on turnover and segmentation. However, several have offered estimates: J.P. Morgan attributes 50% to 75% of turnover to passive or "liquidity seeking" participants, including corporate/multinational treasuries, investors purchasing international stocks, and central banks managing exchange rate policy.[4] Similarly, Bilal Hafeez of Deutsche Bank calculates that just 5% to 25% of FX market participants are profit seekers (hedge funds, currency managers, global bond managers, tactical asset allocation strategies, etc.).[5]

How Currency Managers Make Bets and Generate Returns

When an investor purchases a foreign stock, the returns related to currency are based solely on movements in exchange rates. When investing directly in currency this is not the case. One currency must be sold to buy another, thereby sacrificing the interest rate on the currency sold in exchange for the rate on the one bought. In a simple world where the exchange rate is constant, the return would merely reflect the interest rate differential. In reality, exchange rates are in a constant state of fluctuation and returns on currency investments will thus always reflect the interplay of exchange rate movements and interest rate differentials. The theory of uncovered interest rate parity, one of the longest-standing theories of exchange rate behavior, holds that in an efficient market the interest rate differential is compensation for the expected change in exchange rate; therefore, the expected return should be zero.

The data show that this is often not the case, however. Active managers can and do exploit inefficiencies in the FX market, as noted above, to generate positive returns. Managers will most often create a net short position in one currency to finance a net long position in another, usually

[3] Ronald Layard-Liesching, "The Role of Currency Overlay Managers," The Research Foundation of the Institute of Chartered Financial Analysts, 1997.

[4] Karl Mergenthaler, "Active Currency Management for Institutional Investors," J.P. Morgan, 2009.

[5] Bilal Hafeezl, "Currency Markets: Is Money Left on the Table?," Deutsche Bank, 2007.

via forward or futures contracts. Below we outline three common strategies employed.

Carry

Carry managers will sell low-yielding currencies and buy high-yielding ones, earning the interest rate differential with the assumption that shifting exchange rates will not offset this spread over the holding period. Since the carry trade can unwind quickly and violently in times of market stress or significant central bank intervention, returns for this strategy are the most volatile of the three strategies noted. Put another way, carry is considered a short volatility strategy (similar to long equity and credit exposures) that works best in stable interest rate environments. Carry can be a very successful approach for several years, outpacing other strategies by a wide margin, only to give back substantial gains in a very short period of time (as in 1998 and 2008–09). For this reason, managers will often combine the carry exposures with trend, value, or other strategies,[6] to mitigate against such rapid downswings.

Value

Value managers will employ fundamental analysis to determine a currency's attractiveness. This process will examine the fundamental economic and fiscal standing of a country to determine if currency is under- or overvalued. Factors evaluated may include money flows, interest rates, inflation, purchasing power parity (PPP), GDP growth rates, current account surpluses/deficits, and money supply. Value managers held up particularly well in the recent financial crisis.

Trend/Momentum

Simply put, the core idea behind this strategy is to go long the currency pair when the price is above a moving average of a given length and to go short the currency pair when it is below. Trend managers will thus follow currency market patterns using computer models and technical analysis. As the name suggests, this strategy will profit when currencies trend by riding waves of momentum in time periods over which fundamental models are presumed to have little forecasting power (that is, over the short to medium run). A subset of this group may employ "breakout" strategies that (provided the manager gets the direction right) will benefit when a burst of higher volatility drives a currency *outside* its recent trading range. Trend following worked well and was the dominant strategy from the 1980s into the mid-1990s. Trend managers as a group held up very well in the 2008 downturn.

[6] This may include offsetting options positions, which may include short carry exposure.

Risk, Return, and Correlations

Evaluating active currency strategy returns is quite difficult and problematic, given the dearth of commonly referenced benchmarks and the wide range of client objectives/mandates (which will in turn drive varying levels of underlying leverage). As one measure of currency performance, we provide information on the BarclayHedge Currency Traders Index (CTI), which is made up of a wide variety of active currency strategies. We use this index as it is one of the most widely referenced measures of currency manager results.

While fairly comprehensive and widely used, the CTI does suffer various limitations. The index captures a broad spectrum of the currency manager results given its inclusion criteria. As highlighted in the sidebar on the next page, a manager needs only six months of return history to be added to the index. The benefit of this liberal screening is that the index presumably captures a very wide range of results; the drawback is that it allows for rather new managers with short-lived strategies to be represented. Such managers may or may not have the same skill and success as other well-established

and resourced strategies, and inevitably some of these managers will eventually drop out of the index. In an attempt to mitigate survivorship bias, BarclayHedge will assign a 0% return for the remaining months in the calendar year for that strategy, as the index is reconstituted annually at the beginning of the year. Conversely, in an attempt to mitigate add-in bias, results are not back-filled upon addition of a new constituent.

Another important aspect of the return stream published by BarclayHedge is that the weighted-average return stream does not convey the dispersion of returns around the mean. While BarclayHedge does not publish historical data to evaluate the degree of dispersion over time, the provider did share a few recent monthly highs and lows, which provide an anecdotal sense of the range of results.

March 2011	High +29.14% Low -18.61%
April 2011	High +14.49% Low -16.00%
May 2011	High +12.41% Low -12.64%

From this limited data set we can assume that the dispersion around the index mean over time will be quite dramatic. This in turn suggests two noteworthy things. First, the volatility implied by the index average will be muted relative to that of many individual manager strategies. Second, manager selection will be quite important given the very wide range of possible risk and return outcomes.

As with any index, these imperfections must be borne in mind and balanced by supplemental analysis that we provide later on. In Exhibit 2 we show the 22-year history of returns for the index relative to the MSCI World Index and the HFR Fund-of-Funds Diversified Index. The data provide support for the claims of diversification and consistent returns outlined above. The currency manager universe shows a very distinct performance pattern relative to stocks and hedge funds, often offering modest, positive returns regardless of broad equity market direction. Downside for the CTI index has been limited to -6.0% in 1994 (though we do acknowledge that some of the underlying strategies have suffered losses in the double digits). Currency managers as a group fared relatively well in 2008, up 3.5% (as measured by the CTI), while the global equity market fell 41% and hedge funds lost about half that amount.

Thus, the currency universe does appear to show similar characteristics to hedge funds in that risk and return are moderated relative to the overall market. For the trailing ten-year period (Exhibit 4), the CTI and HFRI FOF Diversified data plot

Characteristics of BarclayHedge Currency Traders Index (CTI)

As of August 2011

Number of managers: 105

Number of funds and managed accounts: 117

Funds primarily domiciled in: United States (43%) and Europe (39%)

Update frequency: monthly

Weighting: Equal weighted, with weights reset annually

Criteria for inclusion: Manager must be managing external client assets, report returns net of fees, and have a minimum six-month return history

Strategies included: Carry, value, and momentum (including breakout strategies, a subcategory of momentum)

Add-in strategy: No back-filling for new managers added mid-year

Survivorship strategy: If manager stops reporting returns, a 0% return is applied for the remaining months in the calendar year, until January when the index is reconstituted and the manager is dropped from the index

Leverage: Includes both fully funded and unfunded mandates

similarly in terms of risk and return. As shown in Exhibit 5, the risk profile for the currency managers over the last 20 years is between that of hedge funds and equities, with lower returns.

We do acknowledge that active currency exposure cannot be considered a perfect hedge fund substitute. Hedge funds, particularly long/short strategies, will capture more upside in rising markets, and the opportunity cost of holding currency can be high in times of strong equity rallies. A currency investor may choose to apply higher leverage or target a higher risk level to achieve higher returns, though downside protection will then be muted.

As noted above, returns will vary substantially from manager to manager depending on the strategy employed and client-driven mandates. To capture the differences in characteristics among strategies (carry, value, momentum), various index providers have compiled indices using a set of naïve trading rules for each strategy (such as those used by Deutsche Bank as described in the sidebar). In Exhibits 3–5 we also show the risk/return results for one set of such indices, as provided by Deutsche Bank. As these indices represent systematic, rules-based approaches to currency and do not apply active management, they will not relate to the CTI; in other words, these substrategies will not add up or average out to the CTI results.

The results vary widely by time period. Carry has been superior to the other two strategies evaluated over the long term, but has not fared well in recent years given the volatile environment. Momentum and value have lagged carry over longer periods, but by a small margin. Risk metrics are similar for the three strategies, with value showing slightly lower volatility over the more recent periods. However, as indicated above, these summary statistics mask the fact that no approach consistently outperforms or underperforms year to year. For example, carry actually outperformed by a good margin between 2002 and 2005, only to rapidly give up that advantage as the recent financial crisis unfolded (Exhibits 6 and 9). For this reason, managers will often employ a blend of the primary strategies.

Given the distinct return pattern of currency strategies noted above, it is not surprising that correlations with other asset classes are low, as shown in Exhibit 10. Over the last 20 years, the CTI has shown a correlation of 0.07 to the MSCI World Index. Unsurprisingly, carry shows the strongest relationship to the overall equity market, particularly in times of stress, while value and momentum have shown much lower correlations to stocks in down periods. The summary statistics shown fail to convey that correlations relative to traditional asset classes are unstable, more so than rolling return or volatility metrics. In Exhibit 11, the rolling correlation

Trading Rules for Deutsche Bank Strategy Indices

Carry: Invests on an equal-weighted basis in the three currencies with the highest yields, funded by the three currencies with the lowest yields. The yield in most currencies is equivalent to the domestic interbank deposit rate in a particular country, but it may also refer to the offshore deposit equivalent in the case of non-deliverable crosses. The index is rebalanced quarterly.

Valuation: Applies PPP, the most basic valuation metric for currencies, which as a concept has been around for over 100 years. Systematically buys the three most undervalued currencies and sells the three most overvalued currencies.

Momentum: Applies a ranking rule based on annual spot returns, where one buys the three currencies with the highest return against the U.S. dollar over the last 12 months, and sells the three currencies with the lowest returns. For each, emerging markets currencies are excluded and rebalancing is done monthly. Investment/funding is done via three-month forward outrights.

Note: Returns for these indices are generally reported net of collateral.

statistics for the various styles relative again to the MSCI World Index show dramatic variation. For instance, carry shows a zero correlation as of 2007, later to spike to nearly 0.8 as of the credit crisis; in contrast, momentum shows an inverse pattern. These swings highlight that currency is a strong diversifier over the long term, but specific strategies can show unique—and sometimes undesired—payoff characteristics in times of extreme stress. We discuss this in more detail in the following section.

Active Currency as a Long Volatility Play?

In recent years, active currency has been marketed by some as a hedge against volatility, capable of delivering positive returns when other assets are falling sharply. Interest in this idea was sharpened in 2008 when a number of managers were able to deliver positive returns. During that year the CTI index delivered a modest, positive return while the MSCI World equity index plummeted. A similar performance pattern was seen in the 2000−02 period as the tech bubble burst. To know whether this is a characteristic that might be relied upon going forward, it is important to examine the data completely rather than anecdotally and also to make a fundamental argument as to why the effect should exist.

Exhibit 12 compares the performance of the CTI index and the DB style indices during periods of rising and falling volatility as proxied by the VIX index. The data conveys the encouraging message that currency strategies do not seem to have a strong negative relationship to volatility (unlike, conversely, most risk assets). The exception is carry-trade strategies, which clearly behave as other risk assets and lose money as volatility rises. Exhibit 13 examines performance of currency strategies during defined historical stress periods. As expected, a similar pattern is again observed. Carry strategies appear to behave like risk assets in most periods shown, while other currency strategies offer diversification characteristics and sometimes a positive payoff.

