MAP SIGNALS

Tomorrow's top stocks today.

WOWSIGNALS

The power of repeated signals in Mapsignals data.

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I was born a Sagittarius, but I'm not much of an astrologist. I am however into astronomy. Ironically, August 15, 1977, Ohio State University's Big Ear radio telescope was pointed at the constellation Sagittarius. Big Ear was being used to hunt for proof of extraterrestrial life. For 72 seconds it observed a strong radio signal coming from Sagittarius. It was so intense and unusual that astronomer Jerry R. Ehman wrote "WOW!" on the readout. Despite never being detected again, it's still the strongest candidate for evidence of intelligent life elsewhere.
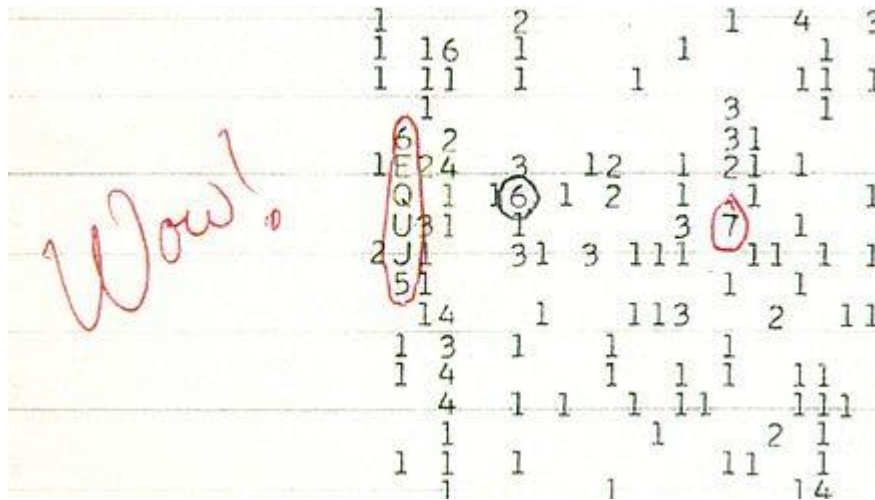
This graph clearly gives you an idea of how unusually strong this signal was:
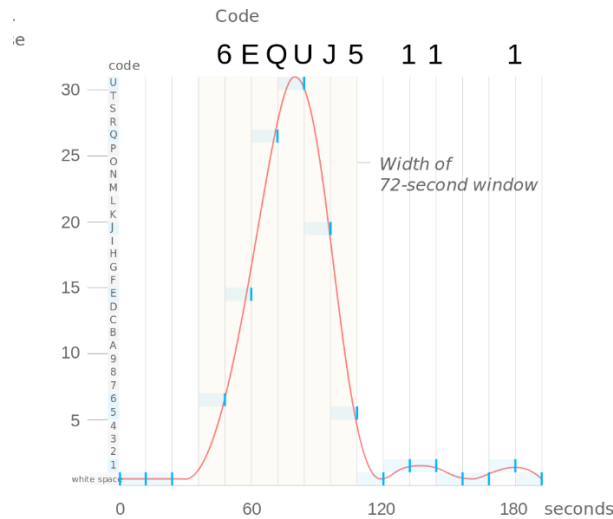

wikipedia

In this case, the signal was so impressive, it's still talked about in astronomy circles 40+ years on. The only thing standing in its way of being a confirmation of aliens, is that it has never been seen since.

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That's the power of one amazing signal: it has a lasting profound effect. But what happens when amazing signals get repeated again and again? Now that's something!

