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Elliott Wave formation using Hybrid Strategy of Stochastic and ADX Indicators

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Abstract**—***In the finance market there are two types of analysis namely fundamental analysis and technical analysis. In this paper, we work on both fundamental and technical analysis. Fundamental factors are price to earning ratio and free float market capitalization and technical tools are Stochastic Oscillator and Average Directional Index (ADX). Mainly in this work, using these technical tools we determine buy and sell signal in up and down trend. Using the fundamental factors for stock selection and applying the trading strategy which gives the better signal, we try to explain wave formation using this hybrid strategy and examine its performance on NSE data.*

Keywords**—***Elliott Wave theory, Average Directional Index (ADX), Stochastic Oscillator, Fundamental Factors*

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I. Introduction

Nowadays, there are sudden rise of investing or trading activities in stocksdue to low return in risk-free securities. For investing or trading, study about stock market is very important. This study is considered as stock market analysis in research field. Fundamental Analysis and Technical Analysis are mainly two types of stock market analysis.Fundamental analysis is a method to evaluate the value of security by financial and economic factor.Based on the past value of fundamental factor we can reduce our loss and maximize our profit by choosing a right asset(stock) by fundamental factors.Technical analysis is used to identify a past pattern and based on this past pattern trader try to gauge about future movement of asset price. Technical indicatorsare usually two different types: 1) lagging indicators and 2) leading indicators. Those indicatorsthat follow the movement of price are called leading indicators and those indicatorsthat follow the trend of market are called lagging indicator. In this paper, we use fundamental factors: price to earnings ratio and free float market capitalization and technical tools : Stochastic Oscillator and Average Directional index.

In this paper, we try to combine Fundamental and Technical forecasting techniques with Elliott Wave Theory and construct a new trading strategy for the investors. Elliott Wave theory is one of the oldest and complex method forforecasting. Elliott Wave theory is mainly based on crowd psychology and fractal theory. According to crowd psychology, people are scared of losing money and being happy with good returns. Due to this type of psychology, behavior of market mainly depends on traded volume of security. According to fractal theory, security prices always followrepetitive price pattern and this repetitive pattern forms wave in market. If this wave is identified before it occurs than accurate prediction of market is possible. Ralph Nelson Elliott was the first person who introduced Elliott Wave and talked about the accurate market prediction through Elliott Wave Theory.Wave pattern is difficult to identify on security price because it has very complex formulation. But with the help of Oscillator, a technical analysis tool,it is comparatively easy to determine where Elliott Wave ends, and upcoming Wave begins. [1]

The Elliott Wave mainly is divided into two waves: 1)An impulse wave, which net travels in the same direction as the larger trend, always shows five waves in its pattern and 2) A corrective wave, on the other hand, net travels in the opposite direction of the main trend. [2]

