



Revisiting “The Revenge of the Stock Pickers”

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Investing in ETFs instead of Stock Picking

- One method of investing is to pick individual stocks to build a portfolio, but this can expose the portfolio to more risk.
- Alternatively, another method is to invest in Exchange Traded Funds (ETFs), which are baskets of stocks based around a central theme.
 - E.g, the banking ETF 'XLF' holds stocks from Morgan Stanley, J. P. Morgan, and similar institutions.
- ETFs provide several advantages
 - Provide a straightforward way for an investor to diversify their portfolio.
 - Typically, have lower operating costs than mutual funds and require no minimum investment.



Investing in ETFs instead of Stock Picking

An exchange-traded fund (ETF) is a collection of securities that can be bought and sold on a stock exchange like stocks. ETFs can track a variety of assets, including stocks, bonds, commodities, and currencies, and can be structured to track a specific index, investment strategy, or price.

Two of the biggest attraction of ETFs are:

- 1) They typically have lower operating costs than mutual funds and have no minimum investment
- 2) They provide a straightforward avenue for an investor to diversify their portfolios

ETFs typically involve stocks that trade around a central theme (e.g., the banking ETF 'XLF' holds stocks from Morgan Stanley, J. P. Morgan, and similar institutions).



What is an ETF? (maybe just one slide)

The easiest way to illustrate ETF is a basket, where each basket holds actual securities.

For example a solar stock basket holds real share of companies that makes solar panels.

XLF is an (ETF) that aims to provide investment results that correspond generally to the price and yield performance of the Financial Select Sector Index. So this basket contains shares of companies like: JP Morgan chase, Berkshire Hathaway Inc, and Morgan Stanley.



Correlations between ETF Constituent Stocks

Lynch et al. 2019 identified that during high volume days, constituent stocks of an ETF become more highly correlated.

These high volume sell offs can occur from panic selling at the breaking of negative news.

However, constituent stocks less relevant to negative news may get caught up in the momentum

If these “outsider stocks” becomes oversold, then it could be suspected that it will revert back to its original price before the sell-off quickly



What is the investment strategy?

The trading strategy involves buying oversold constituents when an ETF (Exchange-Traded Fund) sells off

But When an ETF experiences a sell-off?

There are multiple reasons why this could happen but sometimes the reason can be “A high volume panic”.

Refers to a situation where there is a significant increase in trading volume accompanied by a sense of fear, uncertainty or extreme selling pressure among investors. This heightened trading activity is often driven by emotional reaction rather than rational decision making, leading to rapid and substantial price movement in the market. Sometimes some tweets from a politician can cause such panic.

What is the result of this sell-off?

It can lead to indiscriminate selling of all securities within the ETF, regardless of their individual fundamentals. This can result in certain stocks being oversold, meaning their prices may have dropped more than justified by their intrinsic value or fundamentals.



What is the investment strategy?

How can we benefit from this situation?

By identifying these oversold constituents within the ETF, investors can take advantage of potential mispricings and purchase these stocks at a discounted price.

The strategy relies on the assumption that the market has overreacted to the ETF sell-off, creating an opportunity for investors to buy undervalued assets that are likely to revert to their fair value over time.



How do we implement this strategy?

We follow these two steps:

Step1:

We find the places where the trade volume is very high and the return value is negative. The reason we choose these days is because the correlation between stocks in an ETF is very high in these days.

Step2:

We introduce a measure call β , that indicates the risk of investment Stocks in an ETF.



How do we implement this strategy?

We follow these two steps:

Step1:

We find the places where the trade volume is very high and the return value is negative.

Step2:

Build a portfolio of “outsider” by computing their correlations with other constituent stocks



Data Set

The data set we worked on contains the ETF and its individual stocks between “2019-10-01” and “2024-04-01”.

Our data consists of:

ETFs- ‘XLY’, ‘XLP’, ‘XLE’, ‘XLF’, ‘XLV’, ‘XLI’, ‘XLB’, ‘XLK’, ‘XLU’, ‘XLRE’, ‘XLC’-and their underlying stocks.