At Mapsignals, we use a statistical and data approach to analyzing 5,500+ stocks daily. We hunt down when we think big money investors are moving in and out of stocks. When they do, we get signals: or "yellow flags." This is when big money is moving in or out of stocks in a big way. A yellow flag is one step below a buy (green flag) or sell (red flag) signal. To get those, you need an extra high-price or low-price relationship to volume. Out of all those stocks, we only get a handful of yellow, green, and red flags each day. We have 30 years of data. But since ETFs gained in popularity, volumes soared, giving more signals in the latter part of our 30 year history. Looking back the last 10 years, we normally get 477 yellow flags every day. The average green flag buys are 62, and red flag sells are 44. Out of those buys and sells, we gather them up for a week and rank them for health and fundamentals by score. That's how we find our best stocks.
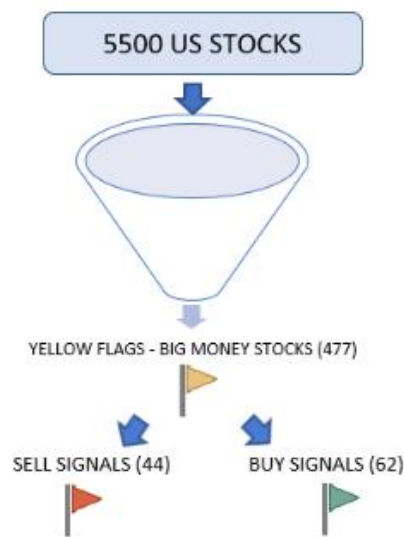
In this paper, we seek to answer the question: "are repeated signals more powerful than a lone Wowsignal?" One might assume the answer is "yes", but here we put it to the test, with the invaluable help of Columbia University Master of Financial Engineering candidate, Yifei Li. As always, we use science to try to prove or disprove our theories. This study is all about green and red signals: money moving in and out of stocks in a big way. It has nothing to do with our ranking stocks for fundamental strength and weakness. Here, our theory is simple:

Stocks with the most green buy signals is a great way to find stocks heading higher over time. Those with the most red sell signals, should fall like rocks.

Let's find out if repeated Mapsignals are better than a wowsignal…

To test our thesis, we created a study. It was simply to create hypothetical portfolios of the most frequently occurring green buy signals and most frequently occurring red sell signals. We tested this over a few time periods.

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We wanted to use live (non-back tested) data for this study. Mapsignals began collecting live daily data on thousands of stocks in 2014, so our study starts shortly thereafter to allow for return calculations. The study range is four years beginning January 1, 2015 and ends December 31, 2018. We chose three observation periods for our stock data:

- 3 months (quarter)
- 6 months (semi-annual)
- 12 months (annual)

To create our 3-month model portfolios, we did it like this: We observed all signals for 3 months and tallied the green buy signals and red sell signals. We then ranked each for most instances. For cases where different stocks had the same signal count, they were then ranked by our MAP score. (Note: we only used MAP score to rank stocks to create order in the case of a tie for signal count.)

Next, we constructed a basket of stocks to buy and sell. We tested both longs and shorts of the 10 most frequently occurring green buy signal and red sell signal stocks. The study held the long and short positions for 3 months. After the holding period concluded, we closed the positions, updated the observations, and rebalanced the portfolio with new stocks. We repeated this process for the entire 4-year study, and we did this for the 3, 6, and 12-month periods.

We benchmarked against the S&P 500 as a comparison for the same time periods. From 2015 to the end of 2018, the S&P 500 increased by 21.76%.

The following pages and graphs summarize what happened with our custom stock portfolios. We assumed investing $1.00 at the beginning of our strategy.

We assume no transaction or borrow costs for this study. The whole point of the study is to find out if repeated signals gave us an edge in forward performance.

In summary, we observed that when we get repeated sell signals, stocks fall and heavily underperform the market. When we get heavy buy signal repetition, stocks rise but don't necessarily outperform.

RED SELL SIGNALS

Assuming we had bought the 10 most frequently occurring sell signals in each time period, we clearly see that these stocks underperformed the market considerably.