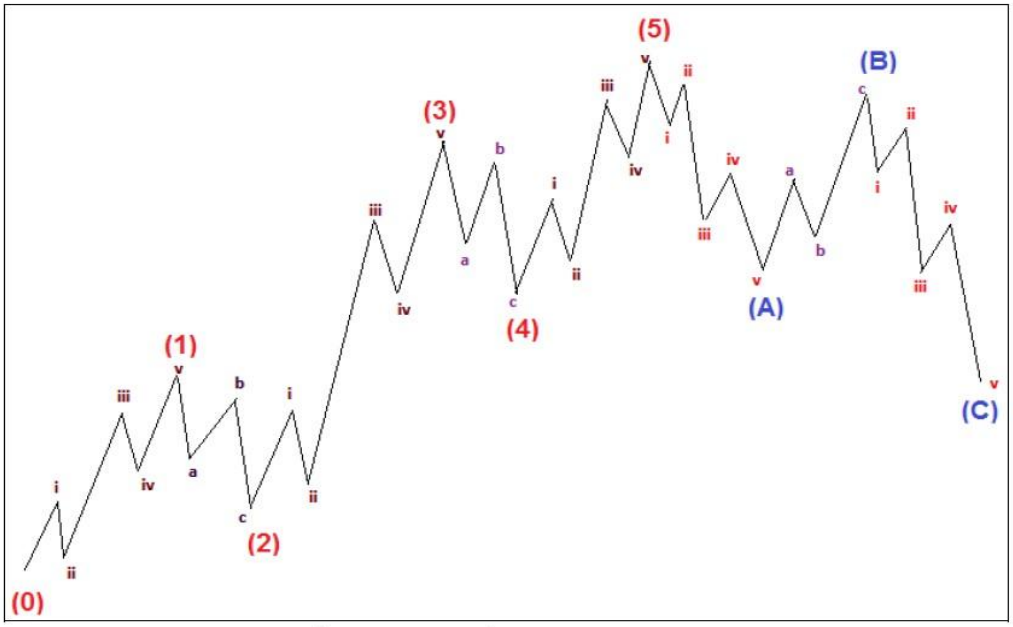

Figure-1: Elliott Wave [2]

As shown in figure-1 the wave formation consists of 5 waves in the direction of primary/impulsive wave marked as 1, 2, 3, 4 and 5. It is followed by three waves in reverse direction of main trend which is called as corrective waves marked as A, B and C. As shown in figure-1, inner wave marked as 1, 3 and 5 are also impulsive waves of smaller degree. So, the wave 1, wave 3 and wave 5 are parts of impulsive wave in upward direction. [2]

Though Elliott waves follow many rules but three basic rules are followed by each wave to interpret Elliott wave. These guidelines are unbreakable. These rules are as follow:

- Rule 1: Wave 2 is not retracted more than 100% of wave 1.
- Rule 2: Wave 3 can never be the shortest wave among the 5 waves of impulse.
- Rule 3: Wave 4 cannot touch Wave 1 [2]

- **Fundamental Factors**

Price to Earning Ratio (P/E Ratio) [21]:P/E ratio is ratio of the price per share and earning per share. P/E ratio shows current demand for a company. High P/E ratio suggests that the demand of investor is high and in future the company growth is high. The price-to-earnings ratio is also sometimes known as the price multiple or the earnings multiple.

$$P/E\ Ratio = \frac{Price\ (Market\ Value)\ per\ Share}{Earning\ per\ Share}$$

Example. Let XYZ be a company whose total outstanding share is 30,000 and the company stock price is Rs.100 and total profit of company is Rs. 3,00,000.

$$Earning\ per\ share = \frac{total\ profit\ of\ comapny}{total\ number\ of\ outstanding\ share} = \frac{3{,}00{,}000}{60{,}000} = 5Rs$$

$$P/_E\ ratio = \frac{Price\ per\ share}{Earning\ per\ share} = \frac{100}{5} = 20$$

Therefore P/E ratio of company XYZ is 20.

Free Float market capitalization [20]: Free Float market capitalization is the value of company. It is different from the market capitalization; in market capitalization we consider all shares of company. In Free Float market capitalization,we don't consider a locked share. Here locked share means that those shares who's for company director, promoter, government.

$$Free\ Float\ Market\ Capatalization = Current\ market\ price\ \times (total\ number\ of\ share - locked\ share)$$

Example:- Let XYZ be a company whose total number of shares are 1,00,000 and lockes share are 30,000. Market price of this company's share is Rs. 50.

$$\text{Free Float Market Capatalization} = 50 \times (1{,}00{,}000 - 30{,}000) = 35{,}00{,}000\text{RS.}$$

Therefore free float market capitalization of company XYZ is Rs. 35,00,000.

