Project Report - Inter IIT Tec

Do Elliott Waves work in the Indian Energy Sector?

#TeamId - 51

Introduction To Hypothesis

H_o- A combination of uptrend and downtrend trading, and Elliott waves can be used to make consistently profitable trades in the Indian Energy sector.

A. Why the energy sector?

Numerous geopolitical and economic reasons can cause significant price movements in the energy sector, especially the oil markets. By spotting and taking advantage of market trends and patterns, price action traders can profit from this volatility. The energy market is typically known for safe investments with higher returns. The Energy market can be seen to move in cycles as can be seen throughout history in boom-and-bust cycles. With respect to the above-mentioned points, we came to a conclusion to select the Energy sector for our study and analysis.

B. The energy sector in the context of the Indian Equity Market

A combination of internal and international factors, including shifts in governmental policy, supply and demand dynamics, and geopolitical events, have an impact on India's energy sector. These elements may cause substantial price changes in the energy markets, providing price action traders with chances to earn by spotting and taking advantage of market trends and patterns. Additionally, there is a thriving futures and options market for the energy industry in India, giving traders a trusted venue to obtain and act on market information. These characteristics make the Indian energy sector a good candidate for price action tactics.

On the plus side, the Indian government has implemented a number of policies to strengthen the stability of the energy sector, including the expansion of the domestic oil and gas industry and the promotion of renewable energy sources.

The industry still has to overcome a number of obstacles, such as a heavy reliance on imports, particularly for oil and natural gas, the restricted availability of energy in rural areas, and the requirement to upgrade the infrastructure and distribution system.

Overall, while the Indian energy sector has seen significant growth and development in recent years, there are still challenges that need to be addressed to improve its stability.

C. The energy sector in the given time period

Between 2018 and 2021, India's energy sector had substantial growth and development, making it a promising area to research. The expansion of renewable energy sources and the development of the local oil and gas industry are only two of the initiatives that the Indian government has put in place to expand domestic energy output and decrease the nation's reliance on imports. Additionally, India's energy industry is anticipated to increase over the coming years, making it a desirable field of study for people with an interest in this industry.

The energy sector saw volatility from 2018 to 2021 because of numerous geopolitical and monetary events. Oil prices and energy stock levels, for instance, may be impacted by changes in oil production levels and variations in world demand.

From a more macroeconomic perspective, it has been predicted that producers of hydrocarbons will no longer be able to rely on the market's typical boom-and-bust cycle. Instead, as a result of banks restricting their access to credit, oil, and gas corporations have joined the hitherto exclusive club of gambling, tobacco, and other undesirable industries.

We are on the verge of an unprecedented commodity supercycle, when producers can't keep up with the rising demand, leading to a spike in prices, and most new projects are currently on hold due to supply finance concerns. Energy poverty is likely to emerge as consumption will start to be restricted. Additionally, we must keep in mind that commodities are like the plankton of the economic food chain; if their prices rise the entire market will remain broadly affected, hence tracking and signal generation are of paramount importance.

D. Stock Universe

As mentioned above we selected the energy sector for our study and analysis. For the selection of stocks, we have looked for market capitalization. We sorted the stocks in the Energy sector according to their market capitalization and selected the Large and Mid Cap companies from the list. We arrived at a list comprising of 7 stocks namely:-

1. Reliance Industries Ltd (RELIANCE)
2. Oil and Natural Gas Corporation Ltd (ONGC)
3. Indian Oil Corporation Ltd (IOC)
4. Bharat Petroleum Corporation Ltd (BPCL)
5. Hindustan Petroleum Corp Ltd (HINDPETRO)
6. Petronet LNG Ltd (PETRONET)

7. Oil India Ltd (OIL)

Tools for detecting Price Action

A. Elliott Waves

The theory was developed by Ralph Elliott in the 1930s and is based on the idea that stock prices move in repeating patterns, which are characterized by waves of price movements. It is an analysis tool used to identify patterns in financial market data, including stock prices, currency exchange rates, and commodity prices. They are based on the idea that market prices move in predictable patterns, reflecting the collective psychology of market participants. Because they offer a framework for comprehending market activity and aid in forecasting future price changes, Elliot Waves are employed in price action methods. According to the hypothesis, market prices fluctuate according to predictable patterns that can be seen and used to inform trading choices. It can be particularly helpful in identifying market trends' amplitude and direction as well as potential turning moments. Elliott Waves should be used in conjunction with other analytical methods and risk management procedures, as they are not a guarantee of future market behavior like other technical analysis tools.

