CFA: FnQ Induction Task
Designing and Backtest of a Market Trading Strategy on Indian Equities
Task: Trend-Following Strategy (Intermediate)

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## *1. Strategy Explanation and Indicator Selection*

The primary goal is to identify and profit from established market trends using a trend-following system optimized for the Indian stock market. This strategy leverages the combination of:

- *Exponential Moving Average (EMA) Crossover*: It captures the short term to long term trend changes by comparing a faster EMA with a slower EMA. When a shorter-period EMA crosses above a longer-period EMA, it's often seen as a bullish signal, suggesting a potential uptrend. Conversely, a crossover below indicates a potential downtrend. It helps in pointing potential trend reversals, allowing better exit or entry in the market.

- *Average Directional Index (ADX)*: Filters weak signals by ensuring trades are placed only in strong trending markets (ADX > 25). It is non-directional, meaning it registers trend strength, not whether price is trending up or down. It helps identify whether a market is trending or simply ranging, which is crucial for choosing appropriate trading strategies and going in the direction of momentum.

- *Sectoral Rotation Strategy*: To maximize returns by strategically shifting investments between different sectors of the market based on their performance and potential during various economic phases. It also helps diversify investments and reduce the risk of being overly concentrated in a single sector.

By combining these, the system aims to reduce false positives in ranging markets and ensure participation in stronger trends.

2. Results and Metrics in Different Indian Market Conditions

➔ *Sideways Market from January 2011 to June 2013*:
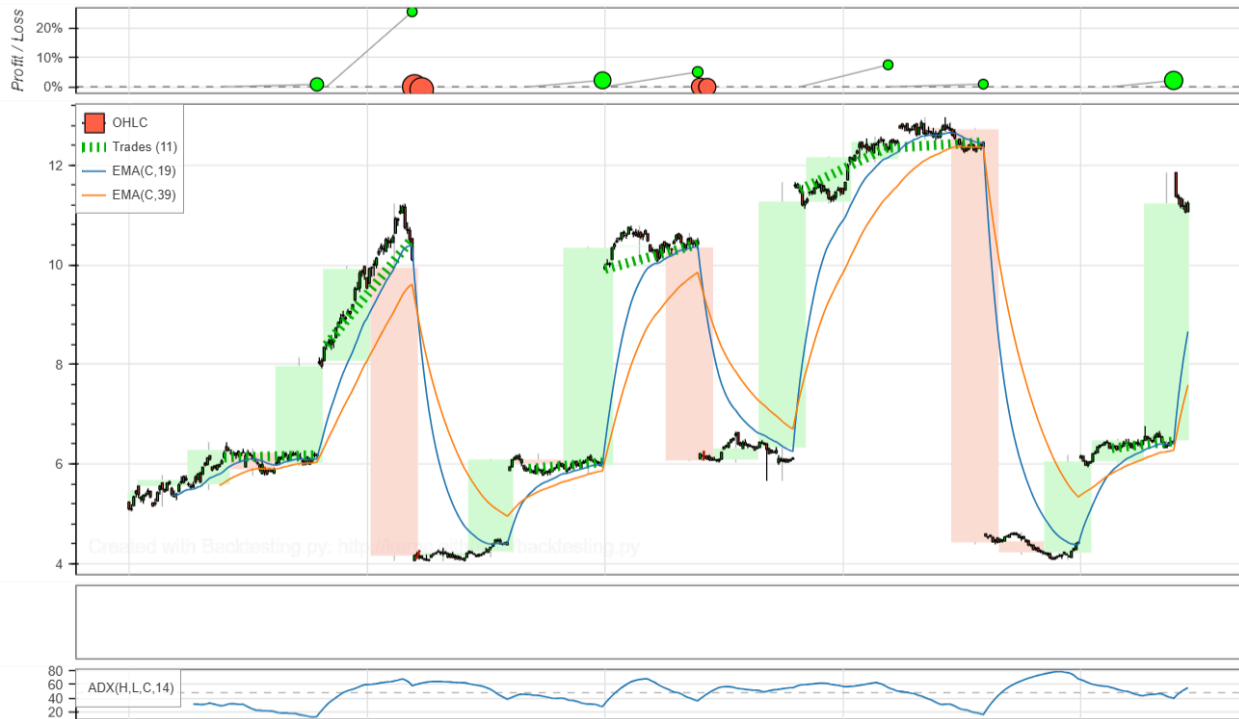
1.	Cumulative Return	13.7938 %
2.	Annualized Return	29.49416 %
3.	Sharpe Ratio	1.29943
4.	Sortino Ratio	2.56197
5.	Maximum Drawdown	-8.79119 %
6.	Win Rate	63.63636 %
7.	Profit Factor	4.7789