- **Stochastic Oscillator [5]**

Stochastic Oscillator is a momentum Indicator. In the 1950, George Lane developed Stochastic Oscillator. In convention, technical indicators follows the price or volume, but stochastic oscillator follows the momentum of the price. The oscillator is not measuring the trend but it measures the force behind a trend movement by using rate of price changes during a specified period of time. Stochastic Oscillator compares the closing price of a security to the high and low price of a given security of a given time. Stochastic Oscillator is a range bound indicator that means the value of Stochastic Oscillator is always lies between 0 to 100. The default setting of Stochastic Oscillator is 14 period. But another period can be used. Stochastic Oscillator is useful indicator to give an overbought and oversold level. Stochastic Oscillator is leading indicator. In Stochastic Oscillator there are two line which is %K line and %D line which is signal line. There are two different types of Stochastic Oscillator fast Stochastic and slow Stochastic.

Calculation:

$$\%K = 100 \times \frac{C - L5}{H5 - L5}$$

$$\%D = simple\ moving\ average\ (3 - period)\ of\ \%K$$

Where,

$$C = closing\ price\ of\ the\ day$$

$$L5 = the\ lowest\ low\ price\ of\ last\ 5\ days$$

$$H5 = the\ highest\ high\ price\ of\ last\ 5\ days$$

- **Average Directional Index (ADX) [4]**

In 1978, Welles Wilder developed Average Directional Index (ADX). The Average Directional Index Average (ADX) is a lagging indicator which follows the trend of market. The Average Directional Index indicator measures weather the price of a security is trending or not trending. Also, ADX helps to determine the strength or weakness of a trend. There are two lines in ADX indicator which is an up directional indicator (DI+) and a down directional indicator (DI–) which identify if there is a trend. In other words, when the up directional index crosses above (below) than the down directional index, a bullish (bearish) trend is in place. The value of ADX is lies between 0 to 100.

Calculation:

$$TR = max\ (|H - L|, |H - PC|, |L - PC|)$$

$$ATR = AVERAGE(TR)$$

$$U.M = H - PH \quad and \quad D.M = PL - L$$

$$If\ U.M > D.M\ and\ U.M > 0, then\ +DX = U.M\ else\ +DX = 0$$

$$If\ D.M > U.M\ and\ D.M > 0, then\ -DX = D.M\ else\ -DX = 0$$

Where,

$U.M. = Upper\ Movement$

$D.M. = Down\ Movement$

$$Smooth\ (+DX) = Average\ (+DX)$$

$$Smooth\ (-DX) = Average\ (-DX)$$

$$+DMR = \frac{smooth(+DX)}{ATR} \times 100 \qquad -DMR = \frac{smooth(-DX)}{ATR} \times 100$$

$$-DX = \frac{|(+DMR) - (-DMR)|}{(+DMR) + (-DMR)} \qquad ADX = AVERAGE(DX)$$

II. Literature review

Collins (1938) first published the concepts of wave theory, based on the original work presented to him by the founder of the wave principle, R. N. Elliott. [2]

Elliott (1946) published his definitive work on the wave principle. Using stock market data as his main research tool, Elliott had isolated thirteen patterns of movement, or "waves," that recur in market price data. [3]

Yazdi and Lashkari (2012) developed Virtual Historical Trading Software (VHTS) for the purpose of calculating the Parabolic SAR (P-SAR) indicator based on its original formulas and interpretations. Also, it generated buy and sell signals. They examined the effectiveness of the P-SAR indicator for four pairs of

currencies; Euro-US Dollar, British Pound- US Dollar, US Dollar-Swiss Franc, US Dollar-Japanese Yen were evaluated based on the profit of buy and sell signals. He saw that P-SAR performed well with EURUSD. [6]

Pinakin (2013) studied indicators namely MACD with EMA and Stochastic Oscillator in technical analysis. And concluded that MACD with EMA generates best profit, maximum number of buying and selling signals and best Average return than Stochastic Oscillator.[7]

Suresh A (2013) studied the effect of fundamental factors and technical analysis on investment strategy. [8]