Having discerned what appear to be fairly consistent characteristics for each substrategy with respect to market volatility, we turn to confirming these findings by establishing a fundamental economic rationale for them. In the case of carry strategies, this is fairly straightforward. Short rates are higher in some currencies to offset expected depreciation, which in turn likely reflects some underlying economic weakness or instability. The forward rate bias theory says that investors are systematically overcompensated for this risk; however, in times of rising stress and volatility such currencies may come under additional pressure and depreciation may exceed the yield premium for a period.

Value strategies are harder to categorize from a theoretical perspective. In one sense value should benefit from volatility since a burst of higher volatility may reasonably be expected to result in reversion toward the mean rather than away from it. On the other hand, simple value criteria may mis-specify the riskiness of an asset. Value equities, for example, sometimes underperform during stress periods because crude value metrics often pick up stocks with high leverage and cyclical earnings streams. In the same way, a currency may trade below fair value for an extended period as a result of fiscal or monetary policy (e.g., Asian currencies pre-1997), or as a result of central bank policy (e.g., China today). While the data do show at times a positive relationship between currency value strategies and volatility, the pattern is not perfectly consistent.

What is particularly puzzling is the behavior of the momentum or trending strategy. It is curious that the DB Momentum index, invested using a few naïve, simple moving average rules, exhibits a stronger positive relationship to volatility. This

implies either that heightened volatility tends to reinforce continuation of a trend (which would seem counterintuitive) or that such simple rules can latch on quickly to currency moves that enjoy some durability.

We do not find sufficient evidence that a basket of diversified active currency strategies will *reliably* have a positive relationship to volatility. We do, however, find that a diversified approach to active currency that is not excessively dependent on carry strategies is likely to have, at minimum, a neutral relationship to volatility. Our review of the data suggests that momentum or trend-following strategies exhibit a positive relationship to volatility, but until a clearer fundamental rationale for this can be put forward we would caution against relying on this characteristic.

When Diversification Failed

The different approaches to currency management have generally proved quite complementary to each other and other short volatility assets over time. However, there have been two periods over the past 20 years when most currency strategies struggled notably. The first was between 1991 and 1995 when momentum, value, and then carry strategies suffered significant and partially overlapping drawdowns, each lasting around 12 months and of magnitudes of 15% to 25%. An equal-weighted blend of the three approaches would also have suffered a drawdown, though much smaller at less than 5%, so diversification was of some benefit. This period was characterized by an unusually high level of government intervention in the United States and Europe, as the Federal Reserve cut its policy rate from 8% to 3%, the Maastricht Treaty paved the way for the European Economic and Monetary Union, and the British pound was devalued. In this environment of unpredictable policy changes, trends broke down and many currencies strayed from fair value.

The second disappointing period, 2004–06, did not see substantial losses but rather weak returns across strategies leading to small drawdowns of the equally weighted blend. A key driver of performance was that overall, volatility was actually falling, which can pose a challenge to each of the currency strategies. Currency tends to revert to fair value when volatility is rising, while the inverse is not necessarily true. Indeed, currency values may settle away from fair value for some time when risk aversion subsides. Similarly, trend managers perform the best when volatility rises from a low level and then remains elevated, and the 2004–06 period was characterized by the opposite. Carry strategies were the best of a bad lot over this period, suggesting they earned a modest interest rate differential but little else.

Making an Allocation to Currency

Funding a Discrete Mandate

Once the decision to invest in currency as a discrete active mandate has been made, several implementation decisions will follow. First, to what degree should the mandate be "funded" or "unfunded"?

Forward contracts are one of the more commonly used instruments to execute a currency strategy. In such a transaction two parties agree to exchange one currency for another at a specified future date. This means that no principal need be exchanged to manage currency positions; rather, one party will simply pay the other the difference in the value of their positions at the end of the contract period. Thus, an investor can incorporate a currency strategy into a portfolio with no cash outlay. The investor would set up a line of credit with counterparties—the manager acting as an agent and the investor's entire asset

base used as collateral. More realistically, many investors wishing to gain unfunded exposure will invest 5% to 10% of the desired notional exposure so that the manager will have immediate access to cash needed for margin calls. A similar approach would be to post the amount of the manager's maximum historical drawdown. Investing in unfunded currency strategies via a separate account provides the benefit of little or no cash outlay and allows the investor to specify the desired level of volatility. However, this approach may not be feasible for smaller portfolios as the minimum required investment for such strategies tends to be quite high. We also note that traditional risk measurement techniques do not readily lend themselves to unfunded currency strategy evaluation.

In contrast, those that wish to invest in currency on a fully funded basis will post collateral equal to the initial desired notional exposure. This eliminates the potential burdens of selecting line of credit counterparties, settling quarterly cash flows, as well as the risk of levered exposure introduced in the unfunded approach. Such an investment is typically made via a commingled fund, which does not allow for customization of volatility targets; however, many investors will find the limited liability of this approach attractive enough to compensate for this fact. Please see Exhibits 16 and 17 for more detail on how both fully funded and unfunded mandates are executed.

Fees, Vehicles, and Liquidity

As noted above, investors may implement a currency strategy via several types of vehicles. Separate (or segregated) accounts, and commingled accounts of various types including U.S. mutual funds, offshore accounts, and open-ended investment companies are all available. Minimum investment amounts vary significantly and depend on both the vehicle and type of investor. Opening a separate account generally requires at least $10 million to invest. Investment in an offshore or other commingled account can be made with as little as $1 million.

Fee structures also vary, but most active currency fee structures tend to fall into two categories.

1. **Hedge fund–like fees:** Performance-based fees are available from many managers starting at 1% of assets plus 20% of profits. For more aggressively structured portfolios, fees of 2% of assets and 20% of profits are not uncommon. It is important to be sure the return potential is appropriately aligned with the fee level and that hurdle rates and high-water marks are in place. For fully funded products there will be a collateral return as well as an active return. Once interest rates revert to more normal levels, one will want to avoid paying 20% of that risk-free collateral return in performance fees.

2. **Risk-based fees:** As one example, a manager may charge 5 basis points (bps) per 100 bps of risk targeted. A performance fee may also be applied on top of the risk-related fee. The intuition behind such a compensation structure is that risk is a proxy for the degree of active bets taken. In a similar vein, investors in conventional asset classes generally expect to pay more to a highly active satellite manager than a core manager. However, many currency risk-based fee structures are linear in their application and can escalate very fast in absolute terms. Since the bets in the portfolio may be the same as in an unlevered account, the investor can in some cases pay higher fees simply for additional leverage. This structure also gives a perverse incentive for managers to promote the highest volatility variant to clients.

A simple base-plus-performance fee appears to us the most appropriate, provided hurdles and

high-water marks are in place and the absolute levels are not punitive. We are wary of entirely risk-based fees and if that methodology were adopted a simple tiering of fees for two to three different volatility bands with modest escalation would seem more appropriate.

Liquidity in active currency portfolios is generally very high. As previously stated, the currency markets are the largest and most liquid in the world, open 24 hours a day. The depth and liquidity of the markets benefits both managers and clients as they are able to express their views inexpensively with low bid-ask spreads and many willing counterparties. This leads some managers to offer daily liquidity with a very short notice period; however, some commingled funds will limit cash withdrawals to month-end only.

Measuring and Monitoring Currency Managers

Unlike in equity or fixed income markets, there are no standard or even widely accepted benchmarks for active currency managers, making performance measurement difficult. Investors tend to apply one of three benchmarking practices, or a combination of these. Most common is to compare returns to Libor (or Tibor, Euribor, etc., depending on home currency), with an additional spread to reflect the targeted level of volatility. Next, investors may choose to compare returns to an average return generated by a universe of managers (e.g., the CTI). Finally, a style index may be used for comparison.

None of these benchmarks is without drawbacks. Similar to the case of assigning a T-bill + 5% return target to hedge fund managers, using Libor + X% may convey the appropriate return expectation but not that for risk. Investors will not find currency manager universes available in abundance, and those that do exist will often suffer from survivor and add-in biases. Finally, style universes do offer a valid complementary measurement to the Libor option and incorporate the risk component; however, the construction of such indices will have to be carefully examined. For instance, the Deutsche Bank carry index shown in the exhibits does not include emerging markets currencies, while the RBS carry index (an alternative style index) does. The style index chosen should align in composition with the invested strategy to the degree possible.

Combining Managers

As with a hedge fund portfolio, an investor will want to take a multi-strategy approach when incorporating currencies as an explicit mandate into the portfolio. From the analysis and discussion of the carry strategy offered above, it is clear that hiring one manager that relies heavily on this approach alone is not prudent or optimal. Substantial long-term gains can be erased in short periods of extreme stress.

Considering this point, would investors do better to avoid carry altogether and simply focus on building exposure with value- and momentum-biased strategies? This answer depends on both the objective of the allocation and the investor's confidence in its ability to move tactically in and out of the carry strategy at the right times. To the degree that one wants to emphasize the long volatility characteristic of active currency exposure, eliminating carry from the opportunity set would make sense. However, carry does offer strong relative return potential in times of falling interest rates and low market stress, as shown in Exhibit 9. Thus, nimble adjustments to this exposure could be additive if timed appropriately (and we acknowledge that as with any tactical shift, this is a big if indeed).

If an investor does not have the skill or insight to manage this allocation closely enough, it might outsource either to a multi-strategy or fund-of-funds currency manager. With the former option, significant oversight will be required to monitor

the managers and watch for style drift. Since one strategy can dominate the others by a wide margin for protracted periods at times, managers have been known to implement strategy changes based on backward-looking optimizations. This may change the risk profile of the overall program notably. The fund-of-funds option does potentially solve this issue, as the manager will theoretically monitor risk levels and style drift on a frequent basis; however, few fund-of-funds managers exist and those that do often offer short track records.

Considerations for Cross-Border Investments

One extra layer of complication an investor must consider arises when investing with a manager domiciled in another country, or more precisely, when the manager invests the cash collateral for a fully funded account in a currency other than the investor's own. For instance, a Brazilian investor that has selected a U.S.-based active currency manager for a discrete mandate will not want its collateral invested in T-bills given the large opportunity cost relative to Brazilian short-term rates. As a remedy the investor may ask for a share class denominated in its home currency and most managers will accommodate. Further complicating the strategy, the manager will then enter into a forward contract to hedge the collateral exposure back to the investor's home currency. The impact of this hedge is then added to the returns of the currency fund returns to calculate the total return. Note that the impact of the hedge can be considered either a cost or a relative gain, depending on whether the home currency is lower-yielding than the manager's (cost) or higher-yielding (gain) as well as the relative appreciation or depreciation. While there will be times that the hedge will cost the investor, such protection is important to have in place. For an unhedged investor, the currency translation risk associated with a fully funded account can easily overwhelm the benefits provided by the currency manager's investment skill.

Conclusion

In comparison to other traditional and even alternative asset classes, the active currency universe is populated by relatively few managers as currency has yet to be wholeheartedly embraced by institutional and high-net-worth investors. However, with attractive market dynamics, relatively consistent returns, and strong diversification benefits, discrete currency strategies are gaining traction as a means of both muting volatility and generating returns.