We aggregate their opening price, closing price, high values, low values, and volume for these tickers

We also compute the daily returns for these tickers as:

$$\frac{\text{Closing Price Today} - \text{Closing Price Yesterday}}{\text{Closing Price Yesterday}}$$



Step 1:

First we filter the data based on the volume spike:

we calculate the volume mean and volume standard deviation then we define:

$$\text{Volume spike} = \{ \text{volume} \mid \text{volume} > \text{volume mean} + 3(\text{volume standard deviation}) \}$$

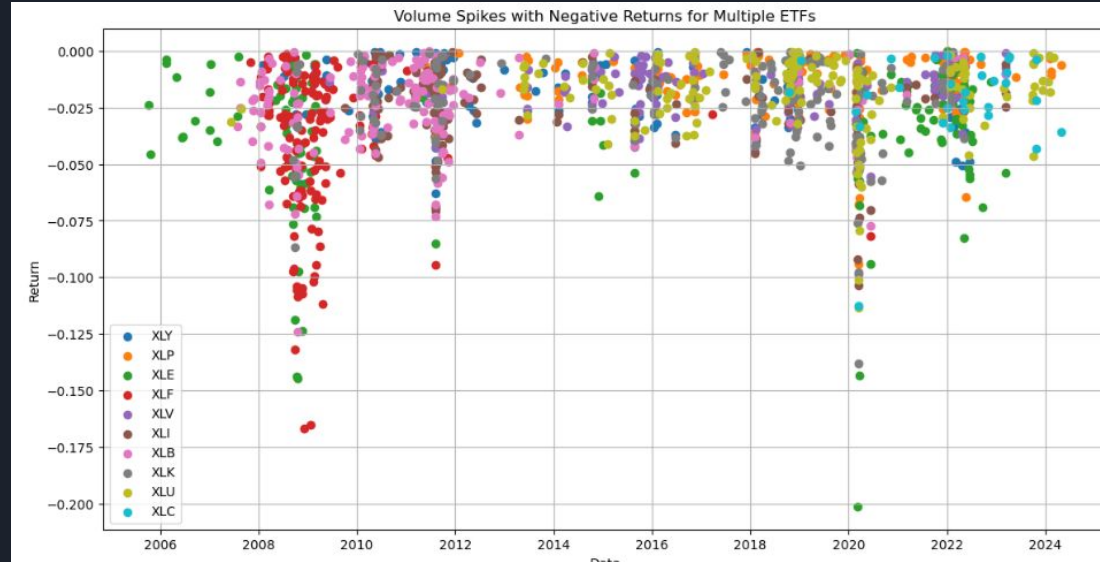
Then between these volumes we filter the ones that have negative return.

Step 1: High-Volume Negative-Return Days

First we filter the data based on the volume spikes

We identify these spikes as days with volumes three standard deviations above the exponentially weighted mean volume.

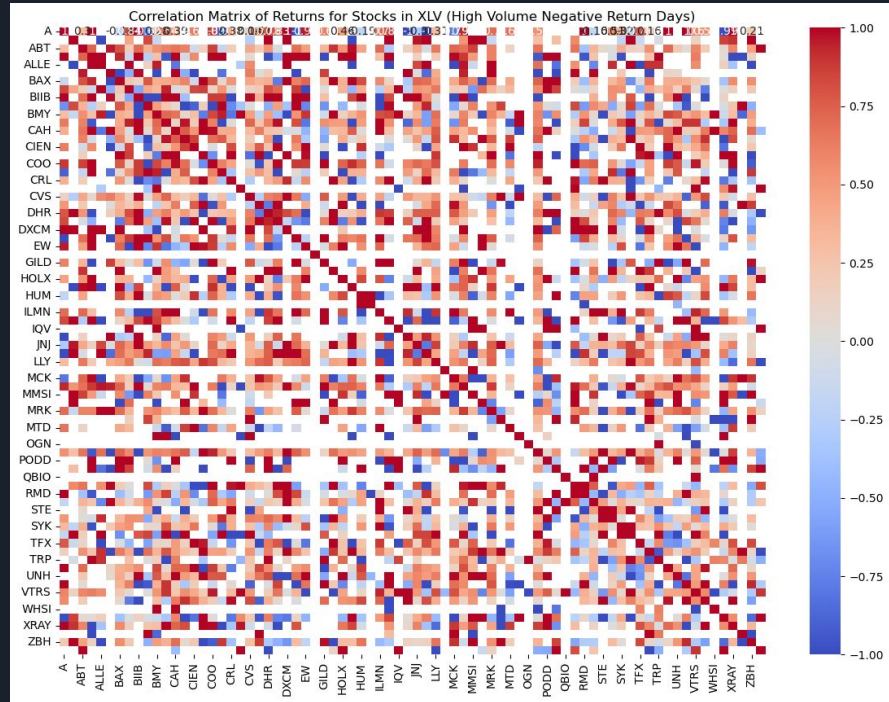
We then filter these for days where the ETFs returns were negative



The picture on the right shows the point we are looking for, among all the ETFs.