Naved (2015) studied different indicators such as Moving Average, Moving Average Cross Rule and MACD on Indian Nifty Stocks Markets for successful trading and profit generation. [9]

Naved (2015) examined the profitability of various kinds of oscillator used in technical analysis on market index of NSE (National Stock Exchange) S & P, CNX, Nifty 50 During 2004- 2014. The researcher concluded that Stochastic, RSI and CCI almost generate same profitability with CCI marginally giving higher profit. [5]

Chong et. al (2017) worked on Stochastic Oscillator (STC). They compared the performance of fast and slow Stochastic Oscillator in 13 major stock market indices worldwide and concluded that the fast STC outperforms the slow STC in most markets. [10]

Dhole (2017) worked on literature review on Fundamental and Technical Analysis. [11]

Isaac et. al (2019) in his research paper study attempted to undertake a systematic and critical review of about one hundred and twenty-two (122) pertinent research works reported in academic journals over 11 years (2007–2018) in the area of stock market prediction using machine learning. And the various techniques identified from these reports were clustered into three categories, namely technical, fundamental, and combined analyses. [12]

Vaghela and Gor (2020) worked on the combination of Elliott Wave theory and sentiment indicator to identify future market direction. They tried to reduce the complexity of Elliott Wave theory by using sentiment indicator. [13]

Panchal and Gor (2020) converted chart pattern of technical indicators which followed mean reversion into numeric form and determined buy and sell signal of investment without having to test the chart pattern. They tried to describe the hold phenomenon in the stock market. [14]

Singh and Gor (2020) developed a solution for derivative pricing a European put option under the assumption that the distribution returns followGumbel distribution at maturity and also checked its relevancy to the actual market. [15]

Panchal and Gor (2020) constructed a hybrid strategy of Exponential Moving Average and Parabolic Stop and Reversal which follows Mean Reversion process. They concluded that the hybrid strategy provides better long and short positions in the market and good strength of trend rather than individual indicator. [16]

Vaghela and Gor (2021) developed Elliott wave formation through Commodity Channel Index and examined the buying and selling opportunities and the trend strength using the two strategies Commodity Channel Index (CCI) and Double Exponential Moving Average (DEMA). [1]

Panchal and Gor (2021) worked on a Mean Reverting namely Donchian Channel and Relative Strength Index (RSI) and created a modified investing strategy. They concluded that the modified strategy provides better buy and sell signal in the market low and high volatile market. [17]

Singh and Gor (2021) developed an analytical closed formed solution based on Black-Scholes Model which follows truncated normal distribution for pricing the American put option and also checked its relevancy to the actual market. [18]

III. Modeling the Hybrid Strategy of Stochastic Oscillator and ADX

In this work, we mainly focus on combining two different indicators and try to identify wave formation through that. Stochastic is oscillator type technical indicator and ADX is trend indicator. ADX is calculated using previous closing price, high price and low price. Stochastic is calculated usingclosing price and highest high and lowest low among last 5 days. The reason behind making the combined strategy of Stochastic and ADX is thatstochastic measures each and every price movement of the market i.e. stochastic generates many false signals in low volatile market. We use ADX to eliminate the false signals of stochastic. As stochastic measures price oscillation through highest high and lowest low among last five periods so it can measure every small fluctuation of asset price. Because of this Stochastic will not able to provide sufficient guidance in the construction of the wave. But this does not mean that wave formation by stochastic cannot be understood. We can observe this from the following figure.

Figure 2: Wave formation through Stochastic Oscillator and ADXcarried out on *investing.com*[23]

In figure 2, the shaded area represents the price of security. There are two lines on security price, the dotted line represents Elliott Wave. The bottom side of figure 2 is graph of Stochastic and ADX respectively.

IV. Research Methodology

1. Data Collection:
   The data from 14-01-2016 to 13-02-2020 was collected from the National Stock Exchange website. [22]

2. Computation:
   - Fundamental factors:
     We used Fundamental factors for selection of companies. We selected10 companies from NIFTY 50 index by using fundamental factors namely Free Float Market Cap and P/E Ratio. The companies and its fundamentals are given in table 1.