With the recognition of the viability of active currency strategies has come a proliferation of related products in recent years. Some managers will market active currency as a long volatility strategy, a claim that must be closely examined before incorporating such a mandate into a portfolio. While our analysis does not show that a fully diversified (i.e., including carry on a strategic basis) active currency allocation should be relied upon to serve as a long volatility strategy, it may more appropriately be considered "volatility neutral." That said, should the investor remove carry from the mix, or implement tactical shifts skillfully, the long volatility potential is enhanced.

As with other alternative strategies, manager selection is particularly important when constructing an active currency allocation. As the CTI data suggest, the range of potential risk and return outcomes on an individual manager basis can be quite wide. Further, investors will want to discern between the manager's use of leverage and the application of investment skill when evaluating fee options. Given the high fees typically charged by currency managers, it will be particularly important to assess not only consistency of performance but also how returns are generated. In sum, implementation is challenging as there is a relatively small opportunity set of managers, with a narrow subset of the universe meeting our investment criteria. We continue to evaluate the manager landscape in search of high-quality managers. ■

Exhibit 1

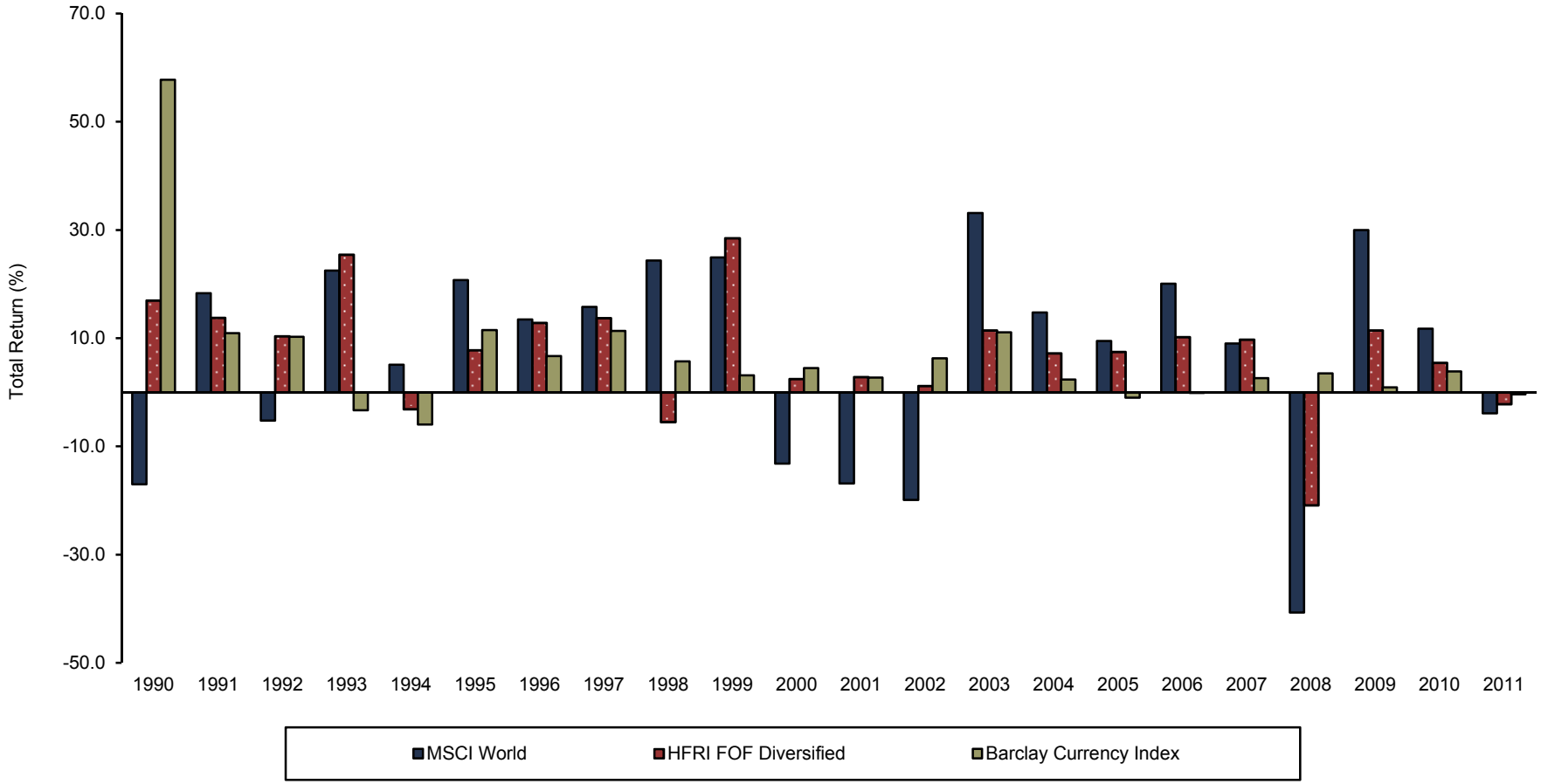
The Currency Universe

Strategy	Objective	Overview	Hedge Against Home Currency Decline?	Expected Return
Passive Hedging	Risk Reduction	Currency manager will "undo" currency exposure embedded in foreign equity strategies on a passive, systematic basis by converting non-home-currency exposure back to dollars, pounds, euro, etc.	No. Will actually lose money when home currency falls in value.	N/A
Active Overlay	Combination Risk Reduction and Enhanced Total Portfolio Return	Similar to passive hedge except that currency manager may emphasize risk reduction or return enhancement depending on client's objectives. For example, manager could actually leave yen exposure in and hedge euro exposure out, should the former be deemed undervalued and the latter overvalued, rather than systematically removing *all* foreign currency exposure. May involve either partial hedge or long-short, alpha-generating strategy.	Optimally yes: depends on manager timing and skill.	Will depend on objectives and leverage employed but a target of 1% to 3% is often cited.
Emerging Markets Currency	Return Enhancement	Discrete mandate, as opposed to hedging or overlay strategies. Investor is effectively short home currency and long emerging markets short-term instruments (but is fully funded).	Potentially.	8%, based on historical experience: significantly lower returns on cash collateral today will likely mute these returns going forward.
Active Currency Strategies	Combination Return Enhancement and Risk Reduction	These strategies are also discrete mandates, perhaps classified as absolute return for lack of a better home. Manager goes long attractive currency and short another to fund; therefore, investors can potentially put up very little capital (though many choose to fully fund). Primary strategies are carry, momentum, and value, each with very different characteristics, and an investor would likely want a combination of these exposures. May or may not include emerging markets currencies.	Potentially, but would again depend on manager timing and skill. Also, percent of total portfolio dedicated to such a strategy would have to be meaningful to serve as an effective hedge.	Will vary significantly depending on level of leverage employed. Over various historical periods active currency mandates have delivered 50% to 100% of equity returns with significantly less risk.

Exhibit 2

Annual Returns

1990–2011 • U.S. Dollar

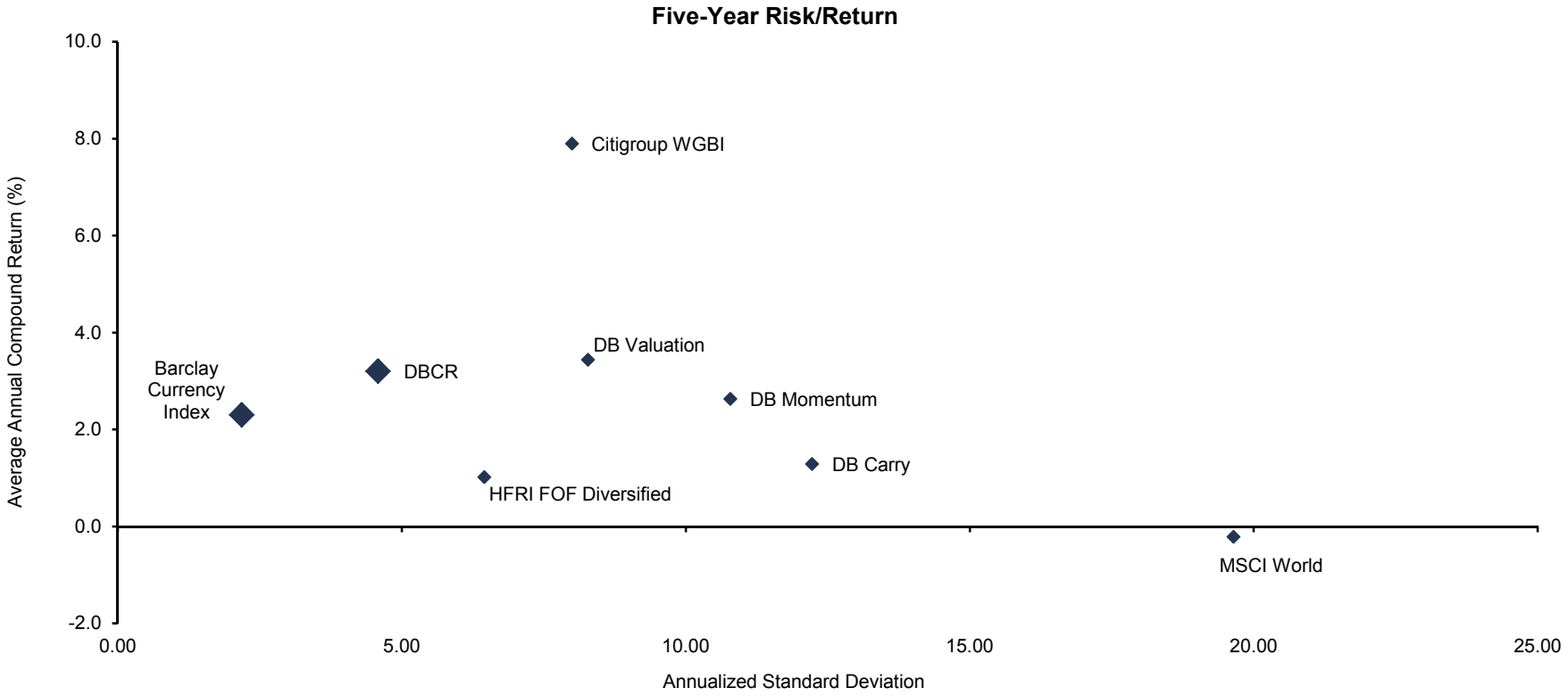


Sources: BarclayHedge, Ltd., Hedge Fund Research, Inc., MSCI Inc., and Thomson Datastream. MSCI data provided "as is" without any express or implied warranties.
Note: Data for 2011 are through August.