Notice that each of the three holding periods showed negative results. The key here is ***stocks with repeated sell signals fell while the overall market rose.***

The annual rebalanced portfolio of long sell signal stocks dropped by -25.65%. The quarterly rebalanced portfolio dropped by -43.79%. The more frequently rebalanced 3-month basket underperformed the annual portfolio by a factor of -1.7x.[1]
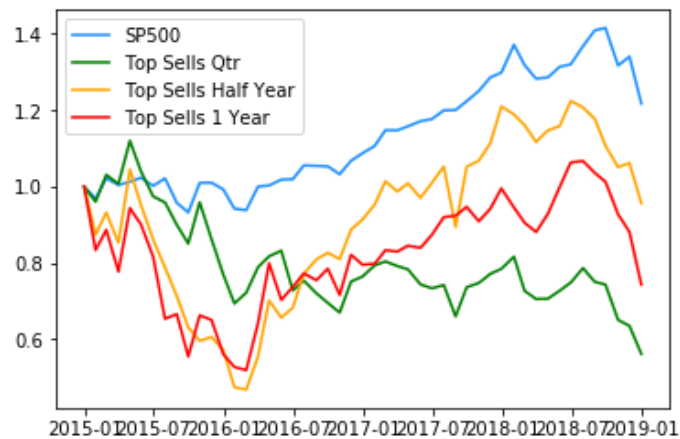

Again, the S&P 500 rose +21.76% during the same time. This means that buying the annual basket of repeated sell signals underperformed the market by -47.41%. Buying the 3-month basket of repeated sell signals underperformed the market by -65.55%.

We begin to see the implications of paying attention to repeated signals. This begs the question: ***What happens if we short the repeated sell signal stocks?***

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[1] This makes sense as typically the Mapsignals bottom 10 stocks to sell playout over a shorter time frame- usually 3 months. For more information on the MAP TOP 20 list of stocks visit: https://mapsignals.com/research-examples/

Here we suppose that instead of buying the repeated sell signals, we short the basket of the same stocks and rebalance instead. Note that even with the elevated volatility of the annual rebalanced portfolio, the result outperforms a long market position by +3.89%.

Now, the quarterly strategy offered less volatility, more stability, and generally outperformed the market. The final outperformance was an amazing +56.15%.[2]
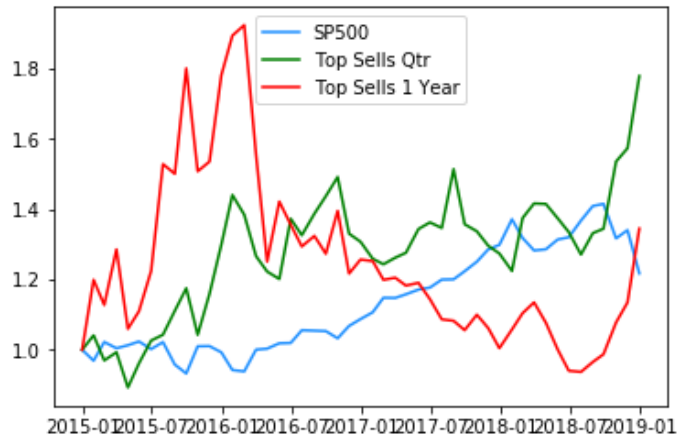
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GREEN BUY SIGNALS

One might assume buying frequent buy signals yields a stellar result right? Not so fast…

Assuming we bought the 10 most frequently occurring buy signals in each time period, we see that these stocks rise. Notice that each of the three holding periods showed positive results (i.e. the stocks went up) but only the 3-month strategy outperformed.

The quarterly strategy slightly outperformed (+1.26%) the market, rising 23.02%. The semiannual basket rose by 10.37%, while the annual basket only rose by 1.15%. Both of those period-rebalance strategies of following big money into any-old stocks underperformed. The key here is ***stocks with repeated buy signals rose but only outperformed the market in the case of the quarterly strategy.***

Here is a closer look of the quarterly updating basket (green line). We can see it is significantly more volatile than the market. This offers poor risk adjusted return: generally, investors don't want to accept higher risk for average returns. No one wants to take a bumpy flight when they can have a smooth one and get to the same destination.
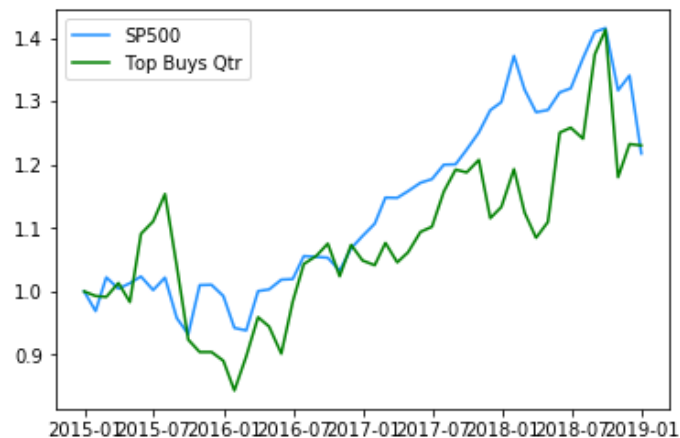
Wait- big money buying general stocks doesn't beat the market? I know what you're going to say: "you said we need to follow the big money. How does that make sense?"

