

# Volume Driven Price Chase Strategy

Submitted by – Kripansh Mohit, 21112065

## INTRODUCTION

The "Volume Enhanced Price Chase Strategy" is rooted in a fundamental principle: the propensity of stock prices to persist in their established trends when supported by significant trading volume and the prevailing price itself. This strategy harnesses the power of this phenomenon to discern market opportunities. In the following discussion, we'll delve into the strategy's core mechanics, which capitalize on this tendency to guide traders in making well-informed decisions within dynamic financial markets.

This report will cover the following topics:

1. Strategy Overview with parameters used
2. Buy and Sell Signalling
3. Performance Metrics
4. Conclusion
5. References

## STRATEGY OVERVIEW

The strategy makes use of MACD indicator, Average Volume and Exponential Moving Average of stock's close price.

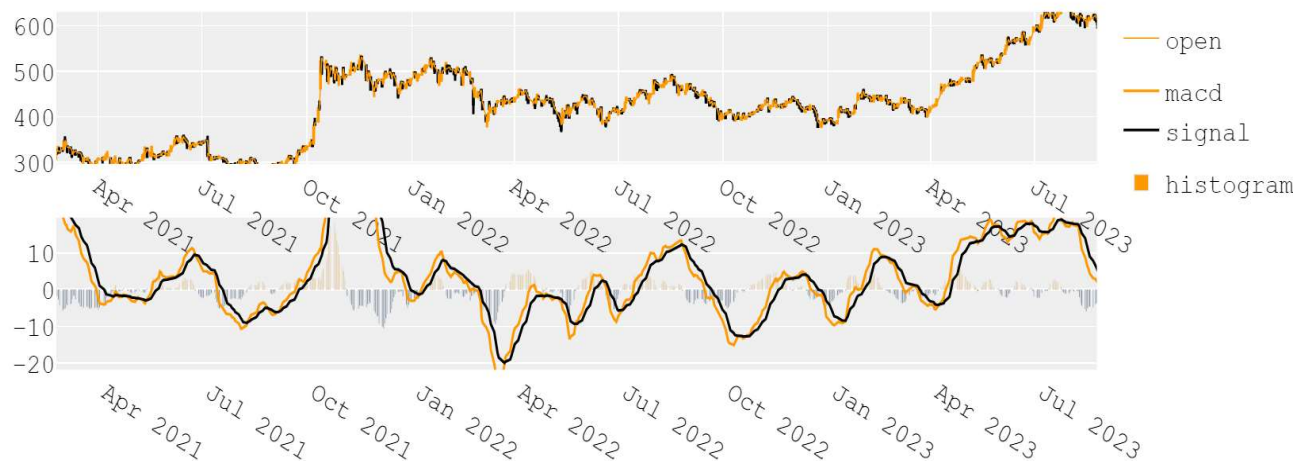
### MACD (Moving Average Convergence/Divergence)

- MACD is a trend following momentum indicator consisting of MACD line and signal line.
- MACD line is calculated by subtracting the 26-period exponential moving average (EMA) from the 12-period EMA. The signal line is a 9-period EMA of the MACD line.

```
# 26-day EMA of the closing price
k = tin1['Close'].ewm(span=12, adjust=False, min_periods=12).mean()
# 12-day EMA of the closing price
d = tin1['Close'].ewm(span=26, adjust=False, min_periods=26).mean()
# Subtracting the 26-day EMA from the 12-Day EMA to get the MACD
macd = k - d
# 9-Day EMA of the MACD for the Trigger line / signal line
macd_s = macd.ewm(span=9, adjust=False, min_periods=9).mean()
# Calculating the difference between the MACD - Trigger for the Convergence/Divergence value
macd_h = macd - macd_s

# Adding all of our new values for the MACD to the dataframe
tin1['macd'] = tin1.index.map(macd)
tin1['macd_h'] = tin1.index.map(macd_h)
tin1['macd_s'] = tin1.index.map(macd_s)
```

✓ 0.0s



## Volume Average

- Daily trading volume is how many shares are traded per day.
- You can calculate average daily trading volume by adding up trading volume over the last X number of days. Then divide the total by X. For example, add the last 20 days of trading volume and divide by 20 to get the 20-day ADTV.

## EMA

- The EMA is a moving average that places a greater weight and significance on the most recent data points.
- Like all moving averages, this technical indicator is used to produce buy and sell signals based on crossovers and divergences from the historical average.

```
# VMA applied as V20
df['V20']=df['Volume'].rolling(window=20).mean()
# 12EMA applied as ma12
df['ma12']= df['Close'].ewm(span=12, adjust=False, min_periods=12).mean()
df['Signal']=0
df
✓ 0.0s
```

## BUY AND SELL SIGNALLING

- Signalling buy as 1 in zones of positive divergence ,high volume and undervalue --> checked by exponential moving average with a span of 12 days

- Signalling sell as -1 in zones of negative divergence, high volume and overvalue --> checked by exponential moving average with a span of 12 days



## PERFORMANCE METRICS

Back testing is done on ticker='TATAMOTORS.NS' from start = '2018-09-20' and end = '2023-09-20'

Total Return: 244.13%

Annualized Return: 28.71%

Benchmark Return: 155.90%

Number of Trades: 39

Max Drawdown: 72.88%

Number of Profit-Making Trades: 24

Number of Loss-Making Trades: 15

Win Ratio: 61.54%

Sharpe ratio: 1.4114808246300894

Returns, Buy and Sell signals and portfolio value of Infosys, Bajaj Finance, Bajaj Auto and Tata Motors has been uploaded as csv file in the drive link.

## CONCLUSION

The Volume Driven Price Chase Strategy seems to work well with stocks exhibiting small phases of growth and correction. It fails to give good returns on highly volatile stocks because of its inability to catch reversions and follow up on long momentum trends. Also, huge losses could have been prevented by adding suitable stop losses.

However, by effectively utilizing volume and MACD along with well-defined buy and sell rules, this strategy aims to deliver profitable trading results with decent Sharpe and win-ratio. Continuous monitoring and refinement of the strategy are essential to adapt to changing market conditions and further enhance its performance over time.

## REFERENCES:

[MACD Indicator Explained, with Formula, Examples, and Limitations \(investopedia.com\)](https://www.investopedia.com/terms/m/macd.asp)

[Financial Data Visualization In Pyplot | Python Tutorial - YouTube](https://www.youtube.com/watch?v=8vXqYqYqYqY)

[Algorithmic Trading Strategy Using MACD & Python - YouTube](https://www.youtube.com/watch?v=8vXqYqYqYqY)

<https://www.youtube.com/@Algovibes>