Exhibit 3

Five-Year Risk/Return and Sharpe Ratio

September 1, 2006 – August 31, 2011



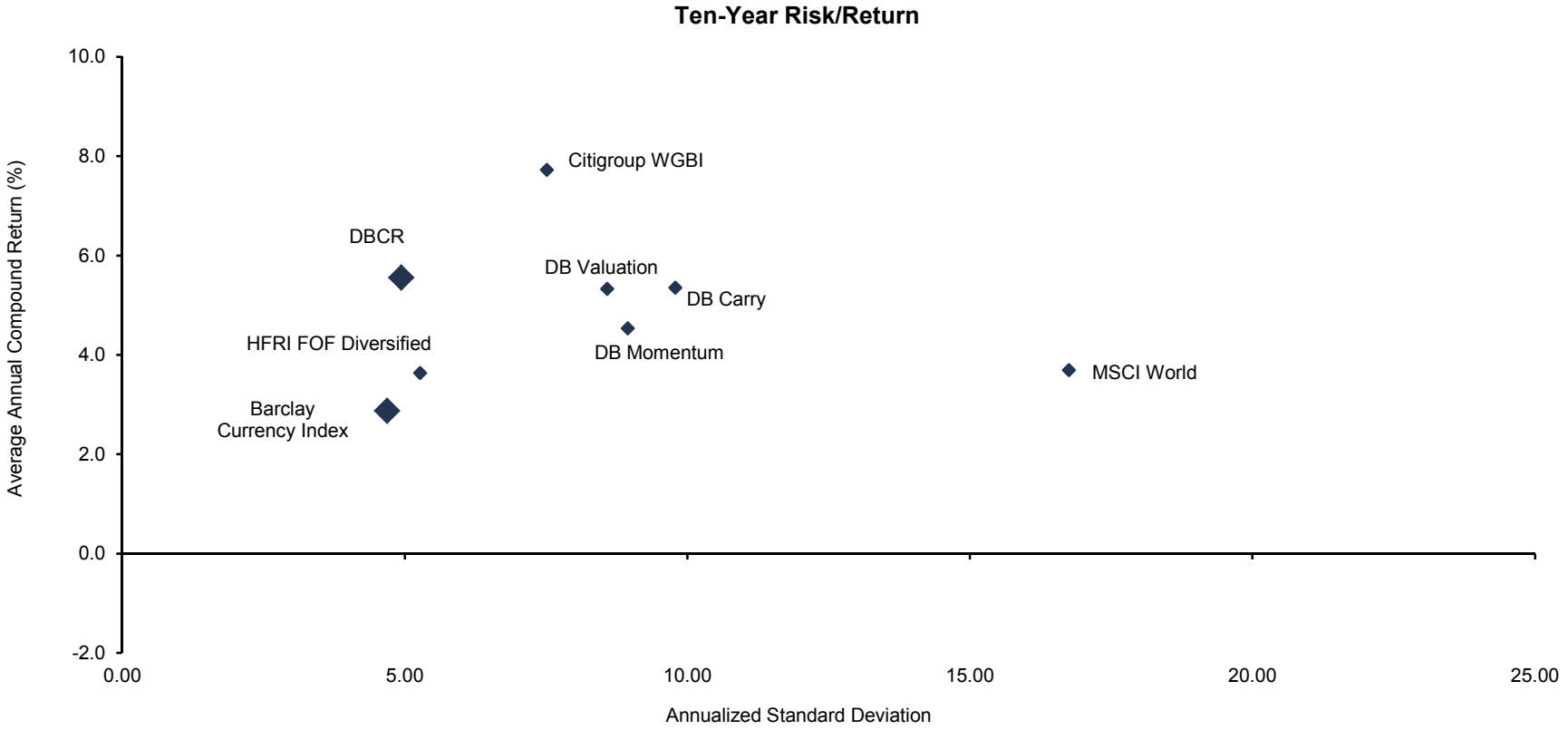
	DB Carry	DB Valuation	DB Momentum	DBCR	Barclay Currency Index	HFRI FOF Diversified	Citigroup WGBI	MSCI World
Five-Year AACR	1.29	3.44	2.64	3.21	2.30	1.02	7.90	-0.21
Five-Year Standard Deviation	12.22	8.28	10.78	4.58	2.18	6.45	8.00	19.64
Five-Year Sharpe Ratio	0.02	0.23	0.12	0.32	0.22	-0.09	0.77	0.00

Sources: BarclayHedge, Ltd., Bloomberg L.P., Citigroup Global Markets, Deutsche Bank, Hedge Fund Research, Inc., MSCI Inc., and Thomson Datastream. MSCI data provided "as is" without any express or implied warranties.
Notes: The Deutsche Bank Currency Returns (DBCR) Index is often reported net of cash collateral return. In our exhibits and analyses we chose to add the cash return, using the 91-day T-bill. This would be more representative of a fully funded strategy, and is consistent with the returns shown for the Deutsche Bank strategy indices.

Exhibit 4

Ten-Year Risk/Return and Sharpe Ratio

September 1, 2001 – August 31, 2011



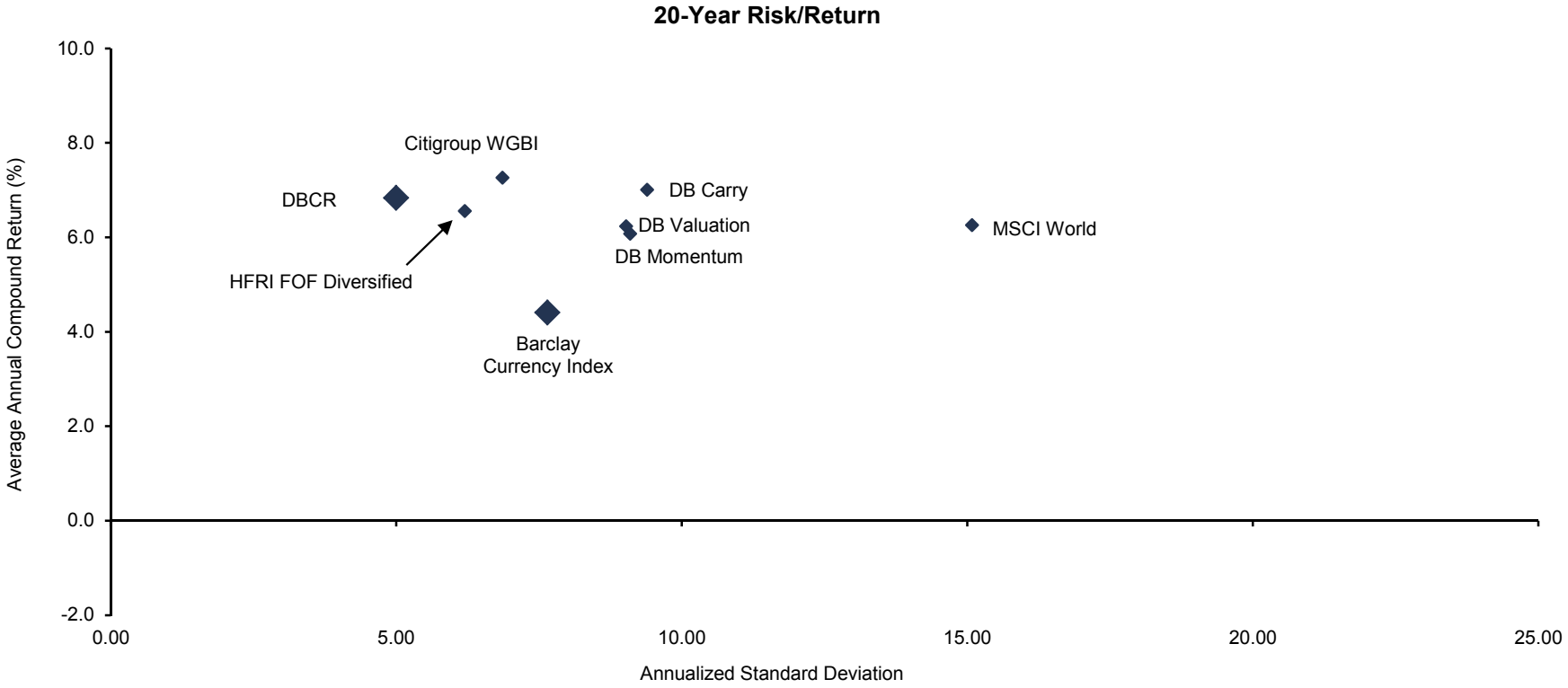
	DB Carry	DB Valuation	DB Momentum	DBCR	Barclay Currency Index	HFRI FOF Diversified	Citigroup WGBI	MSCI World
Ten-Year AACR	5.35	5.33	4.54	5.56	2.87	3.63	7.72	3.69
Ten-Year Standard Deviation	9.79	8.58	8.95	4.94	4.69	5.27	7.51	16.75
Ten-Year Sharpe Ratio	0.37	0.41	0.31	0.71	0.19	0.32	0.76	0.18

Sources: BarclayHedge, Ltd., Bloomberg L.P., Citigroup Global Markets, Deutsche Bank, Hedge Fund Research, Inc., MSCI Inc., and Thomson Datastream. MSCI data provided "as is" without any express or implied warranties.
Notes: The Deutsche Bank Currency Returns (DBCR) Index is often reported net of cash collateral return. In our exhibits and analyses we chose to add the cash return, using the 91-day T-bill. This would be more representative of a fully funded strategy, and is consistent with the returns shown for the Deutsche Bank currency strategy indices.

Exhibit 5

20-Year Risk/Return and Sharpe Ratio

September 1, 1991 – August 31, 2011



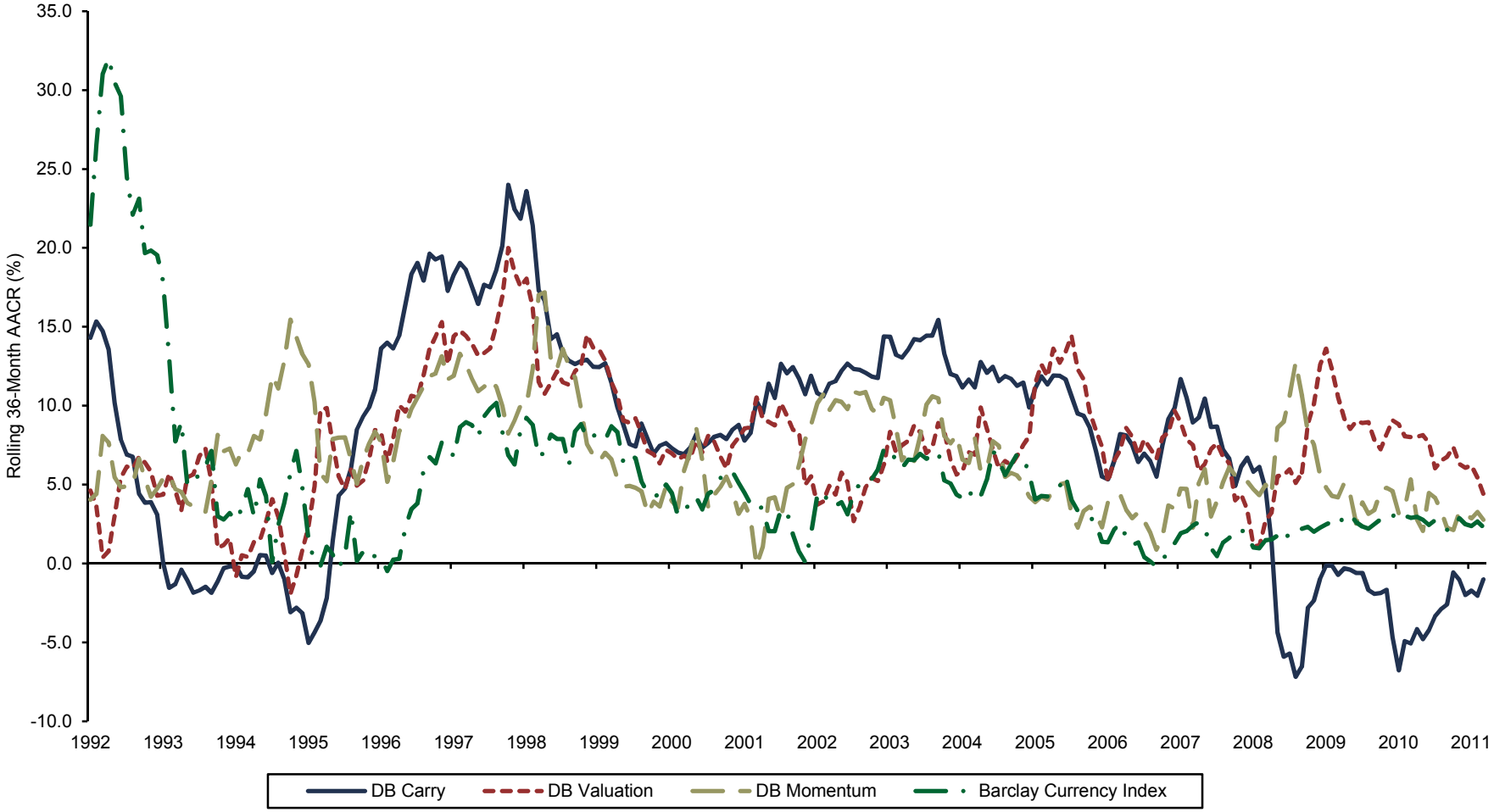
	DB Carry	DB Valuation	DB Momentum	DBCR	Barclay Currency Index	HFRI FOF Diversified	Citigroup WGBI	MSCI World
20-Year AACR	7.01	6.23	6.08	6.84	4.41	6.56	7.26	6.26
20-Year Standard Deviation	9.39	9.02	9.09	5.00	7.65	6.20	6.86	15.08
20-Year Sharpe Ratio	0.40	0.33	0.32	0.66	0.15	0.50	0.56	0.25