Don't forget our stock picking process has *two equally crucial parts*.

1. Follow the money trail.
2. Focus on the best and worst stocks in terms of fundamentals.

This paper focuses solely on the frequency of signals or part 1: is big money moving in and out of stocks in general? We have not qualified healthy or unhealthy stocks (part 2).

The outcomes point to an interesting idea:

Falling stocks have a stronger technical component, while rising stocks have a stronger fundamental component.

Remember this study only considers the technical buy or sell signal. Repeated sell signals alone mean stocks fall and heavily underperform the market. Repeated buy signals alone mean stocks rise but don't necessarily outperform.

If we want to outperform, we need to be where the big money is buying the **best** stocks. Prior Mapsignals white papers have shown the importance of strong fundamental scores in picking outperforming stocks to buy. You can check out prior white papers here. Outperforming long stock picks using the Mapsignals method plays out longer than underperforming shorts. Longs typically playout over 9 months or more. Shorts collapse, but for a much shorter window- typically 3 months or less.

Let's think about what this says: to pick winners, we need strong fundamentals like growing sales, growing earnings, and respectable profit margins. We also need strong technical performance and an added boost from big money buyers.

But to isolate losers, we just need to see a lot of selling. When big money is getting out, the stock goes down. It doesn't matter if it's a healthy company.

This helps contextualize Mapsignals longs and shorts. Now it makes sense why longs take longer. When big money gets in, they typically aren't in for a few weeks. They buy into a business cycle, a sector trend, a product cycle and so forth.

But when they want out- they get out: the trade is done, or the thesis did not play out. And when they exit is precisely when algos go to town. When High Frequency or algorithmic traders see a rush for the exits, it's like a bucket of blood showered on a school of starving sharks. The frenzy is fast a furious. The hypothesis helps explain why Mapsignals' short trades underperform quicker than longs outperforming.

According to the data above: weak technicals alone are enough for a short trade. But if you want big juice to the upside, big money buying alone is not enough. You need big money buying healthy stocks. Again, recall that the study above with the most frequently occurring sell signals had the largest underperformance in a quarterly time frame: three months.

PUTTING IT TOGETHER

Now let's combine longs and shorts. Buying the top 10 buy signals and shorting the top 10 sell signals shows the strongest performance for the quarterly strategy. Notice the overall correlation, but on a more minute level - performance correlation becomes inverted or *dispersed*. When the market (blue line) zigs, the quarterly basket (pink) of longs and shorts zags. It's most pronounced when the market puked in late 2018:

Let's summarize: If you pay attention to big money selling, you can identify opportunities:

1. Short-term traders can get out of stocks.
2. Longer-term traders can wait for the flush (up to 3 months) and jump in for a discount; especially on stocks with healthy fundamentals.

Big money buying alone isn't enough to find winners. You need big money buying the best stocks. This is why the Mapsignals 20/10 is so powerful. It identifies when big money is getting in and out of the best and worst stocks.

If you want, you can stop reading here. The next pages detail volatility of baskets and different combinations of buys and sells over daily observation periods. They are included to illustrate a non-biased study.

Single signals grab attention. It can show investors buying or selling a stock unusually, or alert us of possible life elsewhere. But single signals can't compare to the power of many.