Table-1: Stock Selection

Company name	Free Float Market Cap	P\E Ratio
Reliance Industries Ltd.	4,75,346.99	25.27
Axis Bank Ltd.	1,68,230.82	47.11
Coal India Ltd.	34,445.34	22.38
Power Grid Corporation OF India Ltd.	44,577.07	9.27
HDFC Bank Ltd.	5,40,281.71	27.12
Housing Development Finance Corporation Ltd.	4,20,679.90	22.86
Indusland Bank Ltd.	77,021.77	19.78
NTPC Ltd.	52,005.79	8.75
Tata Consultancy Services Ltd.	2,28,073.69	27.79
Tata Steel Ltd.	33,808.94	5.22

In table 1, there are three companiesReliance Industries Ltd., HDFC Bank Ltd. and Housing Development Finance Corporation Ltd. that have high Free Float Market Cap. From these three companies, we selectedHDFC Bank Ltd. because it had high Price-To-Earnings Ratio(P/E Ratio) as compared to Reliance Industries Ltd. &Housing Development Finance Corporation Ltd.

   - Stochastic Oscillator [5]:

$$fast\%K = 100 \times \frac{C - L5}{H5 - L5} \quad \ldots\ldots\ldots(1)$$

$$slow\%K = fast\%D = simple\ moving\ average\ (3 - period) of\ fast\%K \quad \ldots\ldots\ldots\ldots(2)$$

$$slow\%D = simple\ moving\ average\ (3 - period) of\ fast\%D \quad \ldots\ldots\ldots\ldots(3)$$

Where,

$$C = closing\ price\ of\ the\ day$$
$$L5 = the\ lowest\ low\ price\ of\ last\ 5\ days$$
$$H5 = the\ highest\ high\ price\ of\ last\ 5\ days$$

- Calculations ofStochastic Oscillatorusing excel:
  - Step 1: Using Low and High price of last 5 day and find lowest low (L5) and highest high (H5).
  - Step 2: Calculate the $fast\%K$using equation (1).
  - Step 3:Calculate the $fast\%D$ using equation (2).Here, $fast\%D$ that is same as $slow\%K$.
  - Step 4: Calculate the $slow\%D$ using equation (3).
  - Step 5: Now we insert the following formula in excel sheet to get the outcomes of CCI
    Buy and Sell signal genrate if %K and%D is overbought and oversold level.
    Here overbought region is 65 and oversold region is 35.

For Table 2	
7th column	%K FAST. Calculated by using equation (1)
8th column	%D Fast = %K Slow. Calculated by using equation (2)
9th column	%D Slow. Calculated by using equation (3)
10th column	Outcomes. • Buy and Sell signal generate if %K and%D is overbought and oversold level. • Here overbought region is 65 and oversold region is 35.

