Over the first eight years of this century, quantitative strategies established their reputation as an attractive source of alpha with a low correlation to that of more traditional equity strategies.

From 2000 to 2007, the number of quantitative strategies exploded and assets under management nearly quadrupled—from under $500 billion to over $1.8 trillion. The credit crisis, however, triggered a rapid reversal of this up-trend, leaving assets more than 50% below their peak.\(^1\)

Now, with volatility normalizing, hedge funds de-levered and less competition in the space, the environment appears to be increasingly favorable for quantitative investors. We believe this may be the time for investors to once again consider using these alpha diversifying strategies within their portfolios.

**Point of Inflection**

Despite their rapid rise to fame, quantitative strategies did not escape the pummeling experienced by most asset classes as the credit crisis unfolded. Quantitative strategies are generally driven by sophisticated statistical models designed to rank stocks on a variety of factors including valuation and momentum.\(^2\) Long/overweight positions are established in stocks identified as the most attractively valued (“cheap”) and/or exhibiting improving sentiment (momentum); stocks deemed “expensive” and/or with low momentum are held short or underweighted. A disciplined approach to this investment philosophy generally yielded a pleasant investment experience for quantitative investors through most of the 2000s.

Then, upon the dawn of the credit crisis in August of 2007, market dynamics changed. A series of three events led to a “perfect storm” of sorts for most quantitative investors:

- **August 2007: Leveraged quantitative hedge funds collapse**
  
  Highly leveraged quantitative hedge funds, facing both margin calls and investor redemptions, were forced to de-lever, causing a domino effect and a massive sell-off which disproportionately impacted performance of quantitative strategies.

- **Q1 2009: Valuation spreads widen to historical peaks**\(^3\)
  
  In the midst of the ensuing market mayhem, investors assumed a more risk-averse posture, favoring high quality, defensive stocks and shunning those that appeared

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\(^1\) Source: U.S. Quantitative equity funds that list AUM in eVestment.

\(^2\) Value and momentum factors tend to be some of the more common factors employed in quantitative investing, but many other “alpha” factors, including “quality,” are often used in implementation.

\(^3\) Value spreads are designed to capture the opportunity set between the most and least expensive stocks in a universe, based on value factors such as the difference in forward earnings yields.
“cheap”...and might become cheaper. As a result, valuation spreads gapped out and factor performance deteriorated.

- **March-May 2009: Price momentum signals capitulate**
  Finally, once it appeared that financial and policy initiatives might have succeeded in pulling markets back from the brink, return-starved investors began to re-risk—favoring valuation opportunities versus more defensive stocks. Momentum factors seemed to have shifted into reverse, with the lowest ranked stocks outperforming the highest ranked. The magnitude of momentum’s 2009 underperformance hadn’t been seen since the Great Depression.

At the conclusion of this massive market turnaround, many investors were left questioning whether the world had changed—and what the future was likely to hold for quantitative investors.

**Safe to Go Back in the Water?**

Now that the financial crisis has begun to ebb and markets, in many respects, are normalizing, is it safe to go back into quantitative waters? We believe it is, for the following reasons:

- The quantitative investment space has become less crowded and competitive
- Quantitative strategies can help to diversify risk within equity portfolios
- Market anomalies that drive quantitative alpha opportunities have endured

**Cleansing tide**

One of the often-made observations regarding quantitative strategies is that most quant models tend to be driven by similar factors; when a buy/sell signal is triggered, managers tend to move in the same direction, magnifying market swings and creating liquidity issues.

Although we’d likely disagree with such a claim, the events of the last three years have clearly provided an antidote to quantitative overcrowding. After peaking in early 2007, over 50% of quantitative assets left the space, along with roughly 25% of quant strategies. De-levered hedge funds, greater circumspection among leverage providers and the restrictions of the “Volker Rule” on proprietary trading should serve to reduce the number of quantitative strategies employed in the market place. The net result of all these factors can be viewed as positive for the remaining quantitative players. Less assets chasing the “market anomalies” that quantitative strategies are designed to exploit, in our view, should lead to greater potential for alpha generation.

**Counter-currents**

While quantitative strategies may sometimes move in similar directions, they represent a source of excess returns (alpha) that historically has had a low correlation to that of fundamentally driven strategies. In fact, our analysis suggests little to no correlation between alpha generated by quantitative versus fundamental managers. The pair-wise correlations of excess returns between fundamental and quantitative managers averaged only .10, lower than the average manager correlation within either of these two groups. This low correlation suggests that blending quantitative and fundamental strategies within a portfolio may provide an opportunity to enhance excess return while managing risk.