APPENDIX

The top 10 buy and sell baskets perform well but with a little extra volatility. One would expect a portfolio of equal longs and shorts to have a different volatility profile than being only long the market. Here is the comparison of the drawdowns of both the SP500 and the baskets:
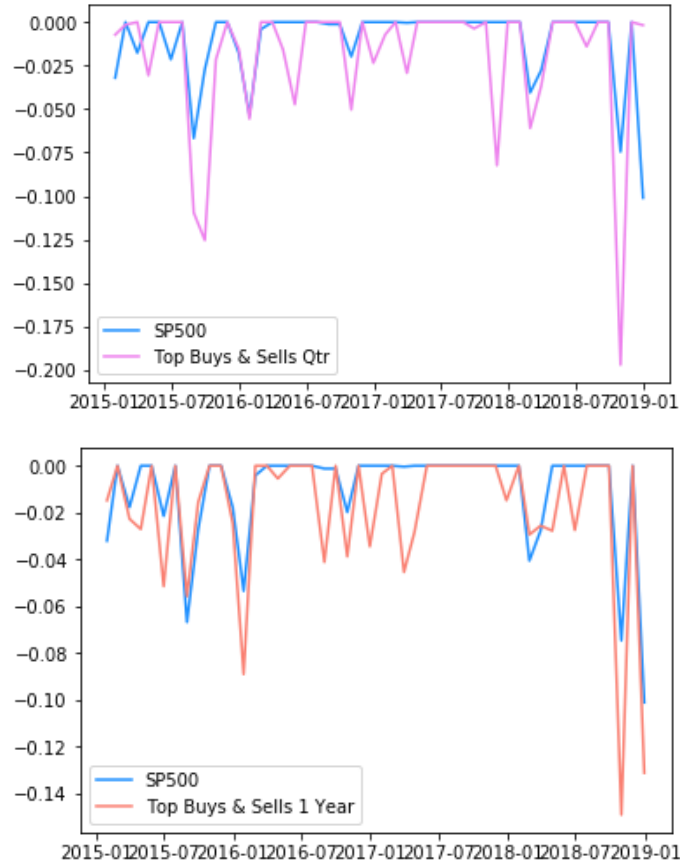
Annual volatility of the SP500 is 11.69% while the annual volatility of quarterly selling of top 10 occurring sells and the buying of top 10 occurring buys is 14.13%. It has a Sharpe ratio of 0.3206.

Another exercise we did was to pull out the daily data for quarterly basket, which starts in Apr 2014 and ends in Jun 2019. This is a longer period than the monthly data used prior. The following graph is the reciprocal performance of rebalanced baskets of the top 5 occurring sells and top 10 occurring sells by quarter.

The following graph is the top 10 occurring buys compared with only the top 5 occurring buys.
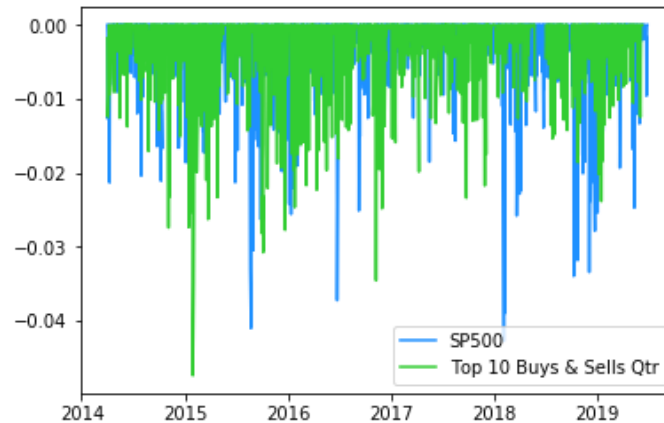

The following graph is buying the top 10 occurring buys and shorting top 10 sells compared to the top 5 occurring buys and sells (quarter).
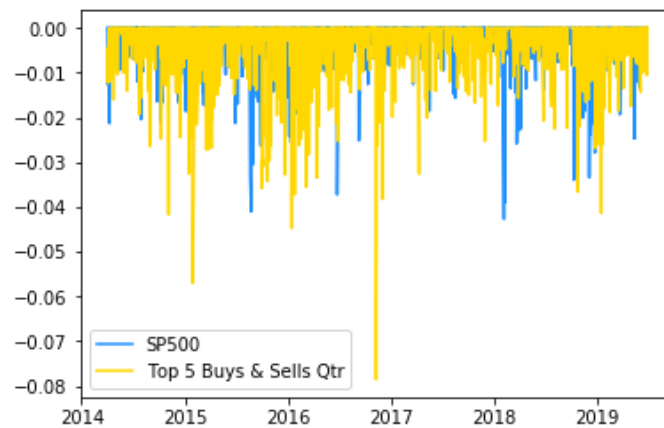

