Monthly Seasonality in the US Stock Market

Monthly seasonality – a given month's propensity towards bullishness or bearishness – is something all equities traders should be aware of.

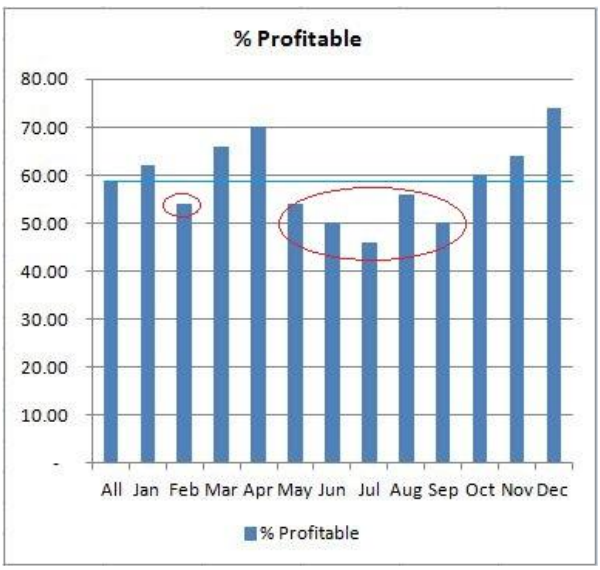
In this paper we will look at each month of the year – January through December – to determine to what degree seasonality plays a role in the relative performance of each month. We will analyze the S&P500 index from 1964 to 2013, to see how these tendencies have evolved over the past 50 years.

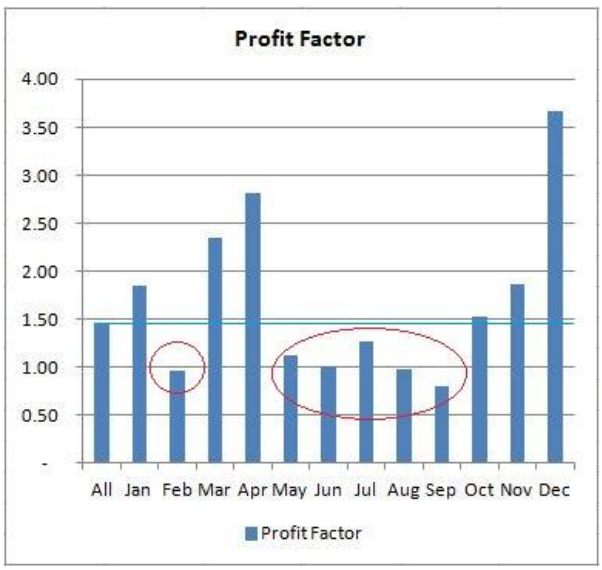
Table 1 below shows the performance of each month of the year from 1964 to 2013. It assumes a $100,000 buy at the open of each month, and a sell at the close of the month. The first row shows results for all months and provides a measure of the average monthly performance of the S&P500 over the past 50 years.

Table1

Test	Month	Net Profit	Trades	% Profitable	Win/Loss Ratio	Profit Factor
0	All	375,091.44	600	58.83	1.02	1.46
1	Jan	61,667.40	50	62.00	1.13	1.84
2	Feb	(2,561.60)	50	54.00	0.82	0.97
3	Mar	58,933.09	50	66.00	1.20	2.34
4	Apr	77,319.80	50	70.00	1.21	2.82
5	May	8,056.80	50	54.00	0.95	1.11
6	Jun	72.70	50	50.00	1.00	1.00
7	Jul	19,251.81	50	46.00	1.48	1.26
8	Aug	(2,474.29)	50	56.00	0.76	0.97
9	Sep	(19,884.89)	50	50.00	0.80	0.80
10	Oct	44,441.91	50	60.00	1.01	1.52
11	Nov	54,671.60	50	64.00	1.04	1.86
12	Dec	75,597.41	50	74.00	1.29	3.66

Although it could be argued that 50 instances do not provide sufficient basis for statistical significance, it certainly appears that some months are more bullish than others. January through April (with the notable exception of February), have outperformed the yearly average, as have October through December. The months of May through September, on the other hand, have generally underperformed. This multi-month seasonal effect is more evident in the charts below:





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The saying "sell in May and go away" certainly seems to be more than just a stock market adage. There indeed appears to be a generally bearish season starting in May, followed by a generally bullish season starting in October or November. So, for the rest of the study, we will focus on the two six-monthly periods of May to October and November to April.

