The Big Picture:
Sell in May and Go Away?

This Big Picture special report investigates the market adage to “Sell in May and go away,” that suggests market returns are not as good during the summer months. We analyze the data to see where the balance of the evidence lies. The results surprised us and may surprise you as well.

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How much investment efficacy is there to the market adage "Sell in May and go away"? It's oft-repeated, but is it good advice? Keeping in mind another old adage, that there are "Lies, damn lies, and statistics," let's take a closer look at the data.

For this study, we looked at price data for the S&P 500 index from the years 1990-2013. We assumed that we bought the index at the close on the Wednesday immediately before Memorial Day each year and sold it at the close on the Wednesday immediately after Labor Day.[i] Most years, there were 73 days between our start and end dates, though a few years had a few days more or less.

In other words, we did exactly the opposite thing of what the adage suggests. If the adage is correct, doing this will generate negative returns more often than it will positive ones.

The results of this simple test are in the win / loss histogram below.

Losses Year (return)	Wins Year (return)
2002 (-17.7%)[iii]	2009 (14.4%)[ii]
2001 (-12.2%)	2003 (11.1%)
1998 (-10.1%)	1997 (10.5%)
1990 (-9.7%)	1995 (7.9%)
2011 (-9.2%)	2000 (6.7%)
2008 (-8.3%)	2012 (6.4%)
1996 (-3.4%)	2005 (3.9%)
2007 (-3.3%)	1991 (3.7%)
2013 (-0.1%)	2006 (3.3%)
	1994 (3.2%)
	2010 (2.9%)
	1999 (2.0%)
	1993 (0.7%)
	1992 (0.2%)
	2004 (0.1%)

Figure 1. Source: YCharts data, YCharts Research analysis

So, if we look at this adage from a straight win-loss perspective, it's clear that it doesn't hold up. More years in the win column (15 wins, 9 losses) means that most years (63% of the time in our study), it would be better off being in the market over the summer years.

But looking at the results above, you will notice that, while the total number of wins is larger than the total number of losses, the losses seem more extreme than do the wins. So, let's increase the granularity of our histogram, and call wins or losses "big" if they are over 5% in either direction, and "small" otherwise.

Our revised win/loss histogram is below.

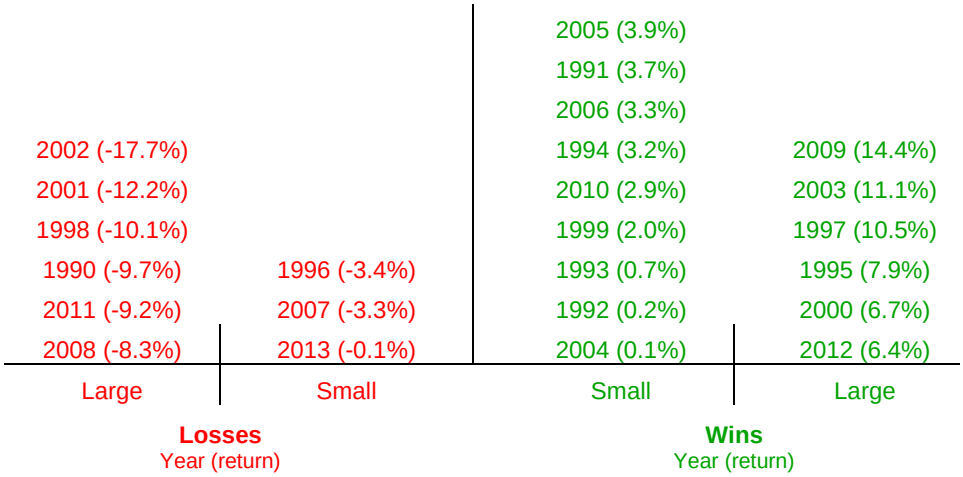

Figure 2. Source: YCharts data, YCharts Research analysis

Indeed, from this perspective, we can see that the number of large wins and losses are exactly the same and if one ignores the small movements on either side, it is also clear that the large losses are indeed larger than the large wins. The average large loss is 11.2% compared to the average large gain of 9.5%. The average small loss is about the same size as the average small win, though obviously there are more of the latter.

