Volatility in Perspective

Volatility, one measure of risk, should be a consideration when evaluating any investment. Understanding and comparing volatility over time and across indexes or benchmarks provides historical context when assessing an investment's risk.

What Is Volatility?

As a measure of risk, volatility refers to the amount of fluctuation in the returns of a financial instrument or index. An investment is said to have high volatility if its value fluctuates widely. Consider an investment with a relatively low annual volatility of 10% and a long-term expected return of 5%: about 68% of the time its annual returns would range between +15% and -5%. Compare this to another investment with a relatively high volatility of 30% and a long-term expected return of 15%. The range of returns for the more volatile investment would be much wider—ranging from +45% to -15%.

Volatility is generally expressed as a percentage figure that is annualized. Volatility measures are historical and can change significantly over time.

Why Does Volatility Matter?

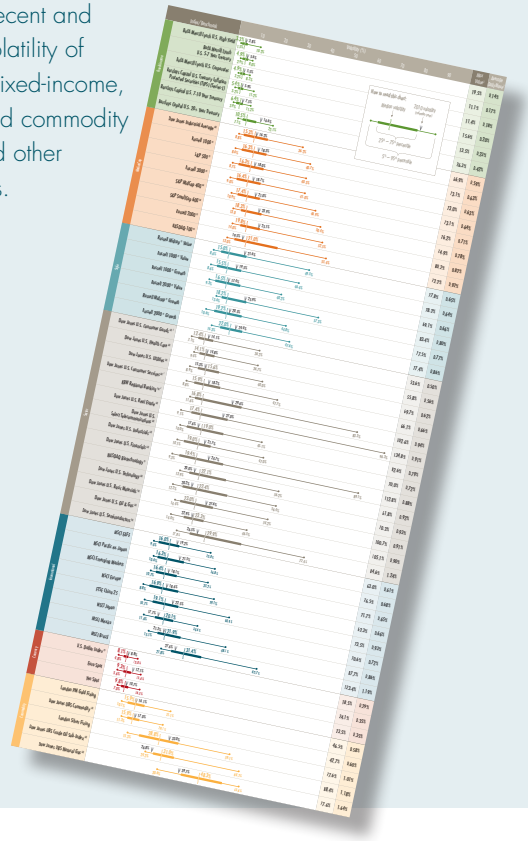
The volatility of returns is a key dimension of investment risk. Higher volatility investments may have a higher risk of loss; however, investors typically expect higher returns from them over time.

Investors should compare the volatility characteristics, as well as the return prospects, for any investment or portfolio. The higher the volatility, the wider the range of fluctuations in return—both positive and negative—the investor is likely to experience. Many investors target a level of volatility for their investments based on their tolerance for losses.

In addition, investors should monitor the volatility of their investments as market environments change. Those who are aware of the volatility ranges for a particular index over time can better assess how much their related investment returns may vary under changing market conditions.

Inside: Market Volatility Over Time

Compare recent and historical volatility of 50 equity, fixed-income, currency and commodity indexes and other benchmarks.



Measuring Volatility

Typically, volatility is calculated using **standard deviation**. Standard deviation is a statistical measure that captures the range, or variability, of returns around a mean (average) return.

Volatility can be measured using many different units of time. The chart in this piece shows index volatility measures based on the following time periods:

- Daily return interval – We used a daily return interval because geared (leveraged and inverse) ETFs have a one-day investment objective.
- Measurement period – As a representative holding period for shorter-term investors, we used rolling 90-day periods. Using rolling periods expands the number of data observations and provides perspective on the "typical volatility range" for an index. It also shows how volatility changes over time.
- 10-year historical time frame – We looked at 10 years of historical volatility data for the indexes. This time frame was sufficiently long to include a range of different economic and market environments, and represented a time frame for which most index data was available.

Talk to your financial adviser about volatility.

The volatility of returns is a key dimension of investment risk. You should compare volatility characteristics, as well as return prospects, of your investments, and monitor them as market environments change.

Index Volatility Measures: 2001-2010

This chart includes historical volatility measures for 50 equity, fixed-income, currency and commodity indexes or benchmarks over a 10-year period (2001-2010). We measured volatility using daily benchmark returns over rolling 90-calendar-day periods. See front page for more information about volatility measures.