Table-2: Observation Table of Stochastic

Date	High	Low	Close	C-L5	H-L5	%K FAST	%D Fast = %K Slow	%D Slow	Outcomes
07-10-2019	1219.85	1181.15	1186.9	5.75	73.85	7.79	8.79	20.71	HOLD
09-10-2019	1229.9	1190	1228.15	47.00	73.85	63.64	25.91	19.77	BUY
10-10-2019	1225.95	1197.2	1200.55	19.40	62.65	30.97	34.13	22.95	HOLD
11-10-2019	1224	1188.95	1198.8	17.65	58.45	30.20	41.60	33.88	HOLD
14-10-2019	1219.9	1197.4	1204.4	23.25	48.75	47.69	36.28	37.34	HOLD
15-10-2019	1225	1206.85	1223.05	34.10	40.95	83.27	53.72	43.87	HOLD
16-10-2019	1235	1210.1	1221.1	32.15	46.05	69.82	66.93	52.31	HOLD
17-10-2019	1229.85	1213.1	1220	31.05	46.05	67.43	73.50	64.72	HOLD
18-10-2019	1233.85	1220.35	1229	31.60	37.60	84.04	73.76	71.40	HOLD
22-10-2019	1257	1232.6	1239.3	32.45	50.15	64.71	72.06	73.11	SELL
23-10-2019	1249.75	1233	1241.6	31.50	46.90	67.16	71.97	72.60	HOLD
27-02-2018	960.875	950	951.275	30.50	40.10	76.06	85.44	64.13	HOLD
28-02-2018	947.725	939	942.1	21.32	40.10	53.18	74.93	75.91	SELL
01-03-2018	946.65	934	937.175	11.97	35.67	33.57	54.27	71.55	HOLD
05-03-2018	939	929.125	934.975	5.85	31.75	18.43	35.06	54.75	HOLD
06-03-2018	939.95	919.75	923.125	3.38	41.13	8.21	20.07	36.46	HOLD
07-03-2018	926.7	914.25	916.3	2.05	33.47	6.12	10.92	22.01	HOLD
08-03-2018	929.25	916	926.425	12.17	32.40	37.58	17.30	16.10	BUY
09-03-2018	932.625	922	925.525	11.28	25.70	43.87	29.19	19.14	HOLD
12-03-2018	934.725	926.7	933.625	19.38	25.70	75.39	52.28	32.92	HOLD

- <u>Average Directional Index(ADX) [4]:</u>

$$TR = max(|H - L|, |H - PC|, |L - PC|) \quad \ldots\ldots(4)$$
$$ATR = 20 - period\ Moving\ Average\ (TR) \quad \ldots\ldots(5)$$
$$U.M = H - PH \ \ and \ \ D.M = PL - L \quad \ldots\ldots(6)$$

$$\left.\begin{array}{l} If\ U.M > D.M\ and\ U.M > 0, then\ +DX = U.M\ else\ +DX = 0 \\ If\ D.M > U.M\ and\ D.M > 0, then\ -DX = D.M\ else\ -DX = 0 \end{array}\right\} \quad \ldots\ldots(7)$$

Where,
$U.M. = Upper\ Movement$
$D.M. = Down\ Movement$
$+DX = Positive\ Directional\ Index$
$-DX = Negative\ Directional\ Index$

$$\left.\begin{array}{l} Smooth\ (+DX) = 20 - period\ Moving\ Average\ (+DX) \\ Smooth\ (-DX) = 20 - period\ Moving\ Average\ (-DX) \end{array}\right\} \ldots\ldots(8)$$

$$+DMR = \frac{smooth(+DX)}{ATR} \times 100 \quad \& \quad -DMR = \frac{smooth(-DX)}{ATR} \times 100 \quad \dots\dots(9)$$

$$-DX = \frac{|(+DMR) - (-DMR)|}{(+DMR) + (-DMR)} \quad \dots\dots(10)$$

$$ADX = 20 - period\ Moving\ Average\ (DX) \quad \dots\dots(11)$$

- Calculations of ADX using excel.
  - Step 1: Calculate True Range using equation (4).
  - Step 2: Calculate the value of ATR taking 20 period moving average of TR using equation (5).
  - Step 3: Calculate Upper Movement and Down Movement using equation (6).
  - Step 4: Calculate$+DX$ and $-DX$ using equation (7).
  - Step 5: Calculate smooth $+DX$ and smooth $-DX$ using equation (8)
  - Step 6: Calculate$+DMR$ and $-DMR$ using equation (9).
  - Step 7: Calculate the value of DX using equation (10).
  - Step 8: Calculate the value of ADX using equation (11).
  - Step 9: The outcomes of ADX. $UP;\ if + DMR > -DMR\ \&\ DOWN;\ if + DMR < -DMR.$

