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## ADVANTAGES OF A QUANTITATIVE APPROACH

Over the last four decades the exponential growth in computing power, the development of sophisticated analytical tools, and significant improvements in the accuracy and size of research databases have led to tremendous advances in the fields of finance, econometrics, and statistics. As a result, quantitative portfolio management strategies have become increasingly more powerful and effective for all asset classes.

Properly designed and implemented quantitative strategies can provide meaningful return, risk, and cost advantages over traditional subjective strategies. Their growth has been steady in recent years as investors are recognizing the disciplined manner in which **quantitative strategies can increase the probability of long-term success.**

### RETURN ADVANTAGES

#### ◆ Quantitative strategies can be time-tested to determine the significance of their edge:

The primary objective of active portfolio management is to generate positive risk-adjusted returns relative to a passive index - which is generally investable. Given that the capital markets are fairly efficient and that the additional costs<sup>1</sup> associated with active management can be high, generating meaningful excess returns in a consistent and sustainable manner is a notable challenge. With this in mind, it is critical that managers have a well-defined, statistically significant if they are expected to outperform.

Quantitative strategies are rooted in statistics that can be empirically tested over long periods of time. This also allows the same methodology to be studied in various market environments to better understand their behavior. Accordingly, any edge can be statistically evaluated as to its significance, and allocation decisions can be made with greater confidence. In addition to Midwest's internal research (1968 to 2007<sup>2</sup>), there are several independent long-term studies (1937 to 1962<sup>3</sup>; 1968 to 1990<sup>4</sup>; 1951 to 2003<sup>5</sup>) that clearly demonstrate the meaningful edge that can be achieved with a properly designed and implemented quantitative strategy.

Conversely, many (if not the majority) of managers rely on subjective forecasts and qualitative judgments that are difficult to quantify. As a result, few managers have the data necessary to confidently determine the true drivers or significance of their edge. Without this information, it is difficult to ascertain whether their investment performance is the result of skill or simply luck

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<sup>1</sup> Portfolio management fees, transaction costs (commissions and markups/markdowns), market impact costs, etc.

<sup>2</sup> Please contact us for details.

<sup>3</sup> Francis S. Nicholson, "Price Ratios in Relation to Investment Results," *Financial Analyst Journal* 24 (Jan/Feb 1968):105-109.

<sup>4</sup> Josef Lakonishok, Andrei Shleifer, and Robert Vishny, "Contrarian Investment, Extrapolation, and Risk," *Journal of Finance* 49 (Dec 1994): 1541-1578.

<sup>5</sup> James P. O'Shaughnessy, *What Works on Wall Street*, 3<sup>rd</sup> ed. (New York, NY: McGraw-Hill, 2005).

## ◆ Quantitative strategies can eliminate behavioral biases from the process:

Due to their subjective nature, many traditional strategies suffer from various behavioral and emotional biases<sup>6</sup> which can hinder consistently superior results. Greed and fear are powerful forces, and research in behavioral finance provides compelling evidence that investors often act irrationally, and repeatedly make sub-optimal decisions when confronted with uncertainty.<sup>7</sup>

By eliminating behavioral biases from the investment process, a sound quantitative strategy enables investors to make decisions that are emotionally difficult, but have the highest probability of generating superior long-term results. Accordingly, temporary price fluctuations and random market “noise” do not cause sub-optimal short-term deviations from a viable long-term plan. This discipline allows quantitative strategies to exploit behavioral inefficiencies, rather than contribute to them.

## ◆ Quantitative strategies can evaluate a large opportunity set:

Because investment decisions are usually driven by objective computer models, a vast number of securities can be monitored and evaluated on a real-time basis to efficiently identify and capitalize on the best reward/risk opportunities. This is in stark contrast to traditional strategies which are significantly constrained by the tremendous amount of time and resources required to subjectively evaluate each security individually. The number of securities that can be effectively monitored in this manner is limited, and consequently many attractive opportunities are missed with regularity. This opportunity cost often outweighs the benefits of additional security-specific insights generated through such a case-by-case process.

## RISK ADVANTAGES

### ◆ Quantitative strategies can identify virtually all sources of risk in a portfolio:

Effective risk management is crucial to long-term investment success. It is important to understand the sources of risk in a portfolio, and then how these risks eventually translate into investment returns. Investors should expect to be rewarded for exposure to systematic market, sector, and style risks. However, security-specific and other non-systematic risks often go uncompensated since they can be effectively eliminated through diversification.

Comprehensive empirical research into the nature of these risks is the foundation of sound quantitative strategies. Statistical analysis can be used to separate risks that should be well-rewarded from those that are not, and exposure can be managed accordingly.<sup>8</sup> With

<sup>6</sup> Amos Tversky, and Daniel Kahneman, “Judgment under Uncertainty: Heuristics and Biases,” *Science* 185 (Sep 1974): 1124-1131.

<sup>7</sup> Meir Statman, “Behavioral Finance: Past Battles and Future Engagements,” *Association for Investment Management and Research* (Nov/Dec 1989): 18-27.

