



Demystifying the Santa Claus Rally

Introduction

The Santa Claus rally is a well-documented seasonal factor believed to positively influence stock market prices in December. In this study we will try to determine whether this seasonal edge really exists and - if it does - how well it has stood the test of time.

Analysis

The data set we will use is the S&P500 Index (^SPX) from 1962 to 2013. For our first analysis we will enter long on the Nth day of December and exit on the last trading day of December. Trade size is \$100,000. The results are shown below:

December Buy Date (1)	Total Trades	Net Profit	% Profitable	Avg Winner	Avg Loser	Win/Loss Ratio	Max Drawdown	Profit Factor
1	52	78,563	73.08	2,862	-2,159	1.33	-10,822	3.60
2	52	85,064	75.00	2,782	-1,802	1.54	-8,876	4.63
3	52	75,142	75.00	2,496	-1,709	1.46	-9,887	4.38
4	52	78,783	76.92	2,459	-1,632	1.51	-8,326	5.02
5	52	71,819	76.92	2,272	-1,588	1.43	-8,387	4.77
6	52	64,133	73.08	2,350	-1,798	1.31	-10,081	3.55
7	52	58,858	67.31	2,443	-1,568	1.56	-11,507	3.21
8	52	59,192	61.54	2,636	-1,258	2.09	-8,814	3.35
9	52	60,004	65.38	2,531	-1,447	1.75	-9,563	3.30
10	52	57,623	71.15	2,243	-1,691	1.33	-9,081	3.27
11	52	55,150	73.08	2,186	-1,993	1.10	-9,081	2.98
12	52	63,302	75.00	2,200	-1,731	1.27	-9,081	3.81
13	52	65,159	75.00	2,160	-1,468	1.47	-8,549	4.41
14	52	70,348	78.85	2,136	-1,722	1.24	-7,838	5.09
15	52	73,085	76.92	2,261	-1,447	1.56	-6,894	5.21
16	52	77,979	76.92	2,333	-1,279	1.82	-5,236	6.08
17	52	70,526	76.92	2,175	-1,372	1.59	-6,418	5.28
18	52	70,698	76.92	2,080	-1,043	1.99	-5,256	6.65
19	52	56,468	73.08	1,869	-1,040	1.80	-5,219	4.88
20	52	53,811	73.08	1,782	-994	1.79	-5,169	4.87
21	52	55,237	75.00	1,780	-1,090	1.63	-4,791	4.90
22	52	47,466	71.15	1,656	-986	1.68	-4,791	4.44
23	52	38,284	67.31	1,527	-892	1.71	-4,949	3.52
24	52	32,357	69.23	1,364	-1,047	1.30	-5,236	2.93
26	52	25,341	67.31	1,234	-1,050	1.18	-4,967	2.42
27	52	16,581	65.38	996	-959	1.04	-4,333	1.96
28	52	14,872	65.38	849	-777	1.09	-4,237	2.06
29	52	10,187	65.38	677	-713	0.95	-4,792	1.79

(1) Buy on the close of previous day; exit on the close of Dec 31st; If day falls on holiday or weekend, buy on the following day;

As we can see, over the past 52 years the month of December has generally proved profitable. Looking at the full 31 day holding period (row 1), **73% of the months were winners and profits would have outweighed losses by 3.6 to 1**. The worst year on record was 2002, that saw a monthly decline in the S&P500 of 5.85%. The year with the highest drawdown was 1980, with a 10.82% drawdown for a 3.39% December loss.

One thing that stands out from the above results is that both profit factor and win rate numbers appear to peak half way down the table - i.e. when the trade is entered towards the middle of the month. So to validate whether the two halves of the month of December exhibit different levels of positive bias, the same system was applied to the periods Dec 1st-15th and Dec 15th-31st, with the following results:



The Mechanical Trader

Period	Entry	Exit	% Profitable	Winning Trades	Losing Trades	Win/Loss Ratio	Profit Factor
Full	1-Dec	31-Dec	73.08	38	14	1.33	3.60
1	1-Dec	15-Dec	55.77	29	23	0.70	0.88
2	15-Dec	31-Dec	76.92	40	12	1.56	5.21

The data clearly indicate that **the first half of December does not exhibit the same positive edge as the second half**. In fact, the first half of December has historically been mildly bearish, with a profit factor of less than 1. The latter part of December, on the other hand, has been historically bullish, with a win rate of 77% and profit factor of 5.21. So Santa Claus does indeed ride his sleigh down Wall Street, but only after Dec 15h.

Below are the equity curves, the first for the Dec 1st to Dec 15th period showing no positive edge, and the second for the Dec 15th to Dec 31st period showing a strong and consistent positive edge.

