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## Volatility: Resurgent or Not

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When the Dow Industrial Average was at 700, Keith Funston, a former president of the NYSE, recommended that the Dow be split ten to one. He foresaw that the Dow would continue to rise in value over time with the consequence that the reported changes in its value would become larger and larger and would scare investors. Today, the Dow is around 17,500, and a two-percent movement is 350 points. If the Dow were instead 70, a two-percent movement would be only 1.4 points—a less scary number.

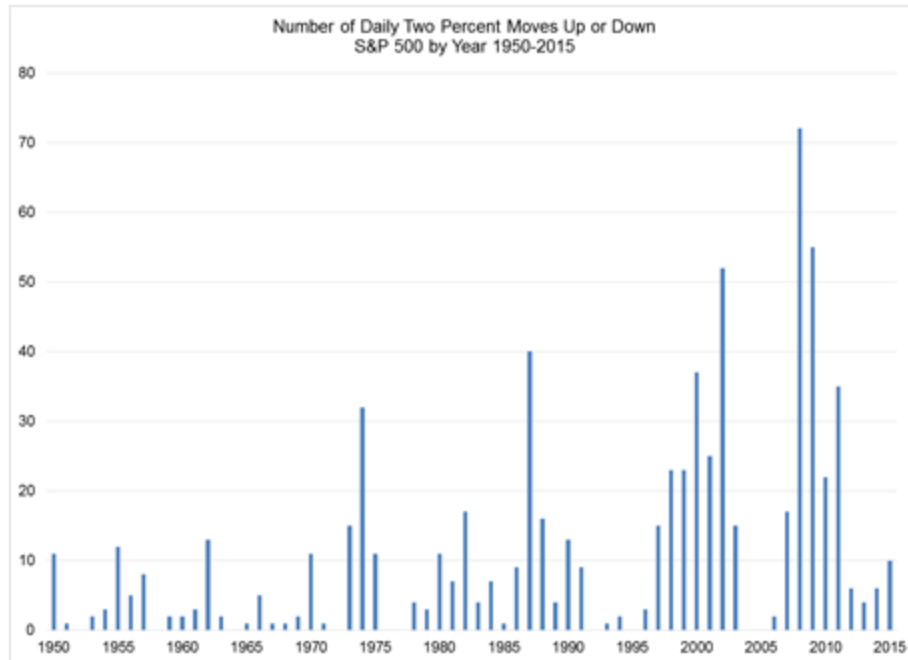
Of relevance of course is the percentage change and not the absolute change. Nonetheless, broadcasters routinely cite the absolute change, and this is what permeates the radio waves. To be sure, apps like Bloomberg now report the percentage change as well, and this is as it should be.

As the magnitude of both the Dow as well as the S&P 500 increases, it is almost a foregone conclusion that the size of daily changes will increase. The relevant question is what has happened to percentage changes over time. To answer this question, we turn to an analysis of daily returns for the S&P 500 from 1950 through 2015—a total of 16,650 daily returns, encompassing 66 years.

The largest daily loss of 20.5 percent, the Great Crash, occurred on October 19, 1987, with the next largest loss of 9.0 percent on October 15, 2008. The largest daily gain of 11.6 percent occurred on October 13, 2008, with the next largest gain of 10.8 percent on October 28, 2008. Three of these extreme movements occurred in 2008, and as we shall see 2008 was a very volatile year.

The average daily percentage change, either up or down, was 0.66 over these years. To put this number in perspective with the S&P around 2000, a change of 13 points either up or down is normal. Applied to the Dow which is around 17,500, a change of 115 either up or down is normal. If Mr. Funston had had his way and kept splitting the Dow to around 70, a change of 0.46 points would be normal—again a less scary number.