**Persistent anomalies**

The value and momentum factors driving many quantitative models are designed to identify and benefit from observable market phenomenon, namely:

- “Cheap stocks outperform expensive stocks” (value factors) and...
- “Stocks with improving earnings expectations outperform those with less positive or declining earnings outlooks.” (momentum factors)

Behavioral finance attempts to explain these anomalies and history supports their persistence. For example, when stocks in the Russell 1000 Index were ranked into deciles on the basis of price/earnings ratios (with deciles rebalanced each month, from 1991 through 2010) excess returns for “cheaper” stocks exceeded those for the more expensive stocks (Exhibit 1A).

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4 Source: U.S. Quantitative equity funds that list AUM in eVestment.
5 Source: eVestment, J.P. Morgan, January 2004 through 2008, including 1,171 fundamental and 301 quantitative managers.
Similarly, when stocks were ranked on the extent of upward revisions to analysts’ earnings forecasts, those expected to have more improved earnings outperformed those with less improved or declining analyst forecasts (Exhibit 1B).

So, while quantitative signals may be less effective at market inflection points—and, as we will see, thrive with more or less vigor under different market conditions—the market anomalies driving quantitative strategy performance have endured over time and we believe they will continue to do so.

**When Quantitative Strategies Thrive**

Irrespective of the long-term efficacy of many quantitative factors, we conducted a test to determine the types of environments that appear to be most (and least) conducive to a quantitative approach. *Our results suggest that the current market exhibits several important characteristics of environments in which quantitative models have been shown to thrive (Exhibits 2A-B and 3A-B, next page).*

**Putting quantitative models to the test**

Based on historical back tests of representative quantitative models, we find that, while composite quantitative factors may be effective in generating alpha under most market environments, they appear to be (Exhibit 3A):

- Most efficacious in low-to-intermediate volatility regimes and...
- most challenged in high volatility regimes.
- High volatility periods (often associated with market inflection points) are particularly challenging for momentum factors.

Additionally, when regimes are defined in terms of value spreads (i.e., a measure of the potential opportunity between the most and least expensive stocks in a universe, based on value factors such as forward earnings yields) composite factors are (Exhibit 3B):

- Most efficacious when value spreads are in a broad mid-range and...
- most challenged when value spreads are at extreme highs or lows.
- Periods when spreads are at their widest are especially challenging for momentum factors.

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5 Based on J.P. Morgan behavioral finance multi-factor models.
Based on quintiles defined over time (January 1992-January 2011), today’s markets exhibit:

...average volatility (3rd quintile)...

**EXHIBIT 2A: VOLATILITY (VIX) QUINTILES OVER TIME**

Quantitative factors can generate alpha across a wide range of market environments, but appear most effective:

...in low to intermediate volatility regimes...

**EXHIBIT 3A: AVERAGE ANNUAL ALPHA BY VOLATILITY (VIX) QUINTILE**

...and average value spreads.

**EXHIBIT 2B: VALUE SPREAD QUINTILES OVER TIME**

...and when value spreads are in a broad mid-range.

**EXHIBIT 3B: AVERAGE ANNUAL ALPHA BY VALUE SPREAD QUINTILE**

Source: J.P. Morgan, Bloomberg.

Volatility quintiles (Exhibit 2A) are calculated using historical Chicago Board Options Exchange Market Volatility Index (VIX) data from January 1992-January 2011. Time periods are ranked into quintiles (from low (Q1) to high (Q5) volatility). Similarly, value spread quintiles (Exhibit 2B) are calculated using J.P. Morgan’s proprietary value factors from January 1992-January 2011. Time periods are ranked into quintiles on the basis of value spreads (spread between “cheap” and “expensive” stocks, from narrowest (Q1) to widest (Q5) spread).

Average annual alpha by volatility quintile (Exhibit 3A) and by value spread quintile (Exhibit 3B) illustrate results from back tested performance for J.P. Morgan’s large cap value and momentum and small cap value and momentum models (applied to the Russell 1000 and Russell 2000 universes, respectively).

Currently conducive to quant

As seen in Exhibits 2A and 2B, both volatility and value spreads are currently in a mid-range, the type of environment which our analysis suggests, is very well suited to quantitative investing.

What’s more, history suggests that value and momentum investing tend to rebound strongly after periods of underperformance (Exhibit 4).
Time to Reconsider Quantitative Investing?

Of course, current geopolitical unrest in the Middle East and North Africa, repercussions from the tragic events in Japan, continued distress among the euro zone’s peripheral economies and concerns over inflationary pressures in the emerging markets could elevate market volatility levels. However, as we continue to emerge from the dramatically volatile environment of the credit crisis to one of relatively subdued volatility, more normal value spreads and fewer quantitative assets chasing alpha-generating opportunities, we believe this may be an opportune time to revisit these alpha-diversifying strategies and consider their potential for enhancing returns and improving portfolio diversification.

Source: J.P. Morgan, K. French Data Library, Performance of a top quintile value and price momentum strategy relative to a cap-weighted index consisting of all NYSE, AMEX and NASDAQ firms, 1927-2010.
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