According to the Elliott Wave theory, there are two types of market movements: impulse waves and corrective waves. Five sub-waves make up an impulse wave, which travels in the trend's direction. Three sub-waves make up corrective waves, which travel in the opposite direction of the trend. According to the Principle, crowd psychology, or collective investor psychology, alternates between optimism and pessimism in regular cycles. These mood swings produce patterns that are seen in market price changes at every level of trend or time period. On all trend time scales, according to Elliott's model, market prices alternate between an impulsive, or motive phase and a corrective phase. Waves 1, 3, and 5 are impulses, and waves 2 and 4 are smaller retraces of waves 1 and 3. Impulses are always separated into a sequence of 5 lower-degree waves, again alternating between motive and corrective nature. After a five-wave counter-trend impulse, a retracement, and another impulse, corrective waves break down into three waves of a reduced degree. The pattern is reversed in a bear market, where the primary tendency is negative and there are five waves down and three waves up. Corrective waves travel in opposition to the trend, but motive waves constantly follow it. The market price is determined by a pattern of 5 hikes upward and 3 hikes downward.

According to Elliott Wave Theory, market movements are interpreted in terms of repeating price structures that follow the Fibonacci sequence.

B. Uptrend and Downtrend Trading

We try to fit a trend line to the given data in a particular window. If we identify a sufficiently clear increasing and decreasing trend, we use it for predictions and hence for trading.

In trading, an uptrend is a market condition when prices are consistently rising over time. In an upward trend, every high point that follows is higher than the one before it, and every low point is higher than the one before it. This demonstrates a bullish market. A strategy should invest in such a bullish market and sell the stock once a threshold (take profit) value from the minima is achieved (trying to sell at the local maxima).

Similarly, In a downtrend, each subsequent low point is lower than the previous low, and each high point is lower than the previous high. This demonstrates a bearish market. Here we should aim at finding a local minimum to buy the stocks.

Trading Strategy

Here we use a combination of the above two tools, i.e if an Elliott wave is detected, we give it a priority and trade based on its prediction (stronger mathematical basis). However, since the number of waves might be very few, we use the trend lines to trade meanwhile.

We make one trade per day based on the trend line, now in addition to this, if we find Elliott waves, we can make additional one trade per wave which will be based on the cyclic trend. As discussed above, Elliott waves show the cyclic nature of waves. We use this to predict the future trend and make one buy/sell per cycle.

Risk Management and Assumptions

There are numerous additional costs associated with trading in the Indian Equity market, these include Brokerage Fees, Securities Transaction Tax (STT), Stamp Duty, Maintenance charges etc.

Since we're focusing on the Indian Energy Sector, we assume **an STT of 0.05% for buying and 0.1% for selling** which is coherent with the actual tax levied by the government. For sake of easier analysis, we assumed all other kinds of taxes/charges to be zero.

Similarly, some stocks might suffer from problems of slippage due to differences in expected trading price and actual trading price. Since we're focusing on a **low-frequency trading** problem, we assume **slippage to be zero.**

RISK METRICS CONSIDERED

Stop Loss: This is to prevent loss below a breakage point by stopping the trade if the stock price falls below a certain price limit. For example, The trade will stop if the price falls below 1.5 times the corresponding trough predicted by Elliot waves.

Take Profit: Similar to stop loss, take profit is a metric used to lock the profit if the stock price rises more than a given value. For example: Stop the trade when the price rises more than 1.5 times the corresponding crest predicted by the Elliot waves.

