

## **VOLATILITY IN PERSPECTIVE**

*By Ed Easterling*

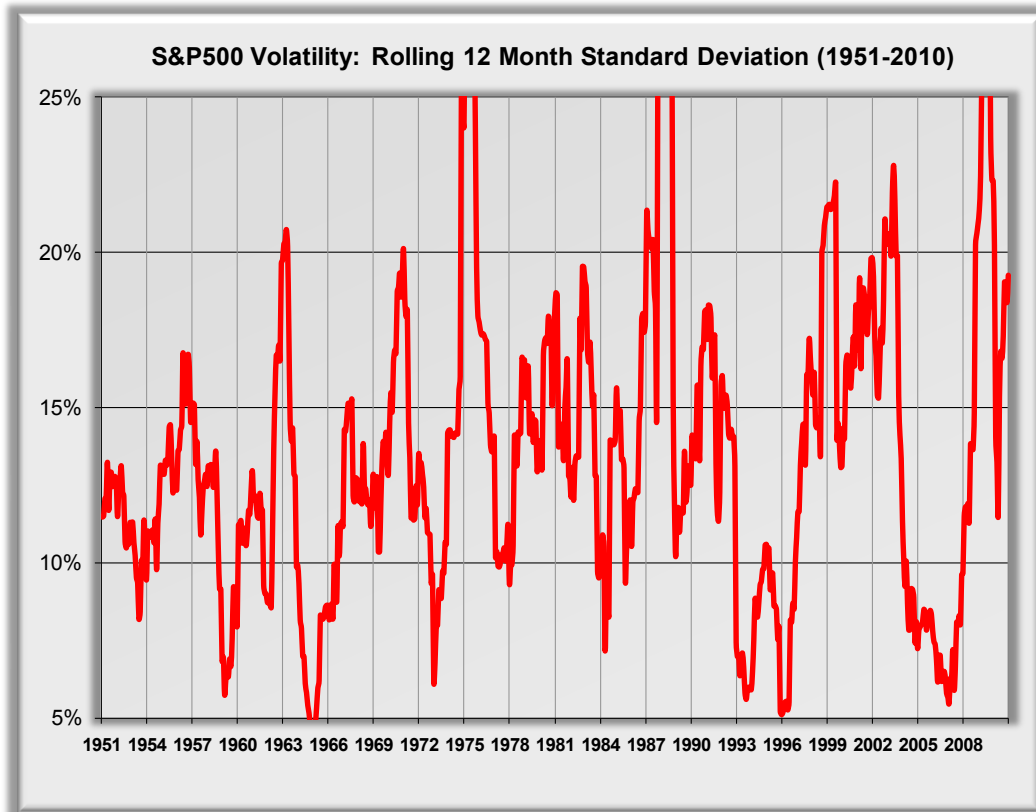
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Who or what is rocking the boat? Market volatility had surged over the previous two years, only to now start settling back into the midrange; investors have had to hold on and try to figure out what this means. Is this variability of volatility “normal” or is it extreme? The purpose of this presentation is to graphically put volatility into historical perspective. It will be updated periodically until volatility again falls to levels of investor disinterest...which could be a while if history is a guide for what can be expected.

The first look at volatility uses the common measure of standard deviation. For this analysis, the monthly percentage changes in the S&P 500 Index are used and then the result is annualized to reflect a measure of the amount of variability in the market. This measure is often used by financial market professionals as an indication or measure of risk in models that assess risk versus return. It’s not important for this discussion to go into detail about the statistic—it is only necessary to appreciate that it is the most common measure of volatility and to recognize that a higher value means higher volatility.

Figure 1. S&P 500 Index Volatility: Rolling Volatility (1950 to Present)



Let's look at six decades of volatility...to put volatility into perspective. To present a view of volatility and its change over time, Figure 1 presents the twelve-month rolling standard deviation for the S&P 500 Index. The concept of rolling periods just means that the value that is used for each month is the 'standard deviation' for the most recent twelve months. So as the market goes through periods of higher and lower volatility, the measure reflects those changes.

