

Beta

Digging Deeper into mutual fund performance metrics

This brief is the first in a series discussing performance metrics that are important to mutual fund investors. Absolute performance is vital, but does it tell the whole story? If it did, nobody would ever invest in the trillions of dollars of U.S. Government securities which currently yield only a few basis points. While this is an extreme example, it does highlight the central principle of the Capital Asset Pricing Model (CAPM), which says that there are two factors driving compensation to investors: The time value of money, and risk. While the time value of money is generally represented by the "risk-free rate" (the yield on said government securities), risk is more open to interpretation. One commonly accepted method of understanding the risk of an investment is by calculating its beta.

Beta: What is it?

Beta (β) may be the second letter of the Greek alphabet, but it's a good first step in assessing risk. And while beta is commonly calculated for individual stocks, it is equally suited for use in the analysis of a portfolio, such as a mutual fund portfolio. The beta of a portfolio of stocks represents the weighted sum of the individual stock betas in that portfolio.

Beta, simply put, tells you how sensitive an investment is to moves in the overall market. In most applications, "the market" is represented by choosing a proxy, such as the S&P 500 (or some other relevant index) and a time period. By definition, the market will have a beta of 1.0. An investment that tends to be more volatile than the market will have a beta greater than 1.0; less volatile, less than 1.0. Beta can be negative in the case of an investment that tends to move in the opposite direction of the market, or zero when they are totally uncorrelated. As an example, suppose an investment portfolio has a beta of 1.2. If the portfolio's relevant index were to go up 10% according to CAPM, the investment portfolio could be expected to go up by $10\% \times 1.2$, or 12%.

It should be noted though, that beta does not necessarily tell how volatile a fund is in absolute terms, but rather how it historically has reacted to changes in the market as a whole. Other measures of risk such as standard deviation, or the dispersion of returns around their mean, are also informative. But knowing beta is one aspect of knowing how and why your fund will perform under various market conditions.

Why should mutual fund investors care?

Knowing a fund's absolute performance without knowing its risk yields an incomplete analysis. CAPM tells us that more volatile or riskier investments should provide higher returns, but that theory is not borne out by recent empirical studies. A fund may outperform its benchmark or even its peers, but do so while taking on undue market risk. What amount of risk is "undue"? That's for each investor to decide based on his or her own tolerances and objectives. Beta is just one metric that can help an investor understand how and why an investment will perform relative to the broader market.

What is a good number?

There really isn't a "good" or "bad" beta. The answer depends upon the investor's tolerance for risk and his or her appetite for taking on more market risk in search of higher returns.

When CAPM was developed in the 1960s by Jack Traynor, William Sharpe, John Lintner and Jan Mossin, the researchers posited that higher beta stocks yielded higher expected returns and indeed this has been a commonly accepted theorem. But in September 2013, Malcolm Baker, Brendan Bradley and Ryan Taliaferro published [The Low Beta Anomaly: A Decomposition into Micro and Macro Effects](#). The authors found strong empirical evidence that low beta stocks have tended to outperform higher beta stocks, and the results are durable and more pronounced when industry and geography effects are removed. The outperformance, they theorize, is a result of market inefficiencies caused by lower demand for low-beta stocks and higher demand for high-beta stocks. In an effort to exceed benchmarks, institutional investors often find low risk stocks unattractive.

How do The Needham Funds measure up?

The Needham Funds: Beta as of October 31, 2026

	1 Year	3 Year	5 Year	Since Inception
Needham Growth Fund	0.99	0.87	0.99	1.07
Needham Aggressive Growth Fund	0.57	0.76	0.86	0.79
Needham Small Cap Growth Fund	0.55	0.76	0.82	0.85
Market Index^[1]	1.00	1.00	1.00	1.00

The Needham Funds have historically tended towards betas of less than 1.00. High "Active Share" (i.e. the measure of the differentiation of the holdings of a portfolio from the holdings of its appropriate passive benchmark index), combined with the ability to take short positions, tend to make the Needham Funds less volatile than the market as a whole.

Any limitations?

Beta is not without its shortcomings. First, its calculation is based on historical data and there is no standard way of deciding which time period to use. Many beta calculations use five years of monthly data but some believe a shorter time period is appropriate. Consistency is desirable when comparing funds. Second, and maybe more importantly, beta is calculated off of past fund and market returns. Such a historic calculation may not capture the risk profile of the fund today, and may not be relevant to the fund in the future if the composition of the portfolio changes markedly.

Conclusion

Despite its limitations, beta is a useful tool for understanding the market risk inherent in an investment, including an investment in a portfolio of stocks such as a mutual fund. Analyzing fund performance in tandem with beta can help an investor decide if a fund is achieving returns commensurate with its level of risk, and whether that level of risk is consistent with that investor's goals. Furthermore, when the empirical evidence set forth by Baker, Bradley and Taliaferro is considered, investors may benefit from the "Low Beta Anomaly" in the form of higher returns coupled with lower risk by investing in low beta stocks and the portfolios that hold them.

Needham Funds Quick Links

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Definitions and Disclosures

[1] Betas are calculated using the S&P 500 Index for NEEGX and the Russell 2000 Index for NEAGX and NESGX. The S&P 500 is an index created by Standard & Poor's Corp considered to represent the performance of the stock market generally. It is not an investment product available for purchase. The Russell 2000 Index measures the performance of the small-cap segment of the U.S. equity universe and is comprised of the smallest 2000 companies in the Russell 3000. There may be dissimilarities between the funds' investments and the securities comprising the indices.

The information presented in this commentary is not intended as personalized investment advice and does not constitute a recommendation to buy or sell a particular security or other investments.

This message is not an offer of the Needham Growth Fund, the Needham Aggressive Growth Fund or the Needham Small Cap Growth Fund. Shares are sold only through the currently effective prospectus. Please read the prospectus carefully and consider the investment objectives, risks, and charges and expenses of the Fund carefully before you invest. The prospectus contains this and other information about the Fund.

Investment returns and principal value will fluctuate, and when redeemed, shares may be worth more or less than their original cost. Shares held 60 days or less are subject to a short-term redemption fee of 2%. Past performance does not guarantee future results and current performance may be higher or lower than these results. Current month-end performance and a copy of the prospectus are available at www.needhamfunds.com or by contacting the Fund's transfer agent, U.S. Bancorp Fund Services, LLC at 1-800-625-7071.

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