Tools for detecting Price Action

1. RELIANCE.NS

Number of Waves Detected: 10


trace 0
trace 1
2400
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Jan 2021
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2 (0.282)
3 (0.561)
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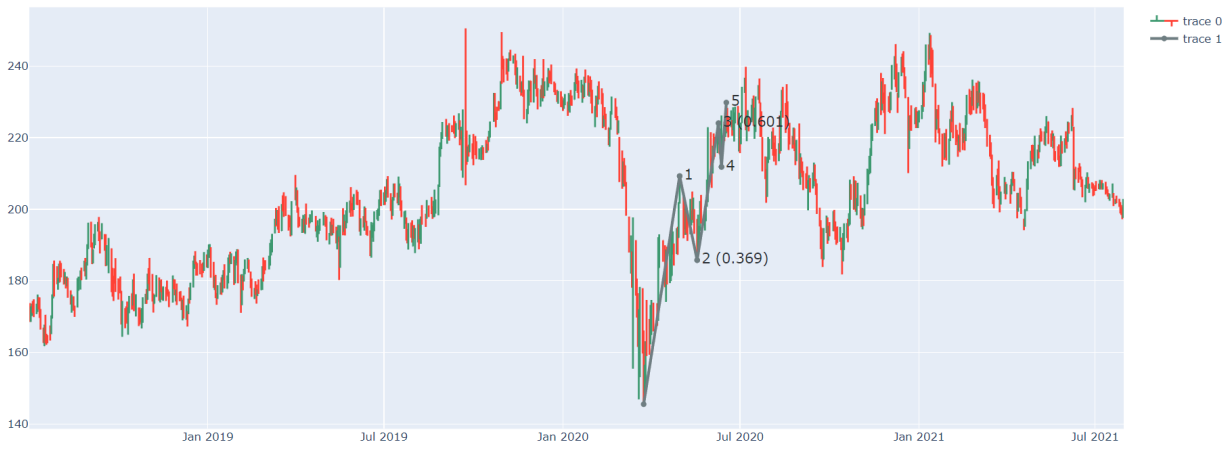
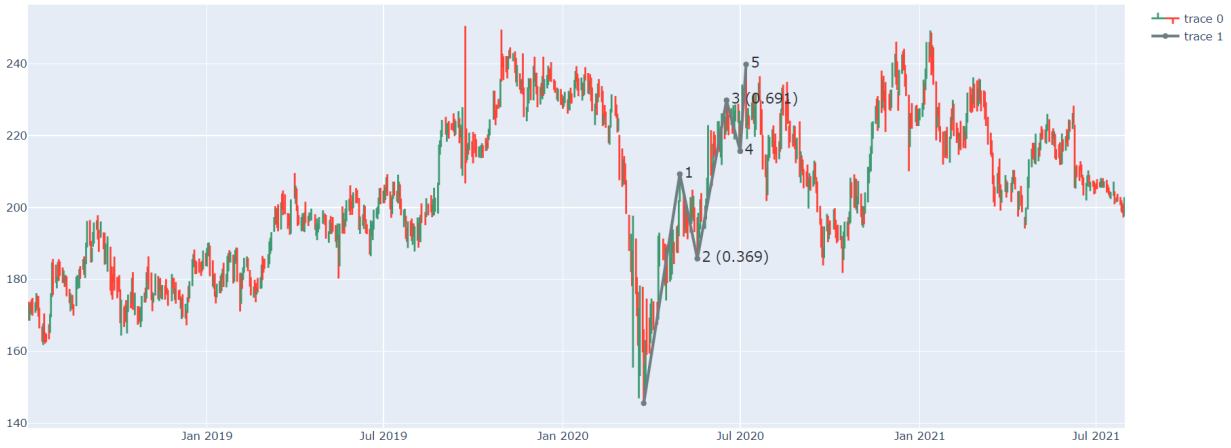
2. PETRONET.NS

Number of Waves Detected: 2





3. BPCL.NS

Number of Waves Detected: 1

4. HINDPETRO.NS

Number of Waves Detected: 13


trace 0
trace 1
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5. IOC.NS

Number of Waves Detected: 6


trace 0
trace 1
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trace 0
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6. OIL.NS

Number of Waves Detected: 14


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7. ONGC.NS

Number of Waves Detected: 11


trace 0
trace 1
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Jan 2019
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3 (0.426)
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trace 0
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Conclusion

As we have found Eliott waves in every Energy stock we have chosen in a given period of time, Eliott waves can be a great price action trading strategy for a somewhat cyclical and highly inertial sector like Energy. A combination of uptrend and downtrend lines helps in getting profits when Eliott waves are not getting detected as the Energy sector is volatile as well as trend favoring and taking profit through a trend-based strategy seems like the way to go as it not only identifies the trends but also the market reversals.

Based on the results of the project, it can be concluded that the combination of Elliott Waves and trend lines can be an effective method for analyzing the Indian energy sector. The repetitive nature of market trends in the energy sector and the ability of Elliott Waves to identify and predict these trends, combined with the use of uptrend and downtrend lines, can provide a comprehensive approach to price action trading.

Elliott Waves provide a simple and straightforward method for analyzing market trends, while trend lines help traders identify key support and resistance levels. By using both of these tools, traders can make informed decisions, improve their timing in the market, and reduce their risk.

It is important to note that while this combination of tools can be a valuable asset to traders, it is not a foolproof method and it is necessary to have a solid understanding of both Elliott Waves and trend lines to effectively apply them to the Indian energy sector.

In conclusion, the results of the project suggest that combining Elliott Waves and trend lines can be a powerful method for price action trading in the Indian energy sector. Combining this

approach with other forms of analysis and risk management, traders can improve their chances of success in this dynamic and growing market.

Codebase

The code is not generated using the Blueshift platform. We chose not to continue with the Blueshift platform as it was taking a lot of time and not compiling most of the results. We used an Eliott Wave Analyser repository to detect the Eliott waves in the given period of time on the Energy Stocks.

https://github.com/dhruv-kakadiya/interIIT2023

References

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[4] https://github.com/btcorgtfo/ElliottWaveAnalyzer

Contribution

Team Member Name	Contribution
Jeevesh Jain	Ideation, RnD, Rnd, Data Analysis, Report (20%)
Suyash Agnihotri	Rnd, Data Analysis, Report, Ideation(20%)
Dhruv Kakadiya	Coding the principle and detection and generation of the graphs, RnD (20%)
Sandesh Singh	Rnd, Data Analysis, Report, Ideation (20%)
Akshat Jain	Rnd, Data Analysis, Report, Ideation (20%)