As you can see in Figure 1, volatility tends to average near 15% (the average that many models and academics use for stock market volatility). Yet one of the most interesting aspects of the history of volatility is that it tends to move around a lot. Although most periods generally fall within a band of 10% to 20% volatility, there have been periods when volatility was unusually high and periods when it was unusually low...and often extreme periods in one direction are followed by oppositely extreme periods. The time between the light grey vertical bars on the graph represent three-year periods. So some of the extreme periods can last for a while, yet few last a long time.

For most of the mid-2000s, volatility had been unusually low—and by late 2006 and early 2007, volatility fell into the lowest three percent of all periods since 1950. No wonder that investors and market spectators had become complacent to market volatility...or maybe complacency about risk led to the low volatility. Nonetheless, the waters of the market were unusually calm.

Then a few years ago, volatility surged to startling and anxiety-producing levels. This longer-term measure (which is a little slow to react since it requires twelve months of information) had recently increased to more than 25%—fairly high by historical standards, yet not without precedent. It's still a lot higher than its low of 5.5% in January 2007, yet it's finally falling back toward the typical range. If history is again a guide, we may spend a little time in the mid-range.

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For a better reflection of near-term changes and trends in volatility, we can look at two other measures: the frequency of days each month that close up or down by more than 1% and the intra-day range expressed as a percentage.

The first of these measures reflects the "six o'clock news summary" of daily volatility—since significant moves in the market often make the news—and the second reflects the "rollercoaster" that many professionals experience. For example, there are days when the market opens higher or lower and stays there—so measuring 1% days reflects the magnitude of daily changes. Therefore, with only a week or month of trading days, we can quickly see emerging changes in the overall level of volatility.

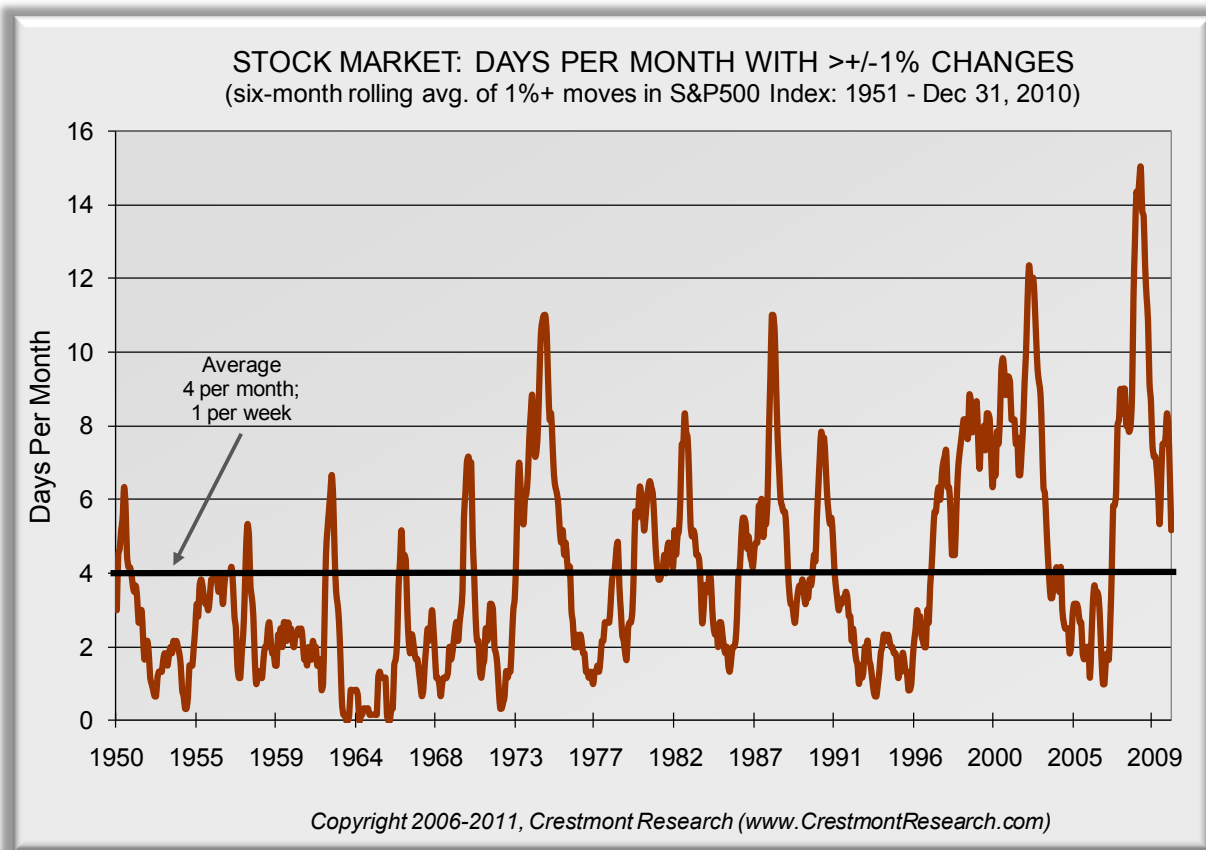
On other days, when the market professionals get home with that worn-out-look, the market may have swung wildly yet closed with little change from the previous day. So to capture that aspect of volatility, we can measure the difference between the high and low and present it as a percentage of the previous closing price. A higher percentage reflects higher volatility.