Sources: BarclayHedge, Ltd., Bloomberg L.P., Citigroup Global Markets, Deutsche Bank, Hedge Fund Research, Inc., MSCI Inc., and Thomson Datastream. MSCI data provided "as is" without any express or implied warranties.
Notes: The Deutsche Bank Currency Returns (DBCR) Index is often reported net of cash collateral return. In our exhibits and analyses we chose to add the cash return, using the 91-day T-bill. This would be more representative of a fully funded strategy, and is consistent with the returns shown for the Deutsche Bank currency strategy indices.

Exhibit 6

Rolling 36-Month Returns

July 1, 1989 – August 31, 2011

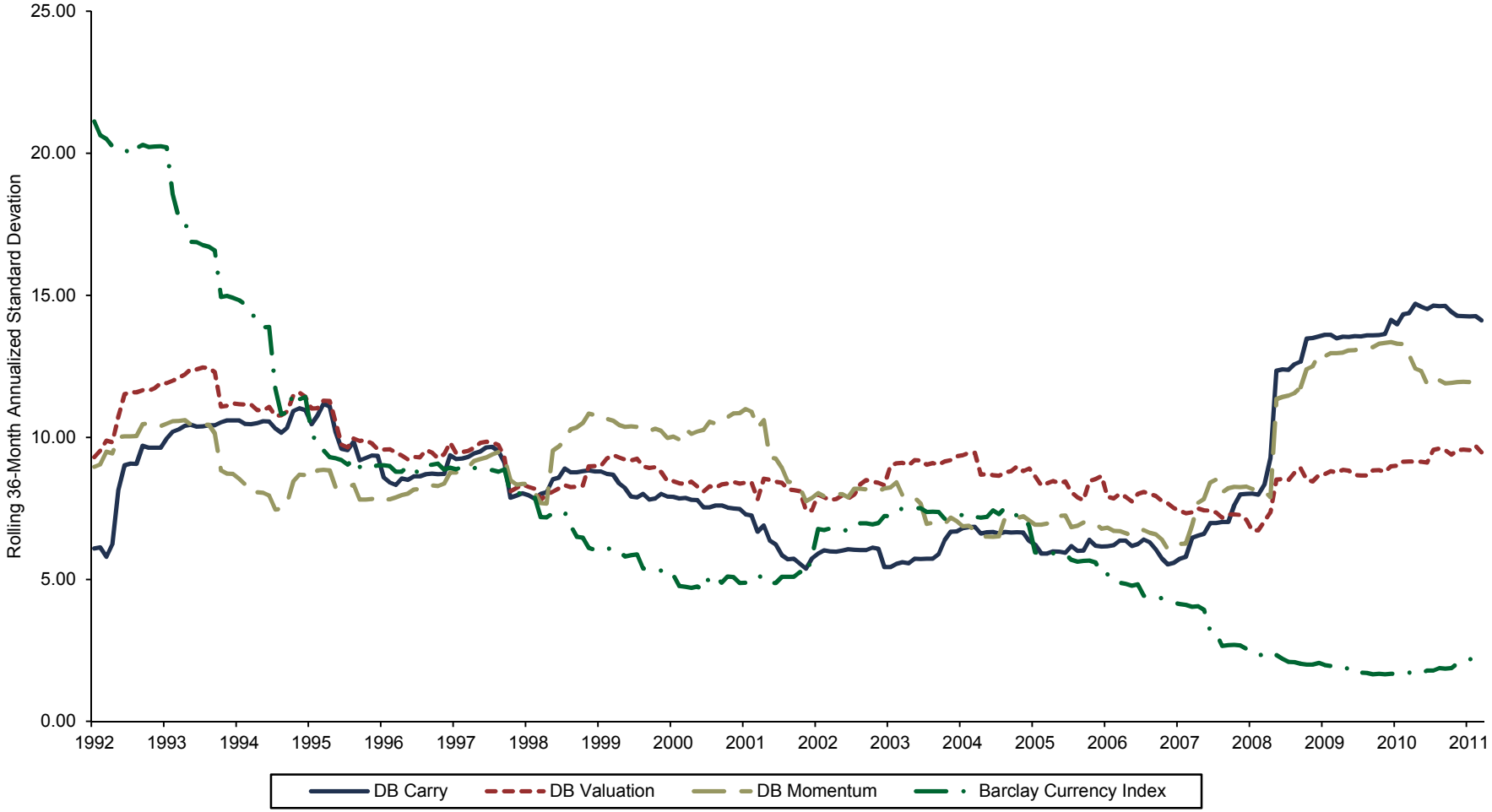


Sources: BarclayHedge, Ltd. and Deutsche Bank.

Exhibit 7

Rolling 36-Month Volatility

July 1, 1989 – August 31, 2011

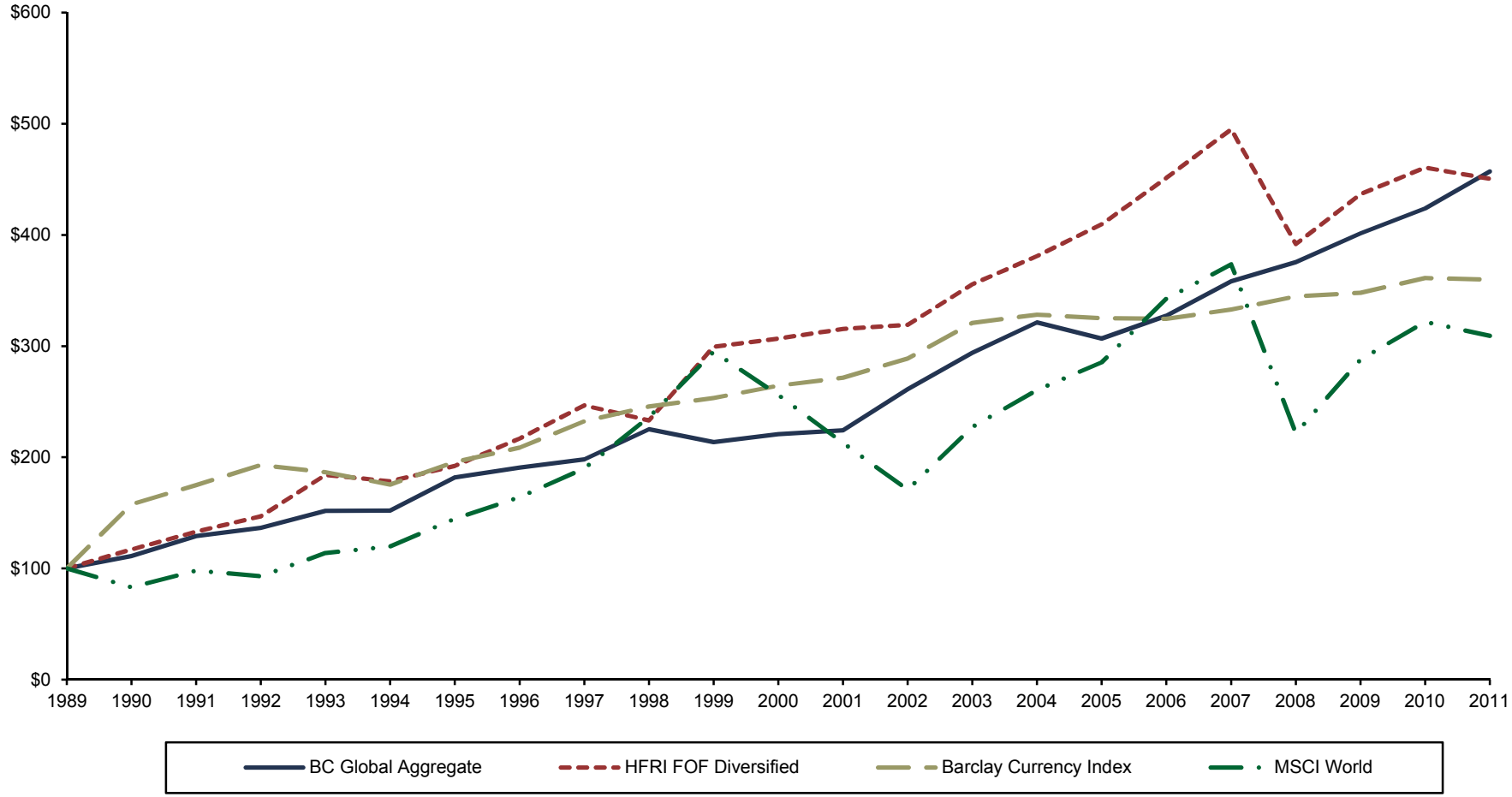


Sources: BarclayHedge, Ltd. and Deutsche Bank.