With this in mind, it is clear that an investment strategy related to this adage should take into account the risk side of the equation—not only the return side. Stay in the market, probably wind up with middling gains, but if not, run the risk of losing more than you stand to win.

But risk / reward decisions are not made in a vacuum. Obviously, market participants are not only looking at whether returns are positive or negative during the summer, but also with how summer returns compare to those during the rest of the year.

In order to express this complexity, we need to increase the sophistication of our analysis.

Since the standard summer time period we studied was 73 days long, we decided to take a look at returns for all other 73-day periods within each year and compare the summer returns to the returns during the rest of the year. Because we had multiple 73-day return statistics for each year, we were able to generate an average and standard deviation for the non-summer returns as well.

This analysis is shown in the graph below:

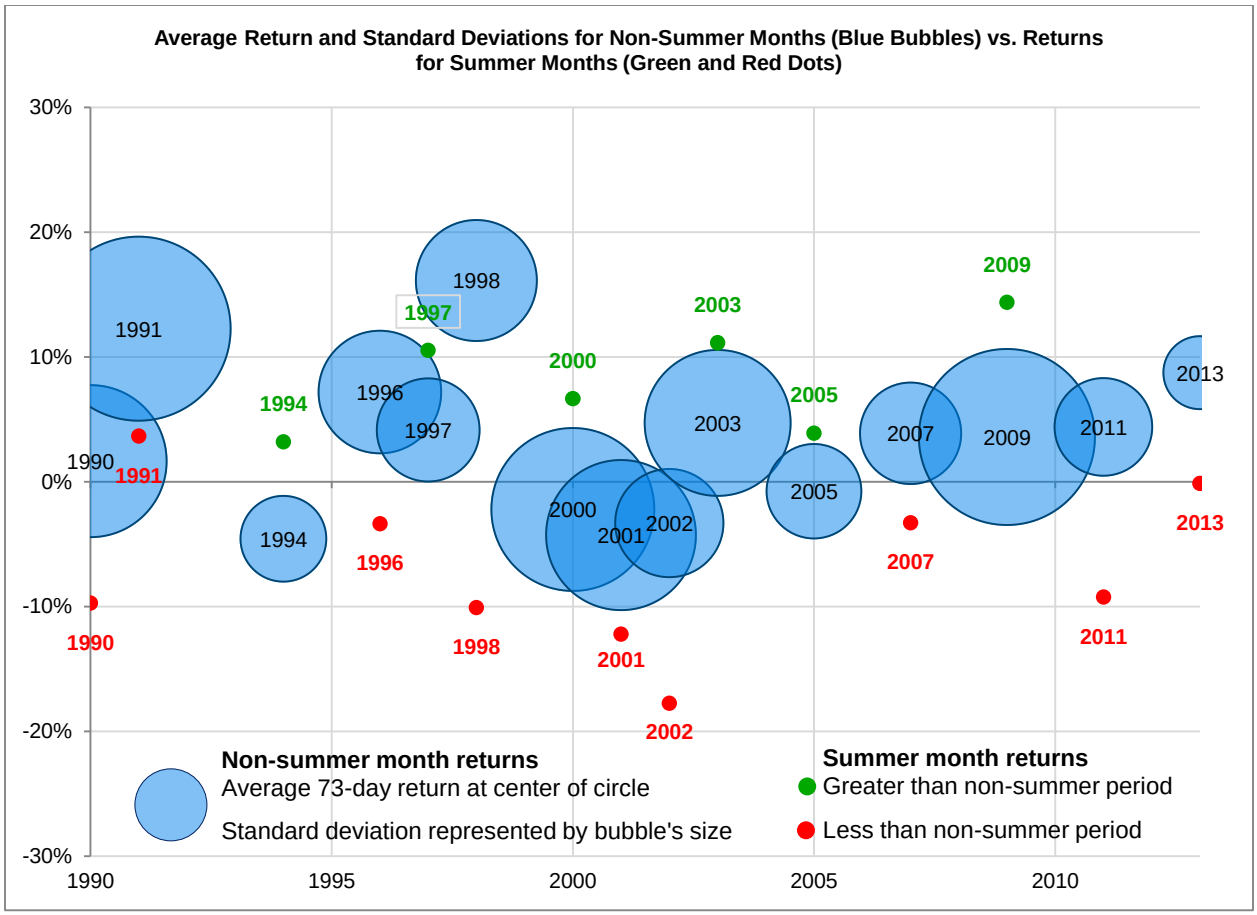

Figure 3. Source: YCharts data, YCharts Research analysis

In this illustration, the average return during all non-summer 73-day periods is pegged at the center of the blue bubbles and the standard deviation of those, represented by the size of the bubbles. Summer returns are represented by a single dot, green if the summer returns were higher than the rest of the year's and red if not.

For example, in 1994, returns for each non-summer 73-day period was -4.5%. In comparison, the return for the summer 1994 period was higher than that—3.2%—so the dot labeled 1994 is shown in green above the blue bubble. In contrast, in 1998, average returns during non-summer 73-day periods was over 15% while the summer returns was -10%; as such, the blue 1998 bubble is centered on the 10% line whereas the summer return dot is shown in red and placed far below the blue bubble.[iv]

Looking at the data in this way, we can start to understand better why the "sell in May" adage came about. Notice how many more red dots there are than green. Nine red for six green indicates that the summer period in any year has underperformed the rest of that year about half again as often as the summer period outperforms the rest of that year.

It also seems that the red dots lie further below the blue bubbles than the green dots lie above them (indicating more severe summer underperformance than outstanding outperformance). Further refining our analysis by removing all summers whose returns were less than two standard deviations away from average returns during the rest of the year, summer underperformance becomes more noticeable.