First, let's look at the frequency of days each month that the market closed up or down by 1% or more. At times in the past, there may have been one day or none per month,

while at other times, the market moved by one percent virtually every other day. Keep in mind that most months average about 21 trading days.

As reflected in Figure 2, the historical average going back almost six decades reflects approximately four “1% days” per month...thus about one per week. Just a few years ago, it was common for it to be less than half of the average. Yet, as recently as 2002, there were times when “1% days” occurred more often than every other day. In June 2007, the tremors started and awakened the market. The previous two years or so, although somewhat erratic, were enough to drive the measure in the graph—the six-month moving average—well into above-average territory. Yet over the past year, volatility has calmed a bit. Like the previous graph, if history is a guide, we may be headed back toward average over the next year or two.

Figure 2. S&P 500 Index Volatility: 1% Days (1950 to Present)



Next, let's look at the other shorter-term measure of volatility trends and changes: the average daily range. This one could be called the “rollercoaster factor” since it measures the trough-to-peak each day as a percent of the market index. For example, if the S&P 500 Index starts at 1015 and falls to 1000 before ending at 1014, the daily range was 15 points (i.e. 1015 minus 1000) or 1.5% (i.e. 15 divided by 1000). The intra-day information that is needed for this measure is available from 1962, providing over four decades of data. The average daily swing over more than forty years has been approximately 1.4%. At today's levels, that's about 18 points for the S&P 500 Index and the equivalent for the Dow Jones Industrial Average would be almost 170 points.

Figure 3 reflects that the average daily range had increased significantly over the previous two years, from an extended period of less than half the historical average. As our most quickly reacting measure of volatility, the Average Daily Range has already returned toward the median.

Figure 3. S&P 500 Index Volatility: Daily Range (1962 to Present)