Exhibit 8

Cumulative Wealth of BarclayHedge Currency Index Versus Other Asset Classes

1990–2011 • U.S. Dollar • December 31, 1989 = $100

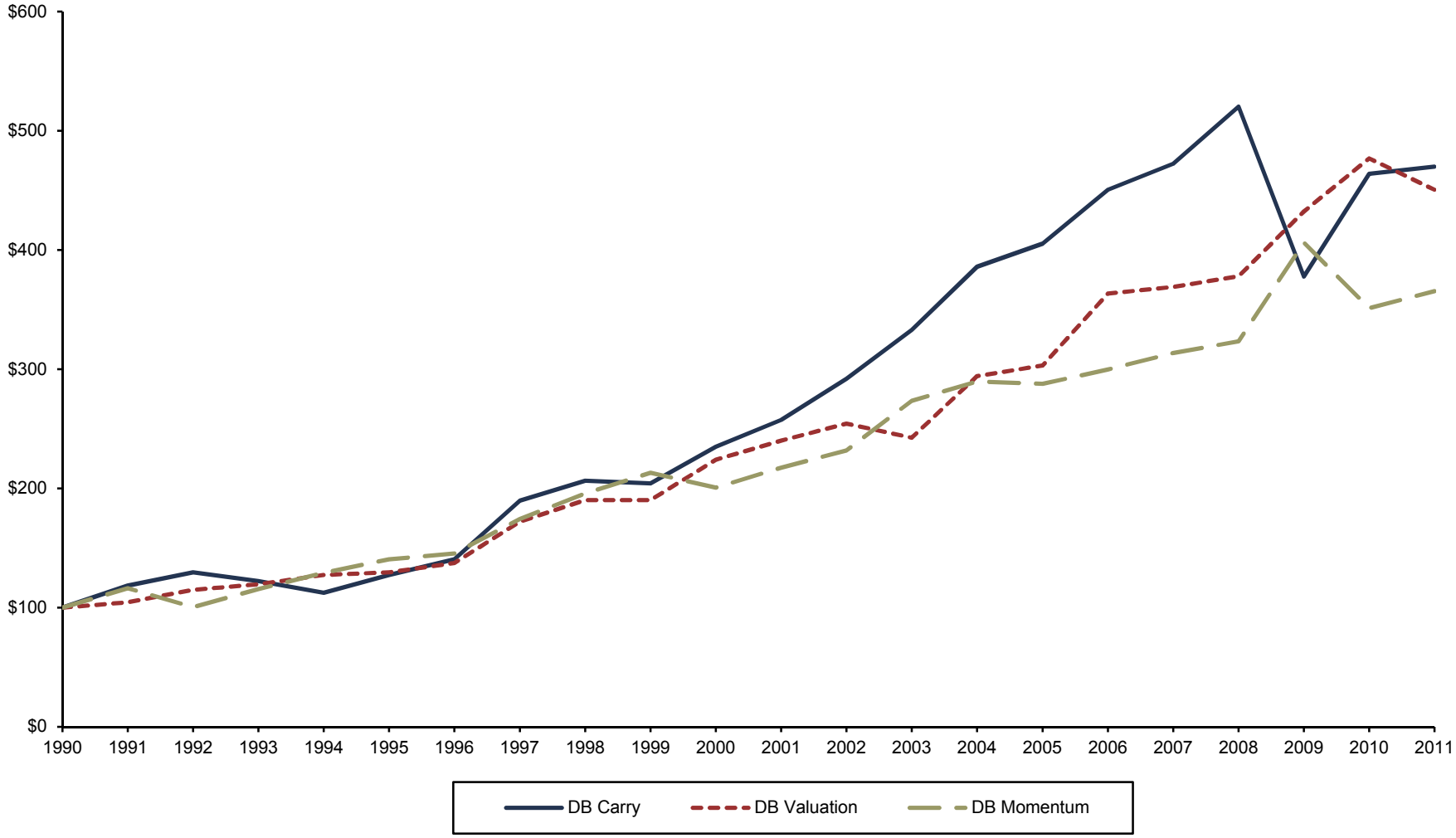


Sources: BarclayHedge, Ltd., Barclays Capital, Hedge Fund Research, Inc., MSCI Inc., and Thomson Datastream. MSCI data provided "as is" without any express or implied warranties.
Notes: Data are annual. Data for 2011 are through August.

Exhibit 9

Cumulative Wealth of Deutsche Bank Momentum, Valuation, and Carry Indices

1990–2011 • U.S. Dollar • December 31, 1989 = $100



Source: Deutsche Bank.
Notes: Data are annual. Data for 2011 are through August.

Exhibit 10

Correlations: Deutsche Bank and BarclayHedge Currency Indices and Global Benchmarks

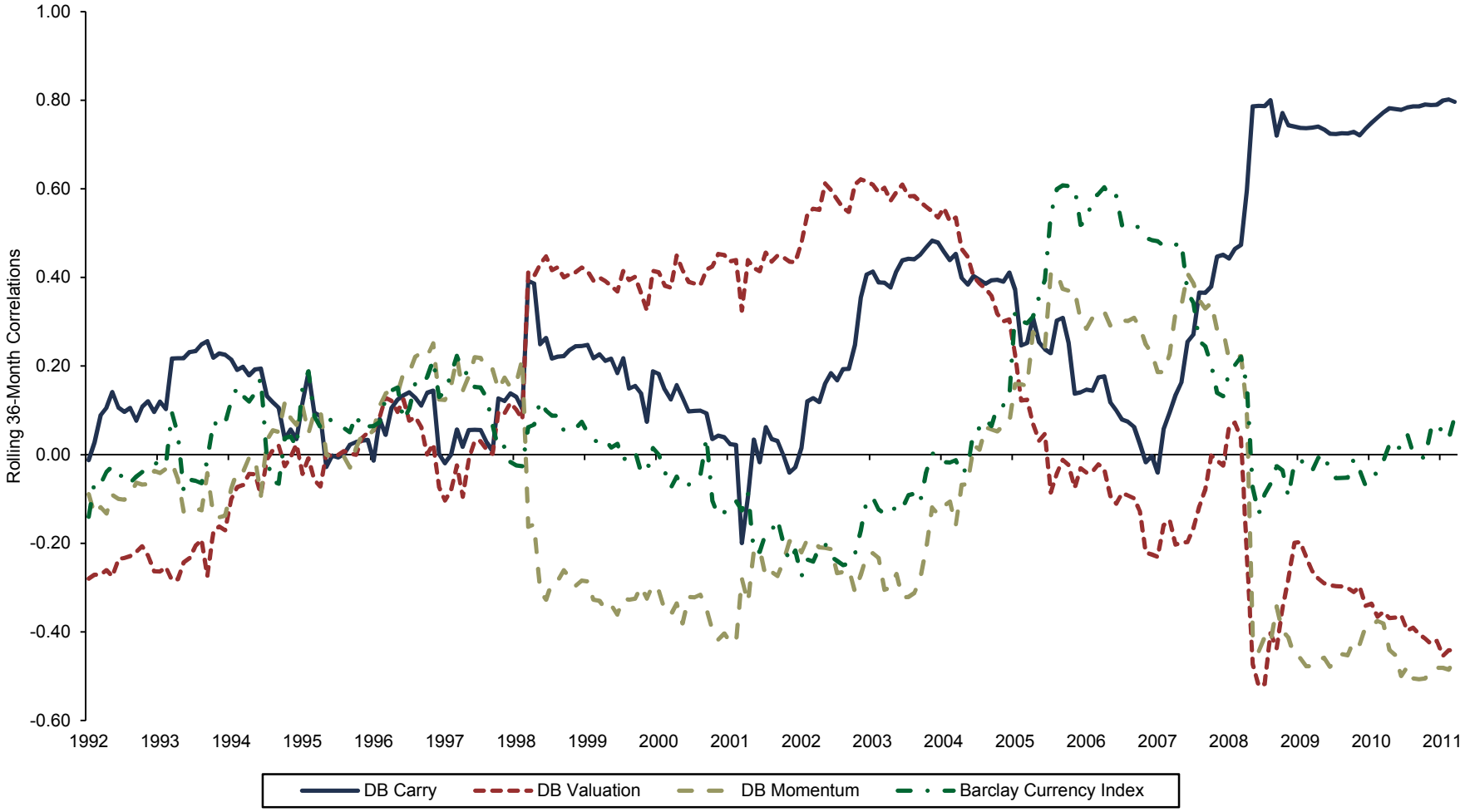
	DB Carry	DB Valuation	DB Momentum	DB Currency Returns	Barclay Currency Index	HFRI FOF Diversified	Citigroup WGBI	MSCI World
Five-Year Correlations: September 1, 2006 – August 31, 2011								
DB Carry	1.00							
DB Valuation	-0.27	1.00						
DB Momentum	-0.32	-0.02	1.00					
DB Currency Returns	0.45	0.36	0.50	1.00				
Barclay Currency Index	-0.01	-0.14	0.39	0.21	1.00			
HFRI FOF Diversified	0.73	-0.41	-0.14	0.25	0.16	1.00		
Citigroup WGBI	0.07	-0.30	-0.15	-0.23	0.28	0.00	1.00	
MSCI World	0.76	-0.36	-0.31	0.19	0.14	0.74	0.27	1.00
Ten-Year Correlations: September 1, 2001 – August 31, 2011								
DB Carry	1.00							
DB Valuation	0.06	1.00						
DB Momentum	-0.17	-0.05	1.00					
DB Currency Returns	0.57	0.59	0.47	1.00				
Barclay Currency Index	0.13	-0.07	0.41	0.29	1.00			
HFRI FOF Diversified	0.63	-0.16	-0.07	0.26	0.18	1.00		
Citigroup WGBI	0.06	-0.35	0.02	-0.14	0.40	0.05	1.00	
MSCI World	0.64	-0.05	-0.23	0.24	0.08	0.72	0.15	1.00
20-Year Correlations: September 1, 1991 – August 31, 2011								
DB Carry	1.00							
DB Valuation	0.11	1.00						
DB Momentum	-0.11	-0.15	1.00					
DB Currency Returns	0.62	0.58	0.45	1.00				
Barclay Currency Index	0.16	-0.09	0.16	0.14	1.00			
HFRI FOF Diversified	0.34	0.11	-0.05	0.24	0.15	1.00		
Citigroup WGBI	-0.04	-0.46	-0.02	-0.30	0.24	-0.03	1.00	
MSCI World	0.41	0.04	-0.18	0.16	0.07	0.61	0.19	1.00

Sources: BarclayHedge Ltd., Bloomberg L.P., Deutsche Bank, Citigroup Global Markets, Hedge Fund Research, Inc., MSCI Inc., and Thomson Datastream. MSCI data provided "as is" without any express or implied warranties.
Notes: The Deutsche Bank Currency Returns Index is often reported net of cash collateral return. In our exhibits and analyses we chose to add the cash return, using the 91-day T-bill. This would be more representative of a fully funded strategy, and is consistent with the returns shown for the Deutsche Bank currency strategy indices.