<sup>8</sup> Louis Chan, Jason Karceski, and Josef Lakonishok, “The Risk and Return from Factors,” *Journal of Financial and Quantitative Analysis* 33 (Jun 1988): 159-188.

traditional strategies the underlying risks are often unclear, and portfolios can be inadvertently exposed to many which are either unnecessary or lack adequate compensation.

## ◆ Quantitative strategies can reduce operational risks:

Investors are also subject to manager-specific operational risks that can lead to sub-par performance. These risks are notably less severe with quantitative strategies:

- ◆ Style drift: Because quantitative strategies are well-defined, consistent, and disciplined, they should not be subject to style drift.
- ◆ Management turnover: The departure of key managers at quantitative firms has little impact as the investment strategies are mechanical and not dependent on the subjective abilities of any single individual.
- ◆ Ethical and legal risk: A quantitative portfolio can be constructed to address most investor concerns (social, environmental, etc.). Once established only minor adjustments should be necessary and legal issues (insider trading, front-running, etc.) should be virtually non-existent.
- ◆ Transaction and other errors: A quantitative structure can reduce these events and, equally important, make them more transparent to fiduciaries.

## ◆ Quantitative strategies can reduce the risk of being fooled by randomness:

As previously mentioned, it is difficult for investors to differentiate skill from luck when evaluating active managers. Even a superior track record is insufficient evidence of investment skill, as research has shown that past performance is generally an unreliable indicator of future success.<sup>9</sup> Therefore, additional information is necessary to make an informed determination. Because quantitative strategies can be tested over long periods of time and risks can be thoroughly researched, investors have more data on which to base their decisions. This enables them to differentiate skill from luck with greater confidence, reduces their risk of being fooled by randomness,<sup>10</sup> and helps to protect those with a fiduciary responsibility.

## ◆ Quantitative strategies can help investors to maintain confidence:

The increased informational content of quantitative strategies helps investors to maintain confidence during inevitable periods of underperformance. Without this confidence, investors often abandon a strategy due to increased uncertainty regarding the manager's skill. Research indicates that this is not an optimal response, as the managers fired by institutional investors tend to subsequently outperform those that are hired.<sup>11</sup> The discipline to maintain confidence and objectivity in the face of short-term underperformance is an important characteristic of successful long-term investors, and quantitative strategies enable that ability.

<sup>9</sup> Mark M. Carhart, "On Persistence in Mutual Fund Performance," *The Journal of Finance* 52 (Mar 1977): 57-82.

<sup>10</sup> Nassim N. Taleb, *Fooled by Randomness: The Hidden Role of Chance in Life and in the Markets*, 2<sup>nd</sup> ed. (New York: Texere, 2004).

<sup>11</sup> Amit Goyal, and Sunil Wahal, "The Selection and Termination of Investment Management Firms by Plan Sponsors," (AFA 2006 Boston Meetings Paper, May 2005)

## ◆ Quantitative strategies can further diversify a multi-manager portfolio:

Because quantitative strategies identify opportunities in a unique manner, they are an excellent complement to traditional strategies already employed in a multi-manager portfolio. Their low correlation can help to decrease aggregate risk and improve return consistency.

## COST ADVANTAGES

### ◆ Quantitative strategies can be highly cost-effective:

Although often downplayed (especially during periods of superior performance), expenses have a dramatic impact on long-term portfolio growth when compounded over time. If excessive, they can quickly consume the excess returns generated by a skilled manager.

Because meaningful excess returns are difficult to consistently generate in a fairly efficient market, any manager that can minimize expenses has a notable advantage. Moreover, research indicates that not only do low-cost managers outperform on average, but they do so by a greater amount than their cost savings.<sup>12</sup>

As quantitative strategies are driven by objective computer models, portfolios can be managed more efficiently and at lower cost than most traditional strategies. By eliminating the need for expensive and time-consuming qualitative research into each security in the portfolio, quantitative strategies can often save more in expenses than traditional strategies can generate through their deeper understanding of unique security-specific characteristics.

## CONCLUDING REMARKS

The capital markets are complex, and the irrationality of human nature makes it difficult for an individual to efficiently capture and objectively process all the pertinent information. By reducing the investment equation to key time-tested variables and by eliminating subjectivity and emotion from the process, quantitative strategies can usually perform this function in a more optimal manner.

Although no single approach can guarantee future success, and quantitative strategies are not the sole solution to every investor's needs, their specific advantages make them quite viable in today's highly uncertain market environment. By helping investors more effectively manage their return, risk, and expenses, properly designed and implemented quantitative strategies can help shift the probability of long-term success more greatly in their favor.

***“In the long-run, facts overpower emotions, but only if you let them.”***

- James P. O'Shaughnessy  
*Author, What Works on Wall Street*

<sup>12</sup> John C. Bogle, *Common Sense on Mutual Funds*, New ed. (New York: John Wiley and Sons, 2000), p. 67-81.