Step 1

The picture on the right shows the correlation between the return of the underlying stocks of the “XLV” ETF, on the high volume spikes days.





Step 2:

Then we do a weighted linear regression where:

- The Response is “stock_t” which is the returns of the stock up to but not including the date t.
- The predictors are “etf_t” which is the returns of the ETF up to but not including the date t.

So technically we will have :

$$\text{stock_t} = \beta(\text{etf_t}) + \epsilon$$

Where etf_t is a vector of return of:

$$\text{etf_t} = ['XLY', 'XLP', 'XLE', 'XLF', 'XLV', 'XLI', 'XLB', 'XLK', 'XLU', 'XLC']$$

And

$$\beta = [\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6, \beta_7, \beta_8, \beta_9, \beta_{10}]^T$$

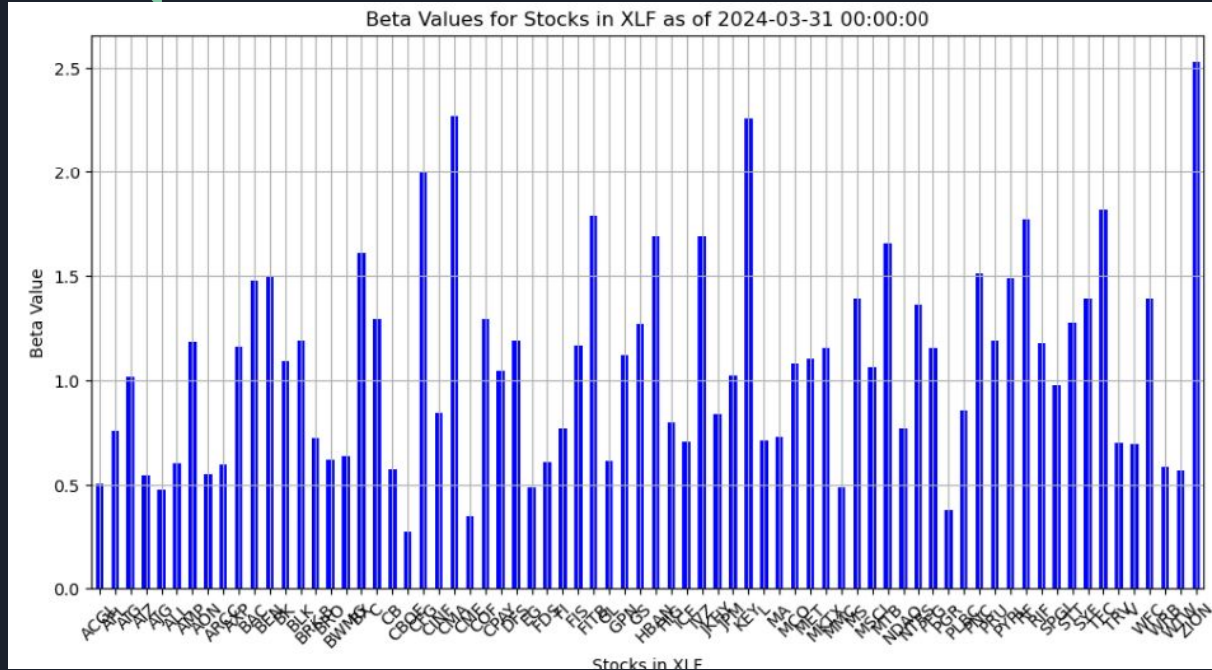


Step 2:

Then we find the β coefficients for each of the stocks in each ETF. These β values, show the risk of investment Stocks in an ETF.

Stocks in the ETF with larger β contribute more to the volatility of the ETF. Intuitively, stocks with smaller β values are less related to the themes surrounding most high-volume selloffs of the ETF.

What is the investment strategy?



In here we will choose to buy the stocks that have the β values less than 10%.

For example, This plot is the result of the β values we found for XLF. As you see very few of them will be chosen to invest on.



Correlation bubbles everywhere:

Fortunately, The cure to this problem is rather simple,
the most spikes in ETF trading volume lead to abnormal correlation and low ETF β values appear to be a
good way to identify the outsiders.