Exhibit 11

Rolling 36-Month Correlations With MSCI World

July 1, 1989 – August 31, 2011

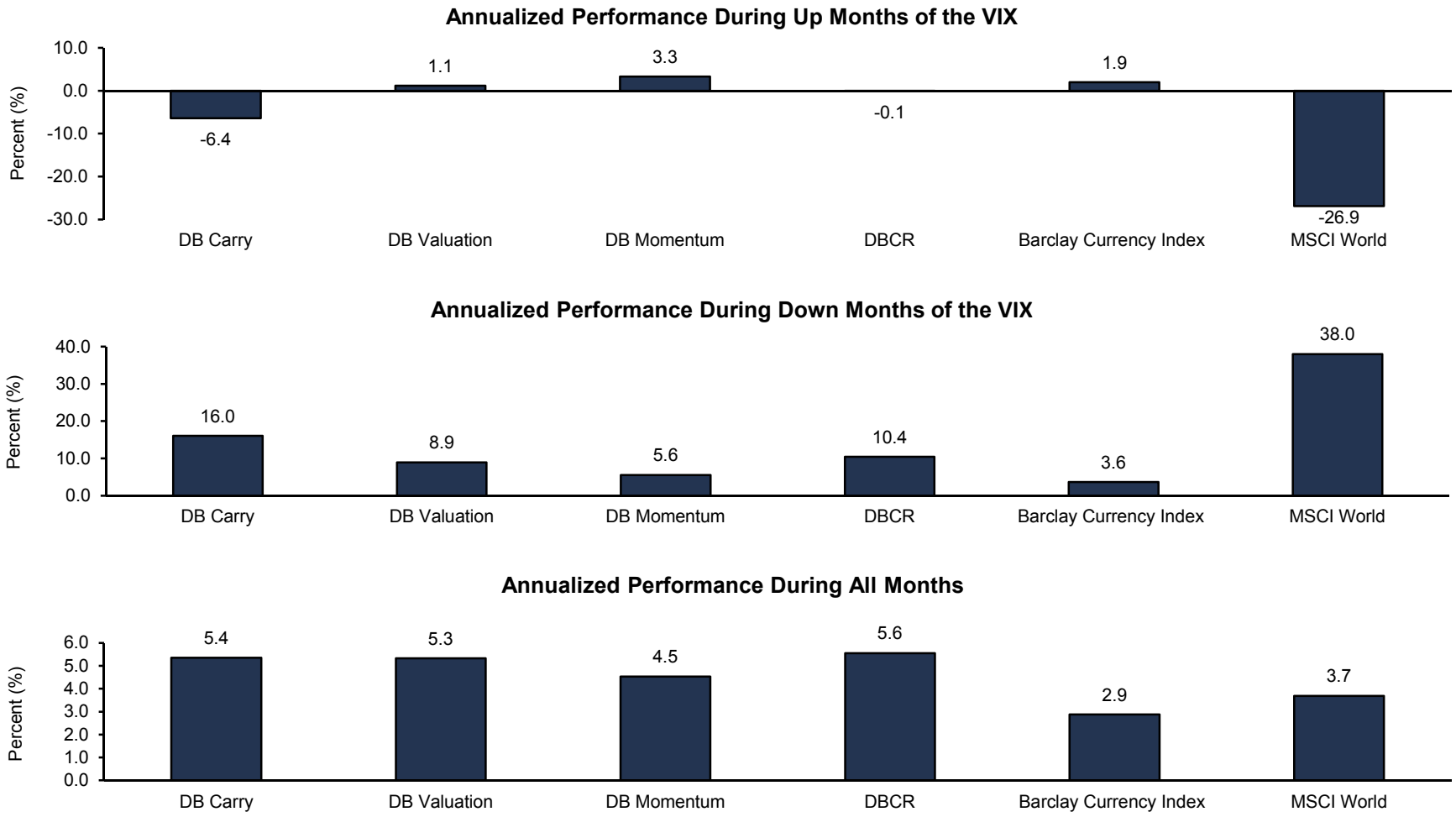


Sources: BarclayHedge, Ltd., Deutsche Bank, MSCI Inc., and Thomson Datastream. MSCI data provided "as is" without any express or implied warranties.

Exhibit 12

Up/Down Markets

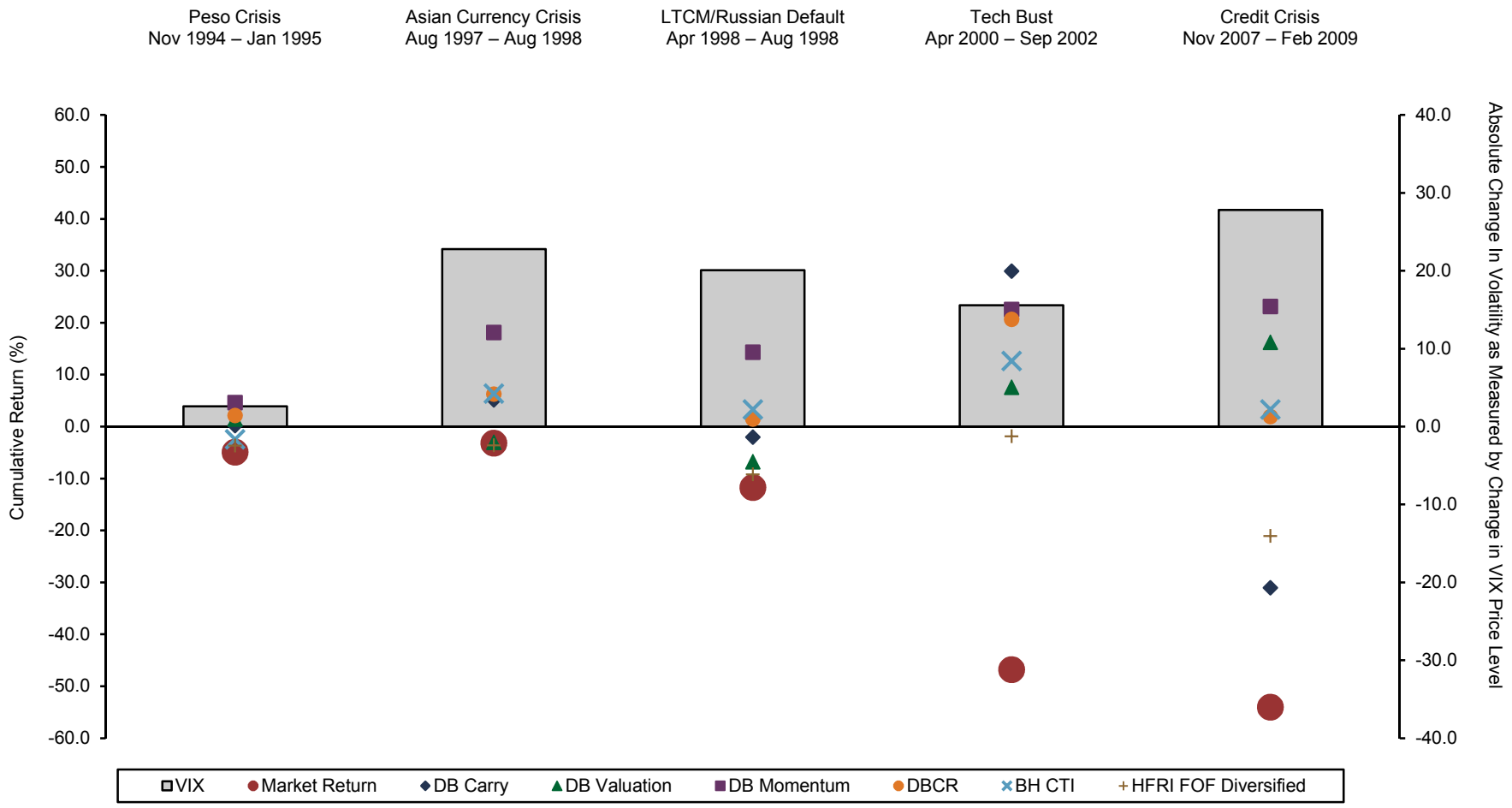
September 1, 2001 – August 31, 2011



Sources: BarclayHedge, Ltd., Bloomberg L.P., Deutsche Bank, MSCI Inc., and Thomson Datastream. MSCI data provided "as is" without any express or implied warranties.
Notes: The Deutsche Bank Currency Returns (DBCR) Index is often reported net of cash collateral return. In our exhibits and analyses we chose to add the cash return, using the 91-day T-bill. This would be more representative of a fully funded strategy, and is consistent with the returns shown for the Deutsche Bank currency strategy indices.

Exhibit 13

Active Currency Returns in Times of Stress

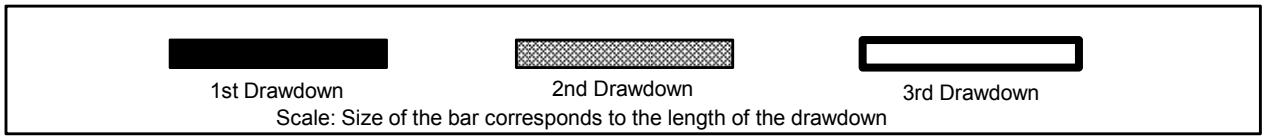


Sources: BarclayHedge, Ltd., Bloomberg L.P, Deutsche Bank, Hedge Fund Research, Inc., MSCI Inc., and Thomson Datastream. MSCI data provided "as is" without any express or implied warranties.
Notes: The Deutsche Bank Currency Returns (DBCR) Index is often reported net of cash collateral return. In our exhibits and analyses we chose to add the cash return, using the 91-day T-bill. This would be more representative of a fully funded strategy, and is consistent with the returns shown for the Deutsche Bank currency strategy indices. Market return represented by the MSCI World Index.

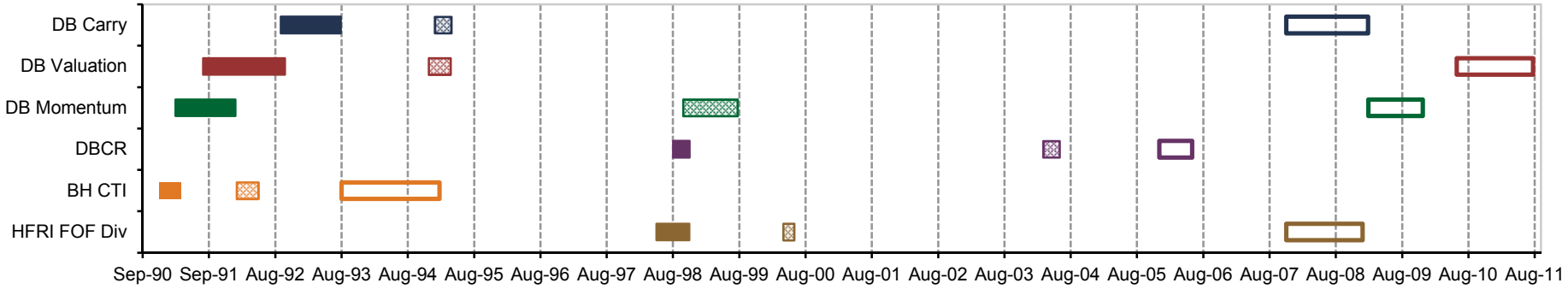
Exhibit 14

Client XYZ Multiple Manager Analysis: Three Worst Cumulative Drawdowns

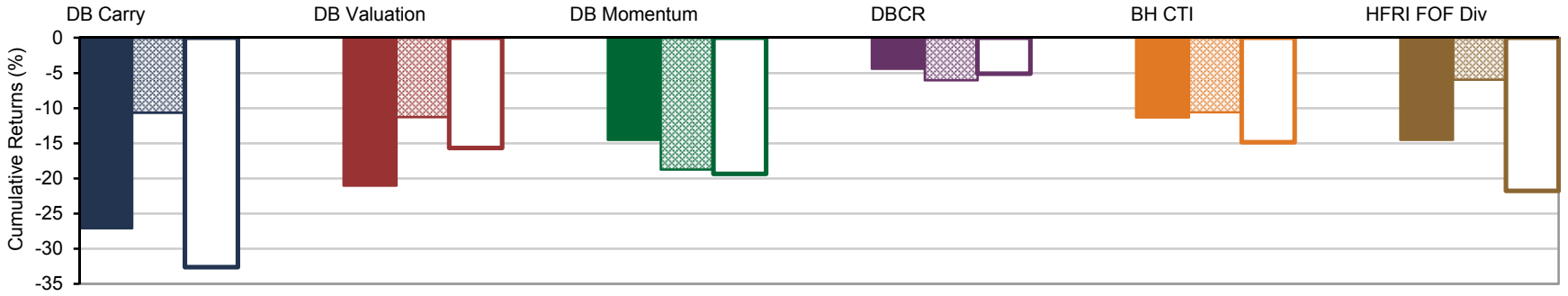
October 1, 1990 – August 31, 2011



When and How Long?