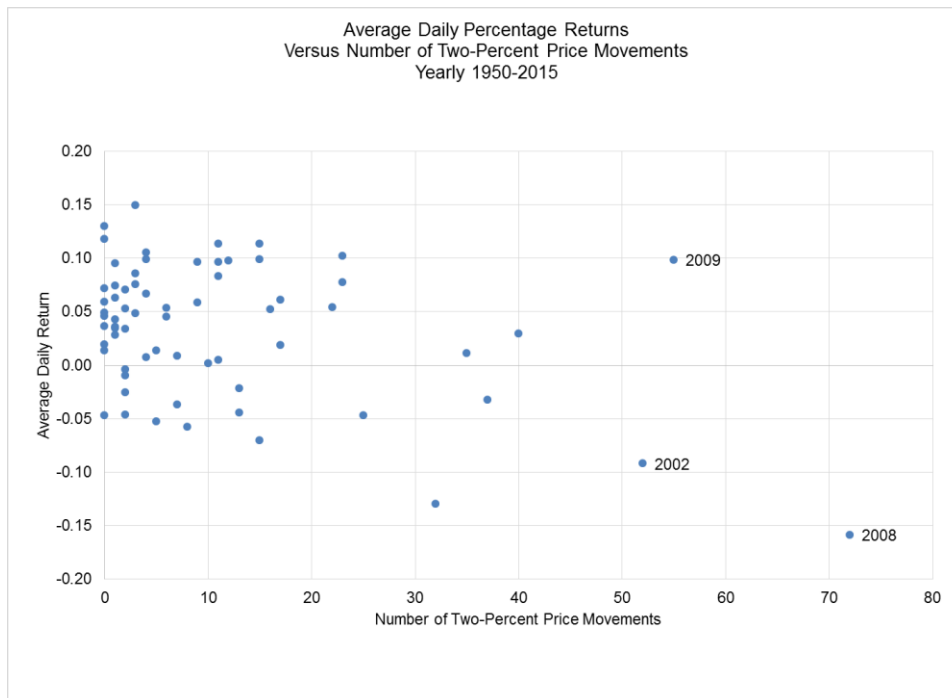
Researchers at S&P routinely look at the number of days the market moves more than one or two percent upwards or downwards. The accompanying chart presents the number of days by year that the S&P moved up or down by more than two percent. For example, 1950 saw 11 days with two-percent price movements, and 2015 saw 10 days.



The number of two-percent price movements in the earlier years from 1950 through 1996 appears generally to be less than the latter years. Two notable exceptions were 1974, which was a recessionary year including the disruption of the oil market, and 1987, which included the Great Crash and the mistaken belief on the part of some large institutions that they could insure their portfolios against loss at no costs. Even with the Great Crash, the S&P was up for the year.

There are two periods of extreme volatility in the latter years: 1997 through 2003 and 2007 through 2011. The first corresponds to the tech bubble and the second to the Great Recession. From 2012 on, volatility has subsided although it is slightly greater than it was in the fifties and sixties.

The next questions to be asked are: What is the relation between realized returns and volatility, in this case as measured by daily two-percent price movements. Specifically, does an increase in volatility lead to greater concurrent returns or less? The accompanying chart answers these questions with a plot of the average daily return in a year against the number of two-percent daily price movements in the same year.



The average daily return across all years is 0.03 percent. This is a small number, but remember that this is a daily number and there are approximately 250 days in a year. Forgetting compounding, 250 times 0.03 percent is 7.5 percent—a reasonable one-year return.

Three extreme outliers in terms of volatility occur in 2002, 2008, and 2009. Both 2002 and 2008 showed large losses, while 2009 showed a large gain—exactly the volatility that one would expect from the large number of two-percent price movements.

When volatility is not extreme, the average daily returns are more often positive than negative. This result is consistent with the upward moving market over these years.

The above analysis ended in 2015. Since then, we saw a highly volatile market in January with five of the nineteen trading days having an S&P price movement of more than two percent, upwards or downwards. There were no extreme price movements in February. March has had one extreme price movement on March 1 and that was an upward change.

Thus, volatility has settled down. In view of this fact and other analysis, PMA has rebalanced its clients' portfolios in the last half of February to the upper end of its policy guidelines for equities. Although PMA never makes forecasts of future market movements, this rebalancing has certainly benefited our clients with the substantial advances in equities in March.