Fig 1: Santa Claus Rally: Dec 1st to Dec 15st

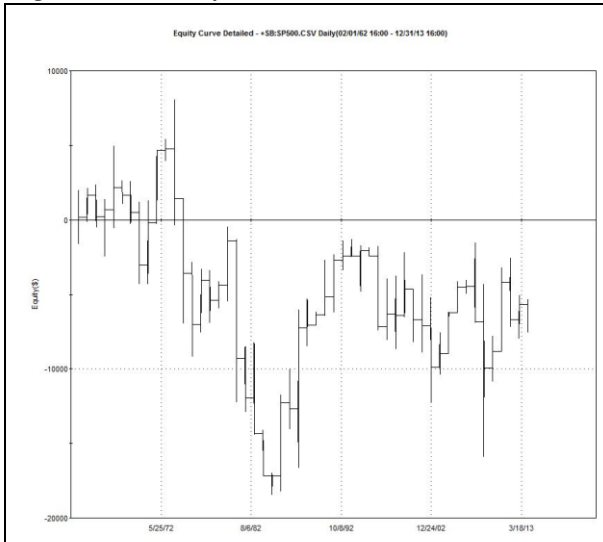
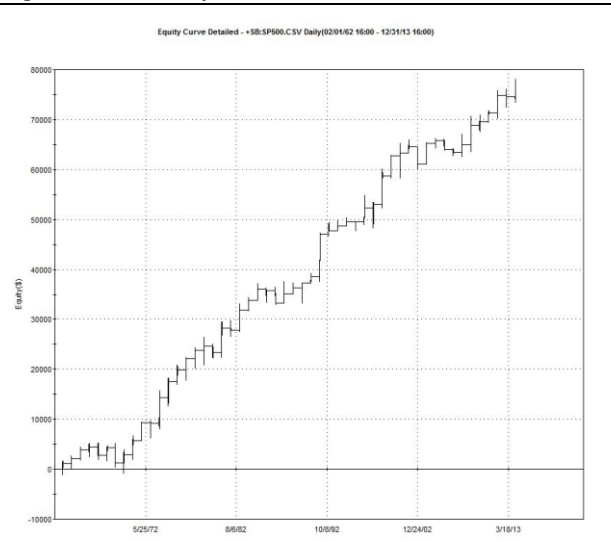


Fig 2: Santa Claus Rally: Dec 15th to Dec 31st



It would therefore appear that **it is better to wait until mid December before going long purely on the basis of December seasonality**. Having determined a possible time of entry, let us now look at when a Santa Claus rally trade should be exited. Does the edge fade out before Christmas or does it carry on until the very last days of the year?

Below is a table showing the results of entering the trade on Dec 15th and exiting on the close of any subsequent day in December. What we see is a slow and consistent increase in both the win rate and the profit factor, day after day, peaking on the last trading day of the year. This indicates that **the edge is strong throughout the 2 week period** and that an early exit may not be warranted.

December Sell Date	Total Trades	Net Profit	All: % Profitable	Avg Winner	Avg Loser	Win/Loss Ratio	Max Drawdown	Profit Factor
15	52	3,354	48.08	795	-612	1.30	-4,079	1.20
16	52	2,943	46.15	1,036	-783	1.32	-6,087	1.13
17	52	2,329	50.00	1,061	-972	1.09	-5,920	1.09
18	52	16,607	50.00	1,659	-1,020	1.63	-6,917	1.63
19	52	19,356	55.77	1,581	-1,152	1.37	-6,394	1.73
20	52	18,043	55.77	1,564	-1,187	1.32	-7,580	1.66
21	52	25,559	63.46	1,532	-1,316	1.16	-8,466	2.02
22	52	34,595	65.38	1,568	-1,039	1.51	-7,279	2.85
23	52	40,782	57.69	2,041	-930	2.20	-6,515	2.99
24	52	47,814	63.46	2,112	-1,152	1.83	-6,640	3.18
26	52	56,493	69.23	2,141	-1,287	1.66	-6,537	3.74
27	52	58,108	73.08	1,993	-1,258	1.58	-6,515	4.30
28	52	61,107	69.23	2,170	-1,064	2.04	-7,599	4.59
29	52	65,544	73.08	2,200	-1,289	1.71	-6,978	4.63



30	52	69,056	76.92	2,163	-1,456	1.49	-6,950	4.95
31	52	73,085	76.92	2,261	-1,447	1.56	-6,894	5.21