How Much?

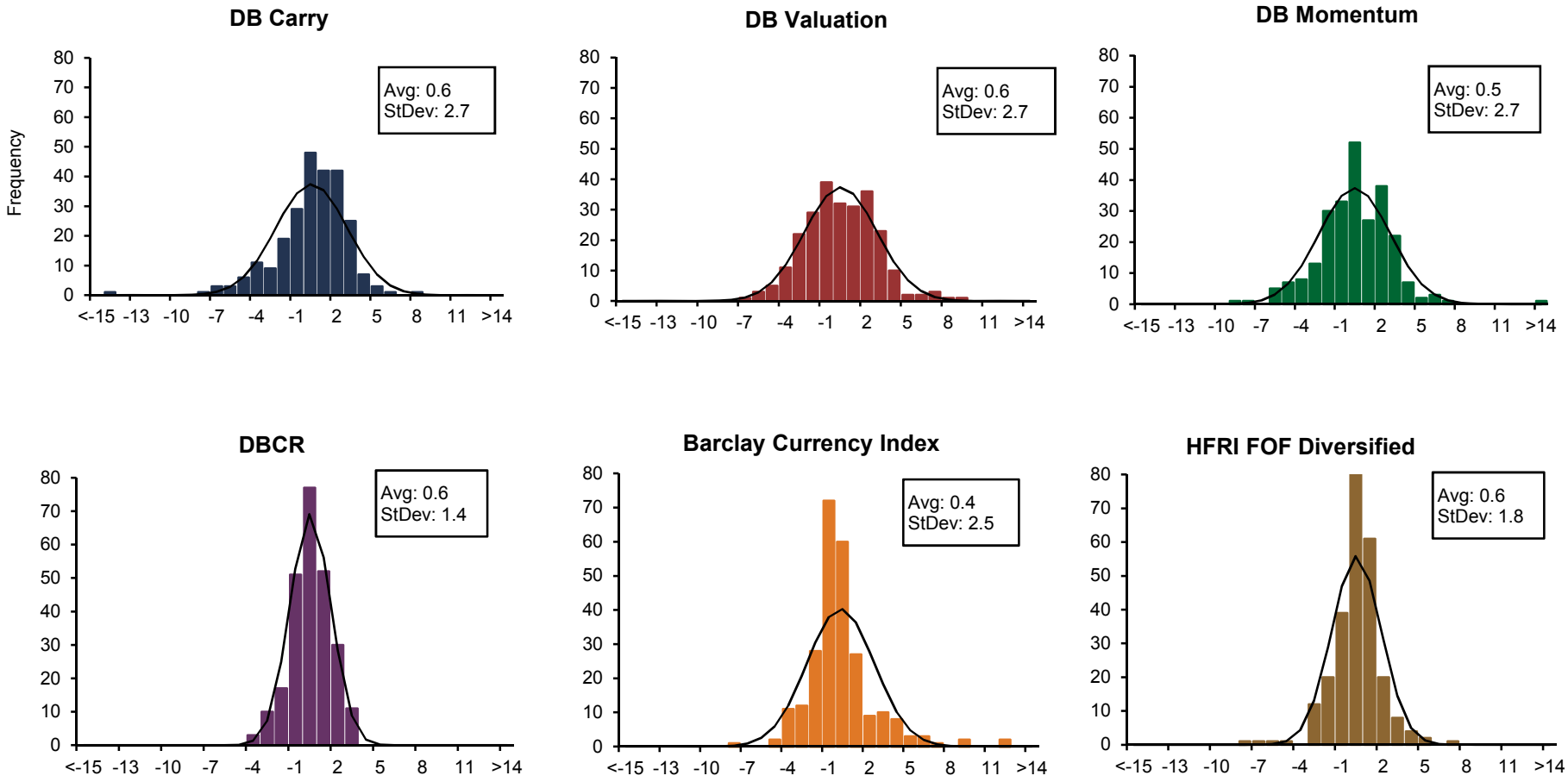


Sources: BarclayHedge, Ltd., Bloomberg L.P., Deutsche Bank, Hedge Fund Research, Inc., and Thomson Datastream.
Notes: The Deutsche Bank Currency Returns (DBCR) Index is often reported net of cash collateral return. In our exhibits and analyses we chose to add the cash return, using the 91-day T-bill. This would be more representative of a fully funded strategy, and is consistent with the returns shown for the Deutsche Bank currency strategy indices.

Exhibit 15

Client XYZ Multiple Manager Analysis: Distribution of Monthly Returns

October 1, 1990 – August 31, 2011



Sources: BarclayHedge, Ltd., Deutsche Bank, Hedge Fund Research, Inc., and Thomson Datastream.
Notes: The Deutsche Bank Currency Returns (DBCR) Index is often reported net of cash collateral return. In our exhibits and analyses we chose to add the cash return, using the 91-day T-bill. This would be more representative of a fully funded strategy, and is consistent with the returns shown for the Deutsche Bank currency strategy indices.

Exhibit 16

Implementing a Fully Funded, Active Currency Mandate

1. Investor partially funds strategy with 5% to 10% of the notional target exposure.

2. Manager invests cash in T-Bills for collateral (and yield).

3. Manager opens investor account and executes spot or forward transations. Manager does not need cash to trade.

4. Manager enters into spot or forward rate agreements with multiple counterparties for the account.

5. Profits give the investor three options: Harvest profits, increase the notional exposure, or overfund the account.

6. Losses may be handled three ways: To maintain fully funded status, contribute cash in the amount of the loss or reduce exposure by the amount of the loss. The third option, which introduces leverage, is to keep exposure the same and become partially funded.

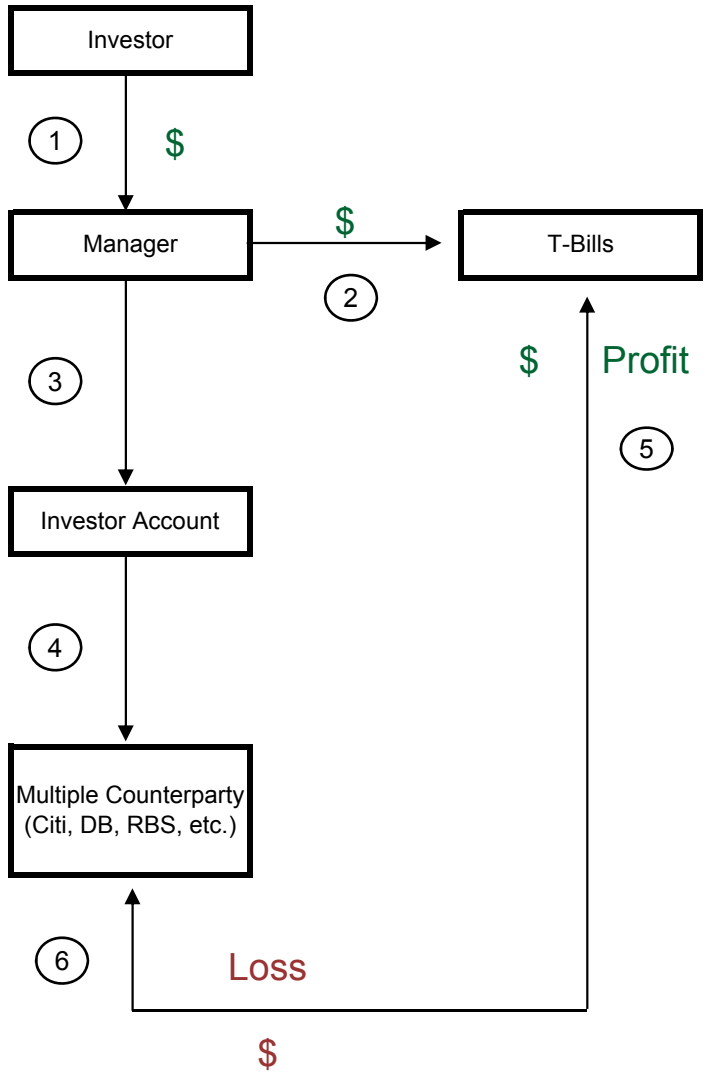


Exhibit 17

Implementing a Partially Funded, Active Currency Mandate*

1. Investor partially funds strategy with 5% to 10% of the notional target exposure.

2. Manager invests cash in T-Bills for collateral (and yield).

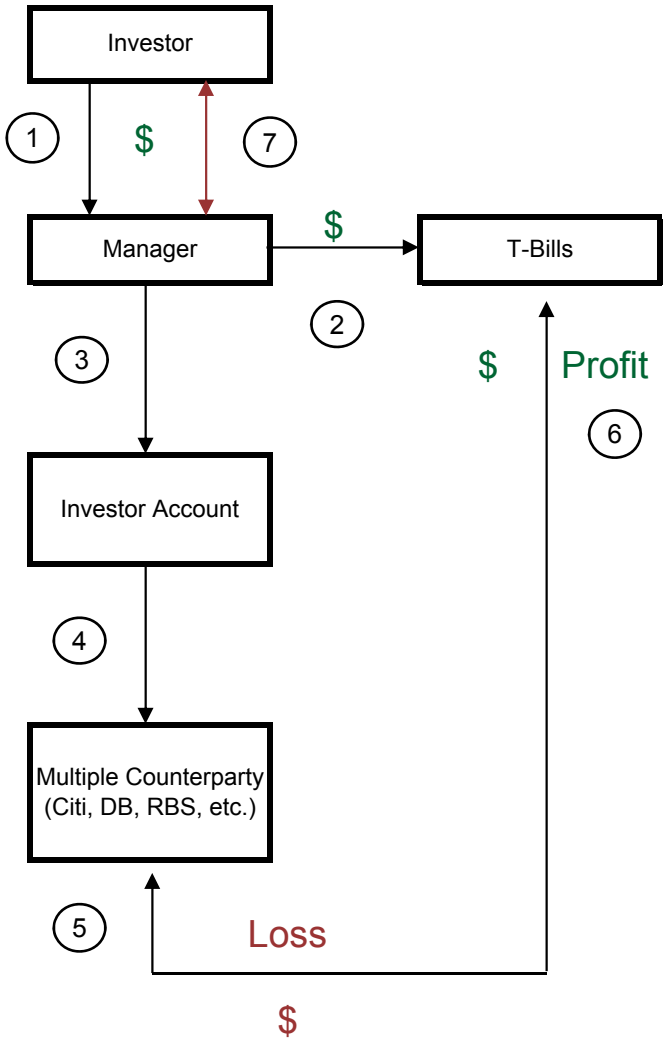
3. Manager opens investor account and executes spot or forward transations. Manager does not need cash to trade.

4. Manager enters into spot or forward rate agreements with multiple counterparties for the account.

5. At contract maturity, trades are settled and the net gain/loss is determined.

6. When the manager shows gains, the investor has three options: profits may be harvested, funding levels increased, or exposure increased (keeping funding levels constant).

7. When losses occur, the investor has two options: fund the losses through a cash contribution to maintain constant exposure, or decrease exposure to meet margin required (amount depends on initial margin posted).



* The mechanics for a partially funded mandate are the same for a discrete allocation and an overlay strategy.