We can see that even with slightly elevated volatility, the drawdown profile of a rebalanced basket of top

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10 occurring buys and sells is similar to the market.

The top 5 occurring buy and sell baskets exhibit a more pronounced drawdown profile. This is logical considering we are comparing a basket of 10 rotation stocks against a long basket of 500 stocks.


The annual volatility of the S&P 500 is 13.27 % and the annual volatility of quarterly selling the top 10 occurring sells and the buying of top 10 occurring buys is 14.59%. The annual volatility of selling the top 5 sells and buying the top 5 buys (quarterly) is 19.03%. The Sharpe ratio of top 10 basket is 0.159814 and 0.3011 for top 5.

To create an impartial study, we also tested the least occurring buy and sell signals. The data is presented here, but as one would expect, it didn't show anything useful.

Let's now look at buying a basket of the 10 least occurring sell signals. These were the stocks that exhibited sell signals only once in the observation period. The first thing you'll notice is a correlation to the market. All three observation periods occasionally outperformed the S&P 500 but overall performance was mediocre.
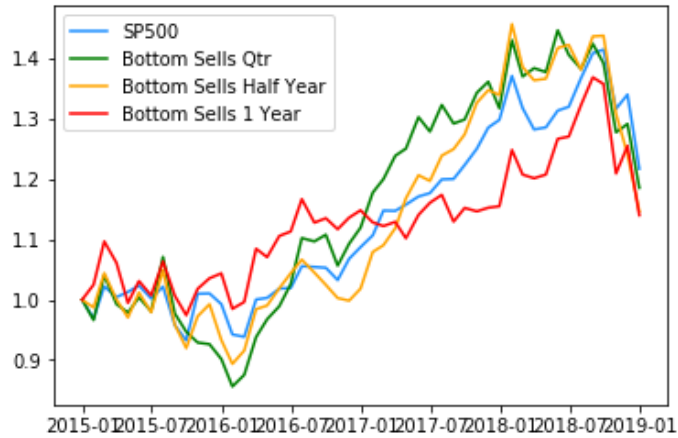
For the lowest occurring buy signals, the result underperforms the market in all three periods. These are stocks not seeing repeated buying. Performance of the 3, and 6-month periods correlated with the market for much of 2017-2019 until they collapsed from September 2018. Ultimately, all periods exhibited more volatility than the market.
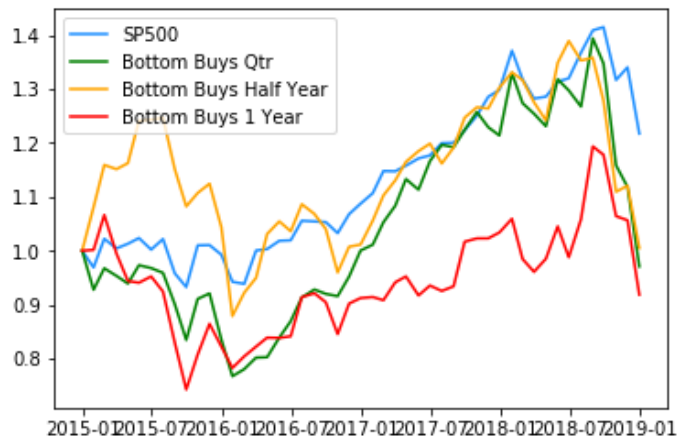
Recall that these portfolios are constructed with stocks with only one signal. The lack of reoccurrence brings these stocks close to random appearances. This diminishes the significance of their results.

The quarterly portfolio exhibited strong performance and correlation to the market. This is because of the frequent rebalancing.