Volatility: Much the same but different

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Quadrant's regular newsletter that highlights topics we believe will affect markets or are important in understanding them.

"Fear tends to manifest itself much more quickly than greed, so volatile markets tend to be on the downside. In up markets, volatility tends to gradually decline." Philip Rot

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While we look for the snow to finally melt away in the Prairies, we also see how markets enjoy an early spring rally that can be interpreted more as a reversal of the sudden pullbacks seen in summer 2015 and early winter 2016. Even as the global economy is signalling a better tone, evidenced by firming commodity prices and the recovery in energy prices, for the most part not much has changed in the economy and its fundamentals.

A recurring topic that comes up with Quadrant's clients and prospects, which we hear with more frequency in periods of heightened levels of financial turbulence, is the idea that markets are more volatile now than what they used to be. We meet with people that tell us that they miss the "Good Ol' Days" when stocks provided positive returns with not so much volatility.

Human beings have a natural aversion to uncertainty. On the flip side, when bored or feeling left behind we have a natural inclination to be attracted to imaginary certainties. Sometimes emotions are the worst enemy of long-term rational thinking and could seriously hurt investors if not properly interpreted and controlled.

"Volatility is basically a function of uncertainty" says John Bollinger, a renowned analyst and author that has concentrated on the overlap between technical and fundamental analysis, rather than focusing on the differences. In the investment industry, volatility is widely used as a measure of risk. Volatility is typically calculated using the standard deviation (or variance) between returns from a security or market index. Standard deviation is a statistical measure that captures the variability of returns around a mean (average) return.

We, at Quadrant, prefer to think of investment risk as the probability of permanent loss of capital rather than the fluctuation of returns, but are mindful that most people are anxious when volatility increases.

"In the short run, the market is a voting machine but in the long run it is a weighing machine" said Benjamin Graham, also known as the father of value investing. Valuations at any given point in time drive future returns while volatility is more a consequence of sentiment prevalent in the market.

The most volatile month in the history of modern equity markets was October 1987, the month of "Black Monday", when the S&P500 lost

20.5% in one day. That month volatility reached 91%. The famous October 19, 1987 crash was the largest negative sigma event recorded (a 20.98 sigma event).

On the "happiest" side, the largest positive sigma event of all time occurred on October 13, 2008 (in the midst of the financial crisis), when the S&P 500 moved up 11.6% registering an 11.82 sigma event.

The "sigmas" are a fancy way to refer to the statistical reference unit of standard deviation. In statistics, the so-called "68–95–99.7 rule" is a shorthand used to remember the percentage of values that lie within a band around the mean in a normal distribution with a width of one, two and three standard deviations (sigmas), respectively.

A 5 sigma event would mean that the chances of something happening is 5 standard deviations from the norm. In a standard normal distribution, a 5-sigma event (an event that occurs five standard deviations or more from the mean) has about a 1 in 3,488,555 chance of happening. Not very likely, in other words. Ten sigmas, or 10 standard deviations, would represent an occurrence as unlikely as to be accounted an impossibility.

Given all this information we can say for a fact that the stock market doesn't follow a normal distribution. Investor behavior, as well as changes in taxes and regulations, lead to "fat tails" that make market returns follow a strongly non-normal distribution.

Having said all this, and being fully mindful of the endless - and some could argue incomprehensible - battle between believers in the efficient market hypothesis (relying on normal distributions to project returns) and believers in behavioral finance (dismissing its use for this purpose), an analysis of the S&P 500's historical standard deviation for different periods sheds some light on the question at hand: are markets today more volatile than in the past?

The table below shows the Standard Deviation of the S&P500 Index for two periods:

Periods	Annual	Quarterly	Monthly	Daily
1929-1999	19.36%	11.65%	5.67%	1.13%
2000-2011	19.05%	9.02%	4.71%	1.38%

Source: Federal Reserve Bank of Philadelphia

As we look at the data we could argue that daily volatility is a little higher than in the past and monthly, quarterly and annual volatility is actually lower (or virtually the same).

Stock markets are perceived calmer in the past in the mind of investors because the past is certain. As John Bollinger rightly said "volatility is a function of uncertainty". The future (even the very next day) is uncertain, the past is not.

The snow is going to melt in the Prairies, as it inevitably happens every spring; stocks are going to be volatile. We, at Quadrant, intend to use that volatility to capture higher risk-adjusted returns for clients with longer term investment horizons.

Disclosures