- During a sideways market period, the strategy achieved a CAGR of 13.7938 %, while the NIFTY 50 index delivered a negative CAGR of -1.35348 % over the same timeframe. This significant outperformance

highlights the strategy's adaptability in non-trending conditions. While benchmark indices like the NIFTY 50 struggled to generate returns, the trend-following strategy maintained positive momentum by selectively participating in trending stocks and effectively filtering out noise using momentum and trend indicators.

➔ *Uptrending Market after 2014 Elections from June 2014 to December 2015*:

1.	Cumulative Return	10.72768 %
2.	Annualized Return	19.26142 %
3.	Sharpe Ratio	1.28241
4.	Sortino Ratio	2.31239
5.	Maximum Drawdown	-9.15973 %
6.	Win Rate	100 %
7.	Profit Factor	NaN

- Over this uptrend period, the strategy delivered a CAGR of 10.72768 %, significantly outperforming NIFTY 50's CAGR of 2.67644 % during the same timeframe. This indicates that the strategy was not only able to capture bullish momentum effectively but also outpaced the broader market by a wide margin. By leveraging trend-following indicators such as EMA crossover and ADX, the system selectively entered high-conviction trades while avoiding common pitfalls of lagging signals or market noise.

➔ *Market during COVID-19 from January 2020 to December 2021:*
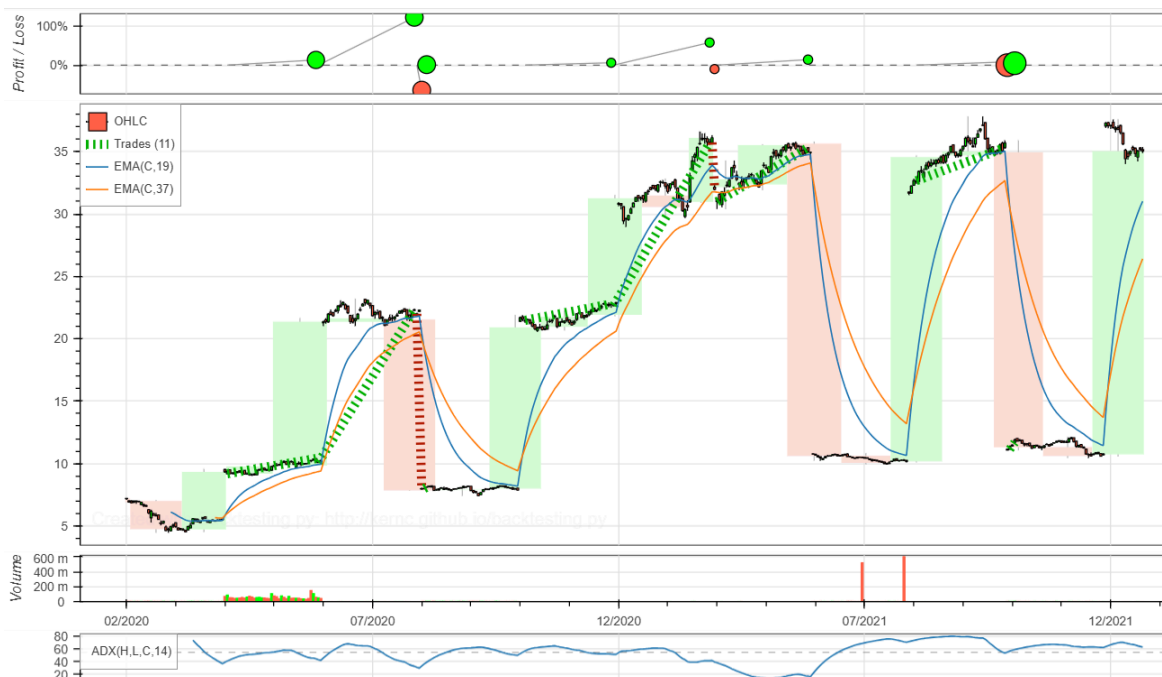
1.	Cumulative Return	21.81881%
2.	Annualized Return	37.69669 %
3.	Sharpe Ratio	0.19241
4.	Sortino Ratio	0.72467
5.	Maximum Drawdown	-65.74651 %

6.	Win Rate	72.72727 %
7.	Profit Factor	3.07197

- Across the full evaluation period, the strategy achieved a Compound Annual Growth Rate (CAGR) of 21.8%, compared to 12.2% for the NIFTY 50. This represents a relative outperformance of 9.6 percentage points annually, demonstrating the strategy's ability to consistently generate superior risk-adjusted returns over the benchmark. The performance advantage reflects effective trend identification, timely entries/exits, and strong trade filtering using technical indicators like EMA and ADX.