Back testing:

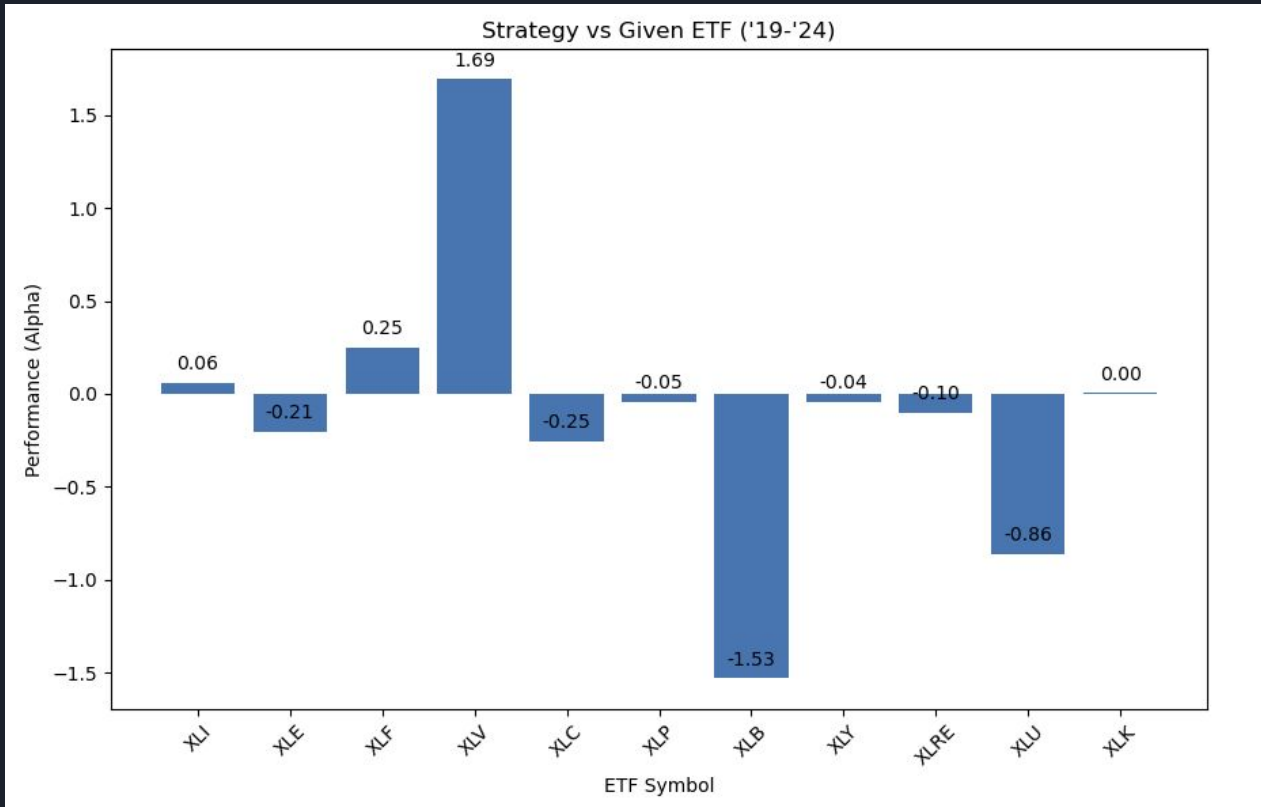
After we choose the days D and the stock S , Now we want to hold the stocks for 40 days and then compare the result of the return for the stock r_S and the ETF return r_{ETF}

To do so we define a measure call alpha. Alpha is a measure used in finance to evaluate the performance of an investment relative to benchmark or market index. It represents the excess return generated by an investment strategy or portfolio above the return expected based on its level of risk as measured by beta. We define alpha as:

$$\alpha = \frac{r_S}{\beta_S} - r_{ETF}$$

Note that these alpha values does not indicate what stocks to invest in just indicates, if we invest on some stocks and hold them for 40 days, what is the associated alpha. i.e, to what degree does this stock's leveraged 40-day return outperform that of the ETF.

Results





Conclusion:

- We observe the same strengthening of correlations between constituent stocks on high-volume, negative-return days.
- We do not recover the same returns as the Lynch et al. (2019) study, and our returns are much more varied.
- There may be other factors at play that would warrant investigation in the future
 - E.g., varying the holding period of the stock from 40 days or different weightings of the outsider stock in the candidate portfolio.



Finally:

Thank you !