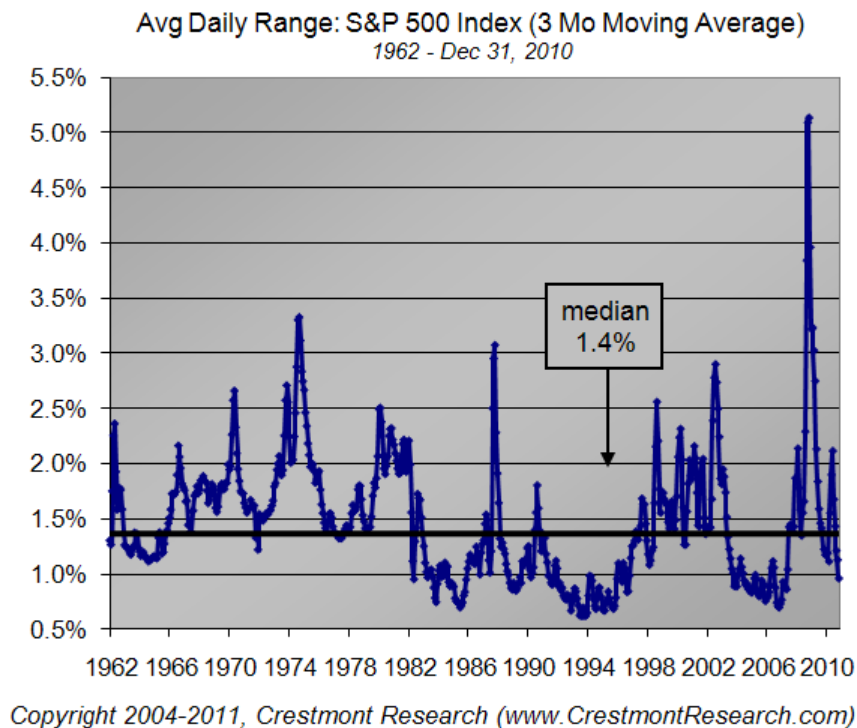


Figure 4. S&P 500 Index Volatility: Relationship To Market Returns

**Relationship Of Volatility & Market Returns  
(S&P 500 Index: 1962–Dec 31, 2010)**

**MONTHLY DATA: S&P 500 INDEX AVERAGE DAILY RANGE**

Quartile	Volatility Range	% Chance Up Month	% Chance Dn Month	If Up Avg Gain	If Down Avg Loss	Expected Gain/(Loss)
1st	0% - 1.0%	69%	31%	3.0%	-1.9%	1.5%
2nd	1.0% - 1.4%	63%	37%	3.0%	-2.1%	1.1%
3rd	1.4% - 1.8%	59%	41%	3.2%	-3.2%	0.5%
4th	1.8% - 6.6%	42%	58%	5.1%	-5.0%	-0.8%

**ANNUAL DATA (1962–2009): S&P 500 INDEX AVERAGE DAILY RANGE**

Quartile	Volatility Range	% Chance Up Year	% Chance Dn Year	If Up Avg Gain	If Down Avg Loss	Expected Gain/(Loss)
1st	0% - 1.1%	92%	8%	14.9%	-1.5%	13.5%
2nd	1.1% - 1.5%	83%	17%	16.8%	-9.0%	12.5%
3rd	1.5% - 1.8%	83%	17%	14.2%	-11.6%	9.9%
4th	1.8% - 2.7%	38%	62%	17.7%	-19.4%	-5.1%

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In Figure 4, as an update to the information originally presented on page 48 of *Unexpected Returns* and discussed in the book, the table reflects the propensity for the stock market to perform well in lower volatility periods and perform poorly in higher volatility periods. The principles of valuation and volatility that are explored in *Unexpected Returns* are the key drivers of stock market returns and performance over multi-year periods. As a result, the current environment of higher volatility certainly suggests that defensive and/or hedged strategies are appropriate, while remaining positioned to participate in any recovery that could coincide with declining volatility.

## CONCLUSION

From ultra-low levels of volatility to ultra-high levels... The past few years have been unique, but not unprecedented. There are several ways to measure volatility, some with longer-term, bigger-picture perspective. Others provide a shorter-term, more current view of conditions. All measures currently reflect that volatility is beginning to moderate.

An historical perspective of volatility reflects that higher volatility periods are normal and can extend for quarters or years. Many investors had anchored on the previous extreme low volatility years as a normal condition and were surprised by the recent period of high volatility. A true understanding of history provides a more rational perspective and can help investors take action to protect their portfolios should high volatility return...while being positioned to participate in improved market conditions as volatility abates.

*Ed Easterling is the author of recently-released Probable Outcomes: Secular Stock Market Insights and award-winning Unexpected Returns: Understanding Secular Stock Market Cycles. Further, he is President of an investment management and research firm, and a Senior Fellow with the Alternative Investment Center at SMU's Cox School of Business where he previously served on the adjunct faculty and taught the course on alternative investments and hedge funds for MBA students. Mr. Easterling publishes provocative research and graphical analyses on the financial markets at [www.CrestmontResearch.com](http://www.CrestmontResearch.com).*