➔ *Present Scenario from January 2022 to December 2024:*
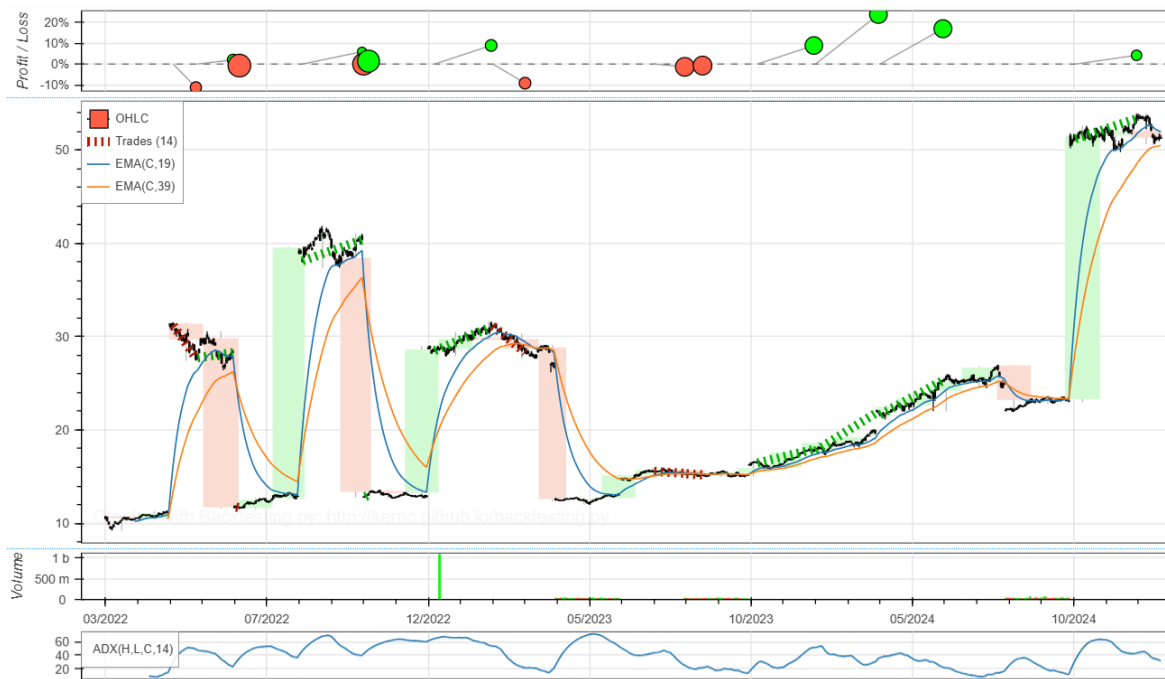
1.	Cumulative Return	9.93254 %
2.	Annualized Return	16.07391 %
3.	Sharpe Ratio	0.8858

4.	Sortino Ratio	1.73067
5.	Maximum Drawdown	-14.99289 %
6.	Win Rate	57.14286 %
7.	Profit Factor	3.1184

- During the observed period, the strategy achieved a CAGR of 9.93254 %, outperforming the NIFTY 50's CAGR of 6.07597 %. This outperformance highlights the strategy's ability to generate alpha over passive index investing, even in moderately trending or mixed market conditions. The use of momentum and trend-following indicators enabled more precise trade entries and exits, contributing to this performance edge.

3. Resources

- https://economictimes.indiatimes.com/wealth/invest/manoeuvring-global-economic-and-business-uncertainties-via-quality-investing/articleshow/121179857.cms?from=mdr
- https://www.investopedia.com/
- https://kernc.github.io/backtesting.py/doc/backtesting/
- https://chatgpt.com/
- https://www.youtube.com/playlist?list=PLnSVMZC68_e48lA4aRYL1yHYZ9nEq9AiH