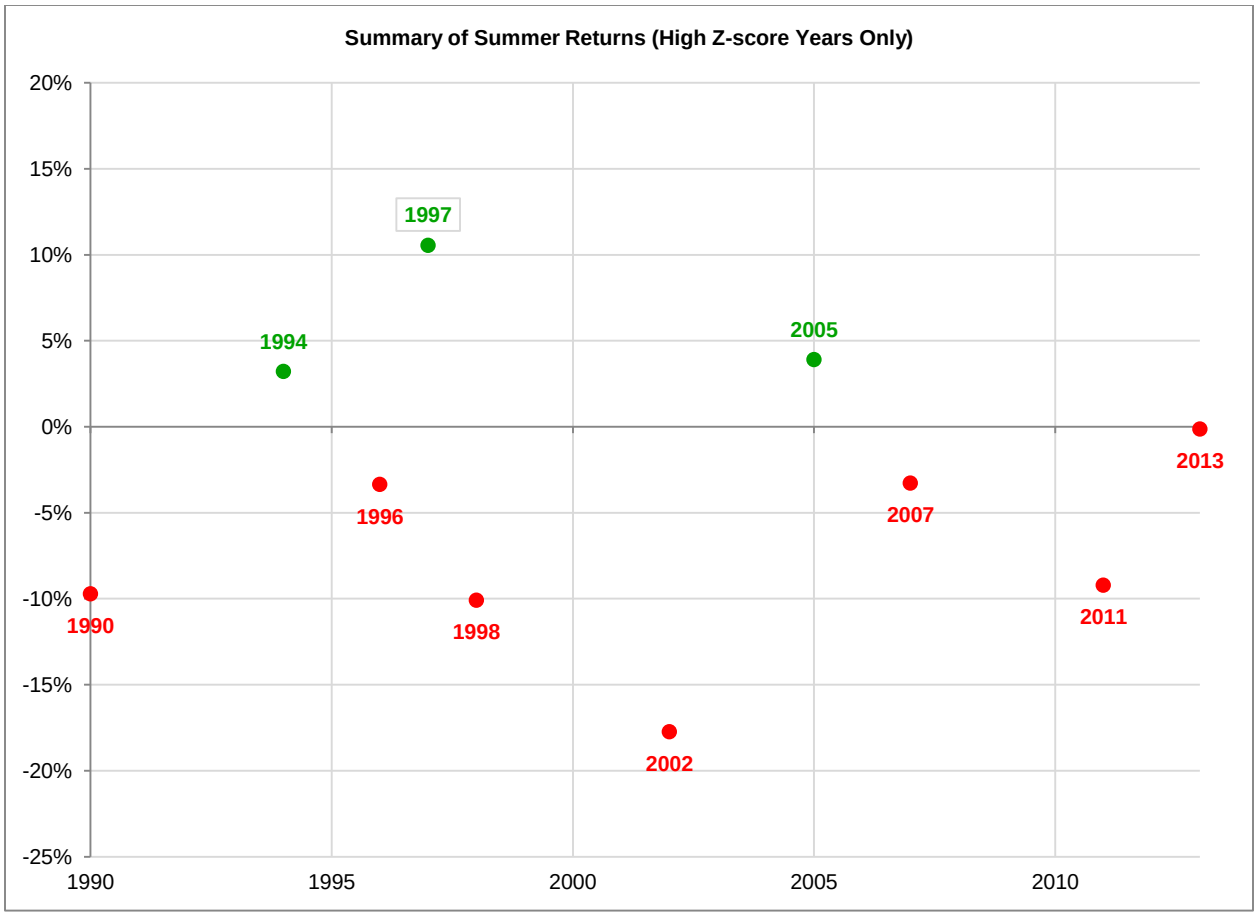

Figure 4. Source: YCharts data, YCharts Research analysis

This chart shows a picture very different from Figure 1 and suggests why grizzled veterans of the trading pits keep the "sell in May" adage alive. Using the number of standard deviations (termed a Z-score in statistics) the summer returns lie away from average returns in the rest of the year to judge the relative pain or pleasure of each summer's returns, we see that summer pain swamps summer pleasure.

Bad Summers Year (Z-score)	**Good Summers** Year (Z-score)
1998 (-8.30)	
2013 (-7.53)	
2011 (-6.53)	
2002 (-5.67)	
1996 (-3.25)	1994 (4.80)
2007 (-3.20)	1997 (2.77)
1990 (-2.29)	2005 (2.38)

Not only are there more than twice as many bad summers, the severity of the bad returns (as measured by the magnitude of the Z-scores) is much greater than those of the good ones. Considering the tendency of humans to remember unpleasant events with greater clarity than positive ones (the so-called Negativity Bias) and the fact that institutional investor assessment and compensation is based on yearly performance, it is no wonder that this adage developed and remains a part of market lore.

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NOTES:

[i] We did not take trading commissions or fees into account. This study just looks at the pure return of the index over the summer months.
[ii] This was the summer that market participants realized that the Fed was handing out "Get out of Jail Free" cards along with trillions of rectangular strips of paper with the images of dead people printed on them.
[iii] This was the summer immediately after the 9/11 attacks, when the US was just running out of targets in Afghanistan and Colin Powell was speaking to the UN Security Council to warn about WMD in Iraq.
[iv] For the years in which the summer returns were within the non-summer return bubble—1992, 1993, 1995, 1999, 2004, 2006, 2008, 2010, and 2012—I deleted that year's data to make the chart more legible. These deletions also contain some valuable information. Namely, in 9 out of 24 years—just over a third of cases—summer returns are similar to returns during the rest of the year.