Table 2 shows the results of investing $100,000 during these two periods over the past 50 years. Positions are taken at the close of the prior semester, and exited at the close of the semester under review:

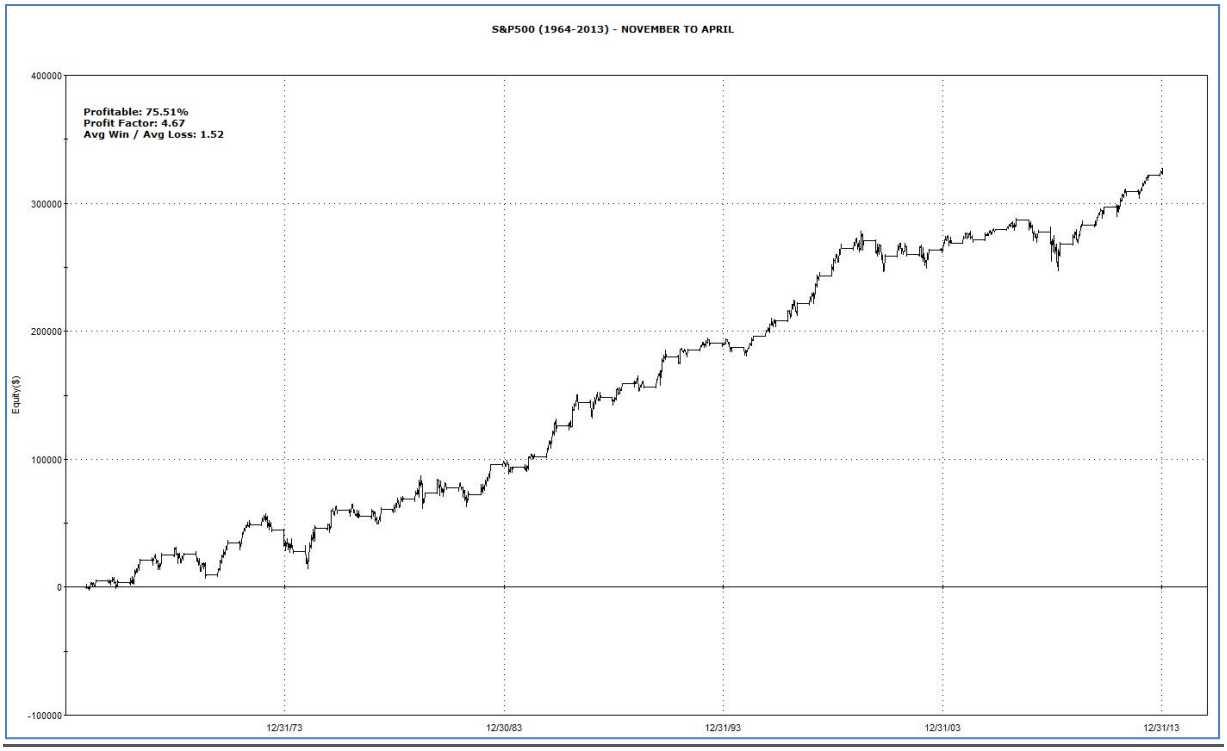
Table2

Test	Month	Net Profit	Trades	% Profitable	Win/Loss Ratio	Profit Factor
0	Jan-Dec	367,481.70	50	69.70	1.08	2.49
1	May-Oct	45,608.80	50	64.00	0.72	1.29
2	Nov-Apr	321,872.90	50	75.51	1.52	4.67

The results are quite stark. In terms of asset appreciation, the Nov to Apr semesters outperformed the May to Oct semesters 7 to 1 over the past 50 years.

The strength and consistency of the edges of each 6-month period is more evident when looking at their corresponding equity curves:

November to April



As we can see, the bulk (88%) of the appreciation in the stock market over the past 50 years took place during the Nov to Apr semesters. The 75.51% win rate, coupled with an average winning trade 52% greater than the average losing trade, resulted in a high profit factor of 4.67. The smooth and steady upward curve shows that the bullish edge of the Nov-Apr semester has been fairly consistent over the past 50 years. Maximum drawdown during the period was also relatively small, topping at only 20.7% of the initial theoretical capital of $100,000.