ProFunds Group®

	Index/Benchmark	Max Value[1]	Average Daily Move[2]
Fixed-Income	BofA Merrill Lynch U.S. High Yield	19.5%	0.14%
	BofA Merrill Lynch U.S. 5-7 Year Treasury	11.1%	0.17%
	BofA Merrill Lynch U.S. Corporates	11.4%	0.18%
	Barclays Capital U.S. Treasury Inflation Protected Securities (TIPS) (Series-L)	15.6%	0.20%
	Barclays Capital U.S. 7-10 Year Treasury	13.5%	0.23%
	Barclays Capital U.S. 20+ Year Treasury	26.3%	0.42%
MarketCap	Dow Jones Industrial Average℠	66.9%	0.59%
	Russell 1000®	73.1%	0.63%
	S&P 500®	73.0%	0.63%
	Russell 3000®	73.1%	0.64%
	S&P MidCap 400™	76.2%	0.71%
	S&P SmallCap 600™	74.9%	0.78%
	Russell 2000®	80.2%	0.82%
	NASDAQ-100®	72.2%	0.92%
Style	Russell Midcap® Value	77.8%	0.65%
	Russell 1000® Value	78.2%	0.64%
	Russell 1000® Growth	69.1%	0.66%
	Russell 2000® Value	83.4%	0.80%
	Russell Midcap® Growth	77.5%	0.77%
	Russell 2000® Growth	77.4%	0.86%
Sector	Dow Jones U.S. Consumer Goods℠[3]	53.6%	0.50%
	Dow Jones U.S. Health Care℠	55.8%	0.56%
	Dow Jones U.S. Utilities℠	69.7%	0.62%
	Dow Jones U.S. Consumer Services℠[3]	66.1%	0.66%
	KBW Regional Banking℠[4]	102.6%	0.94%
	Dow Jones U.S. Real Estate℠	134.8%	0.91%
	Dow Jones U.S. Select Telecommunications℠	82.6%	0.79%
	Dow Jones U.S. Industrials℠	70.0%	0.72%
	Dow Jones U.S. Financials℠	112.8%	0.88%
	NASDAQ Biotechnology®	61.8%	0.92%
	Dow Jones U.S. Technology℠	70.3%	0.93%
	Dow Jones U.S. Basic Materials℠	100.7%	0.91%
	Dow Jones U.S. Oil & Gas℠	105.1%	0.90%
	Dow Jones U.S. Semiconductors℠	84.6%	1.24%
International	MSCI EAFE	63.0%	0.61%
	MSCI Pacific ex-Japan	76.5%	0.68%
	MSCI Emerging Markets	71.7%	0.65%
	MSCI Europe	62.3%	0.66%
	FTSE China 25	73.5%	0.93%
	MSCI Japan	70.6%	0.72%
	MSCI Mexico	87.7%	0.86%
	MSCI Brazil	123.4%	1.19%
Currency	U.S. Dollar Index®	18.5%	0.29%
	Euro Spot	24.1%	0.35%
	Yen Spot	23.5%	0.35%
Commodity	London PM Gold Fixing	46.5%	0.58%
	Dow Jones-UBS Commodity℠	42.7%	0.60%
	London Silver Fixing	77.6%	1.01%
	Dow Jones-UBS Crude Oil Sub-Index℠	88.4%	1.18%
	Dow Jones-UBS Natural Gas℠	77.6%	1.64%

[1] Represents the highest volatility calculated for any 90-calendar-day period over the 10 years. [2] Represents the average daily price move (up or down) for the index from 2001 to 2010. [3] Started 12/20/2004. [4] Started 12/31/2004

For illustrative purposes only. Historical volatility does not predict future volatility. Volatility is not an indication of performance.

Source: ProFunds Group Investment Analytics. Data source: Bloomberg. Volatility is calculated using rolling 90-calendar-day periods (each including about 62 trading days) from 2001 to 2010, using an annualization factor of 365 days. Results for other benchmarks will differ. Funds that track a benchmark may have different volatility than the benchmark.

The Impact of Volatility on Geared Fund Returns

Most geared (leveraged and inverse) funds are designed to provide a multiple or inverse multiple (e.g., 2x or -2x) of the one-day return of an underlying index or benchmark, before fees and expenses. Many investors use geared funds to seek short-term profits on benchmark dips and spikes. Others hold these funds for longer periods, aiming to hedge their portfolios or profit from longer-term trends.

Over time, the returns of these funds may be greater than or less than the benchmark return times the fund multiple for the same period. Investors should understand how benchmark volatility can impact the returns of geared funds over time:

- When benchmark returns are trending, and volatility is low, geared funds can outperform the benchmark return times the fund multiple. For example, a 2x fund can have more than a 2x gain when its benchmark trends up, or lose less than double the index return when the benchmark trends down.
- When benchmark returns are highly volatile, geared fund returns can significantly underperform that return. In some circumstances, realized returns can even move in an opposite direction to that return.

Generally, the greater the volatility of the underlying benchmark, the greater the chance that the return of a geared fund will deviate from the benchmark return times the fund multiple over time. Other factors to consider include:

- The longer the time horizon, the more likely the fund return will diverge from that return.
- The higher the leverage level (e.g., 2x, 3x), the sooner the fund return will diverge from that return.
- An inverse fund (e.g., -2x or -3x) will diverge from that return sooner than a leveraged fund with the same multiple (e.g., 2x, 3x) for the same benchmark.

How Leverage Magnifies the Effects of Volatility

Leverage magnifies the effects of volatility, resulting in gains or losses that occur much faster and to a greater degree.

Compare an investor in an unleveraged fund and another in a 2x leveraged fund tracking the same benchmark, each starting with an investment of $100.

The benchmark returns 10% on day one and -10% on the next. After the two days, the unleveraged investment is worth $99, for a return of -1%. The leveraged investment is worth $96, more than doubling the loss of the unleveraged fund.

	1x investment return	2x investment return
Day 1 Return	+10%	+20%
Day 2 Return	-10%	-20%
Total Return	-1%	-4%

This example shows extreme hypothetical benchmark movements for illustrative purposes only. Actual benchmark movements can be meaningfully different. Example does not reflect investment fees and expenses or taxes, which would lower the results shown.

Geared (leveraged and inverse) ProShares ETFs and ProFunds seek returns that are multiples or inverse multiples (e.g., 2x, -2x) of the return of an index or other benchmark (target) ***for a single day***, as measured from one NAV calculation to the next, before fees and expenses. Due to the compounding of daily returns, the returns of these funds over periods longer than one day will likely differ in amount and possibly direction from the target return for the same period. Investors should monitor geared fund holdings consistent with their strategies, as frequently as daily. Investing involves risk, including the possible loss of principal. Geared funds are non-diversified and entail certain risks, including risk associated with the use of derivatives (swap agreements, futures and similar instruments), imperfect benchmark correlation, leverage and market price variance, all of which can increase volatility and decrease performance. For more on correlation, leverage and other risks, please read the prospectus.