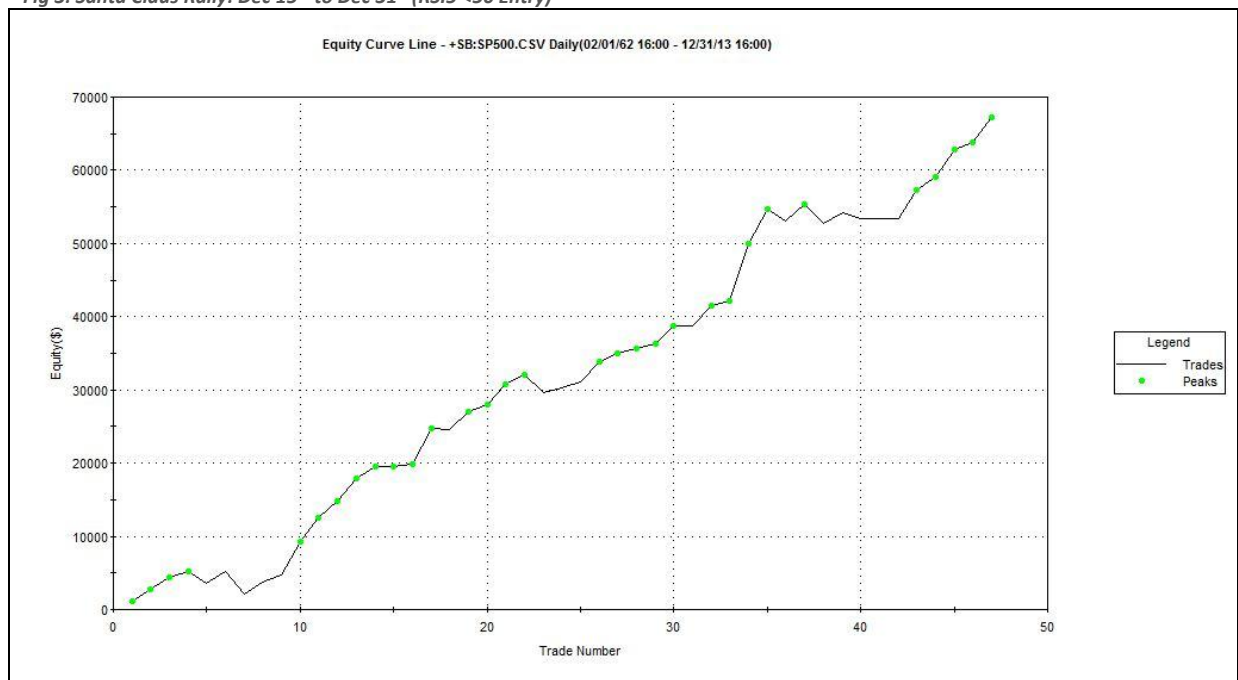
The final piece of analysis involves determining whether it might be worthwhile to “time” the entry. The simple approach would be to enter long at the open on Dec 15th (or on the close on Dec 14th). But since we know that the following 2 weeks are likely to be bullish, it may make sense to enter on a mild pullback to further increase trade expectancy.

The first row of the table below shows the results of entering systematically on Dec 15th. The second row shows the results of entering on or after Dec 15th on a close below the 10 day moving average. The last row shows the results of entering on or after Dec 15th if and when the 5 day RSI closes below 50 – i.e. is in marginally oversold territory.

Entry Rule	Total Trades	Net Profit	All: % Profitable	Win/Loss Ratio	Profit Factor
Enter on Dec 15 th (close of Dec 14 th)	52	73,085	76.92	1.56	5.21
Enter on or after Dec 15 th on a close below the 10 day MA	45	61,803	77.78	1.53	5.94
Enter on or after Dec 15 th if the 5 day RSI is below 50	47	67,235	80.85	1.36	6.44

As we can see, using these timing triggers would have had a positive effect on both profit factor and win rate numbers. Net profit, however, would have decreased because of the lower number of trades. Below is an equity curve of the system using the “5 day RSI below 50” entry trigger.

Fig 3: Santa Claus Rally: Dec 15th to Dec 31st (RSI < 50 Entry)



Summary

The actual reasons behind the *December effect*, as it is also known, have been debated for years. They are most likely a combination of increased capital flows due to accounting and tax imperatives, “window-dressing” by fund managers, and general end-of-year optimism.

Santa Claus may not exist, but his rally certainly does. Or at least, it has existed quite consistently over the past 52 years. We have also seen that the rally only kicks into gear in the second half of December, and that it then remains consistently strong until Dec 31st.

Timing an entry is never easy, but traders looking to improve their risk-reward may want to consider waiting for a pullback before committing to a Santa Claus rally trade.