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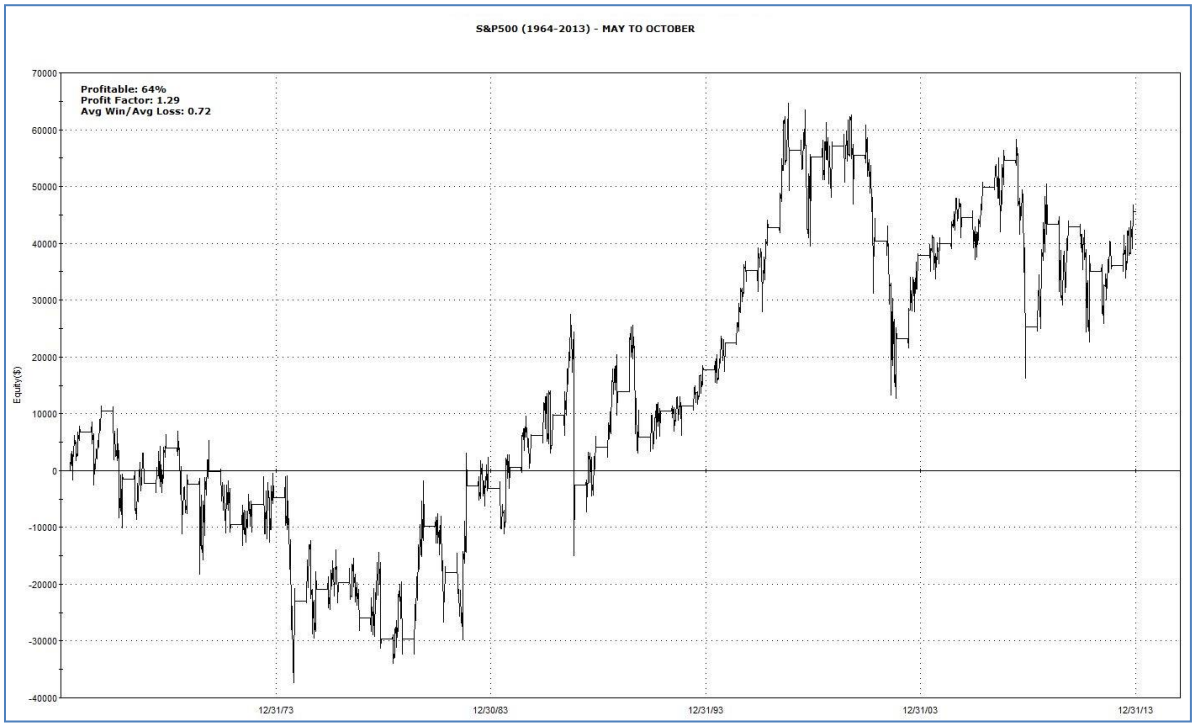
May to October



The May to Oct periods, in contrast, performed rather poorly, with 64% winners versus the annual average of 69.7%. Average losing trades were greater than average winning trades, resulting in a modest profit factor of 1.29 over the 50 years. The equity curve is fairly erratic, with a marked negative bias in the 60's and 70's, followed by a choppy positive-to-neutral bias in the following years. The maximum drawdown during this period was quite high, at 40.2% of initial capital.

It would of course be useful to be able to predict the likely intensity of an upcoming seasonally bullish or seasonally bearish semester. Since past performance is generally the best predictor of future performance, we will look to buy into upcoming semesters only if the previous semester has been positive (or negative). The results of this simple strategy are shown in tables 3 and 4 below:

November to April

Previous 6 months	Trades	% Profitable	Win/Loss Ratio	Profit Factor
Up	31	77.42	1.81	6.19
Either	49	75.51	1.52	4.67
Down	18	72.22	1.25	3.25

May to October

Previous 6 months	Trades	% Profitable	Win/Loss Ratio	Profit Factor
Up	37	67.57	1.05	2.19
Either	49	63.27	0.72	1.25
Down	12	50	0.51	0.51

The results show considerable "follow-through" from one semester to the next. Positive semesters tend to be followed by outperforming semesters. Similarly, negative semesters tend to followed by underperforming semesters. This is particularly visible in the May to October data set. These periods noticeably outperformed their average when they were preceded by a strong Nov to April period, and markedly underperformed the average when preceded by a weak Nov to April period.

Summary

It indeed appears that certain months of the year are more bullish than others. Furthermore, a simple division of the year in two six-month periods reveals two distinct performance profiles – one consistent and bullish (Nov-Apr), the other choppy and neutral/bearish (May-Oct). This information alone could enable a buy-and-hold investor to limit his exposure by only investing during the bullish winter and spring periods. Furthermore, we have seen that bullishness often begets bullishness, and bearishness often begets bearishness. So recognizing bullish periods and staying invested during times of market euphoria could also be a simple, yet profitable, strategy for the average investor.

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