For Table 3	
5th column	Day True Range. Calculated by using equation (4).
6th column	Value of ATR: 20 period moving average of True Range.
7th& 8thcolumn	Calculate Upper Movement and Down Movement using equation (6).
9th& 10thcolumn	Value of $+DX$and $-DX$.
11th& 12th column	Value of Smooth $+DX$ / smooth $-DX$ = 20 period moving average of $+DX/-DX$.
13th& 14th column	Value of $+DMR$ /$-DMR$ using equation (9).
15th column	The value of DX using equation (10).
16th column	The value of ADX using equation (11).
17th column	Outcome: $UP;\ if + DMR > -DMR\ \&\ DOWN;\ if + DMR < -DMR.$

Table-3: Observation table of ADX.

Date	High	Low	Close	TR	ATR	H-PH	PL-L	DX positive	DX negative	smooth DX positive	smooth DX negative	DMR positive	DMR negative	DX	ADX	Outcomes
07-10-2019	1219.85	1181.15	1186.9	38.70	30.43	-19.75	4.15	0.00	4.15	9.12	5.88	29.97	19.31	21.65	24.12	UP
09-10-2019	1229.9	1190	1228.15	43.00	31.06	10.05	-8.85	10.05	0.00	9.17	5.58	29.52	17.97	24.32	24.13	UP
10-10-2019	1225.95	1197.2	1200.55	30.95	31.05	-3.95	-7.20	0.00	0.00	8.71	5.30	28.05	17.07	24.32	24.14	UP
11-10-2019	1224	1188.95	1198.8	35.05	31.25	-1.95	8.25	0.00	8.25	8.27	5.45	26.47	17.44	20.58	23.96	UP
14-10-2019	1219.9	1197.4	1204.4	22.50	30.82	-4.10	-8.45	0.00	0.00	7.86	5.18	25.51	16.80	20.58	23.79	UP
15-10-2019	1225	1206.85	1223.05	20.60	30.31	5.10	-9.45	5.10	0.00	7.72	4.92	25.48	16.23	22.18	23.71	UP
16-10-2019	1235	1210.1	1221.1	24.90	30.04	10.00	-3.25	10.00	0.00	7.84	4.67	26.09	15.56	25.29	23.79	UP
17-10-2019	1229.85	1213.1	1220	16.75	29.37	-5.15	-3.00	0.00	0.00	7.44	4.44	25.35	15.11	25.29	23.86	UP
18-10-2019	1233.85	1220.35	1229	13.85	28.59	4.00	-7.25	4.00	0.00	7.27	4.22	25.43	14.75	26.59	24.00	UP
22-10-2019	1257	1232.6	1239.3	28.00	28.57	23.15	-12.25	23.15	0.00	8.07	4.01	28.24	14.02	33.63	24.48	UP
23-10-2019	1249.75	1233	1241.6	16.75	27.97	-7.25	-0.40	0.00	0.00	7.66	3.81	27.39	13.60	33.63	24.94	UP

27-02-2018	960.875	950	951.275	10.88	14.48	3.47	-8.22	3.47	0.00	3.57	3.30	24.65	22.78	3.95	17.86	UP
28-02-2018	947.725	939	942.1	12.28	14.37	-13.15	11.00	0.00	11.00	3.39	3.68	23.60	25.63	4.13	17.17	DOWN
01-03-2018	946.65	934	937.175	12.65	14.29	-1.07	5.00	0.00	5.00	3.22	3.75	22.55	26.25	7.57	16.69	DOWN
05-03-2018	939	929.125	934.975	9.88	14.06	-7.65	4.88	0.00	4.88	3.06	3.81	21.76	27.06	10.85	16.40	DOWN
06-03-2018	939.95	919.75	923.125	20.20	14.37	0.95	9.38	0.00	9.38	2.91	4.08	20.23	28.42	16.83	16.42	DOWN
07-03-2018	926.7	914.25	916.3	12.45	14.28	-13.25	5.50	0.00	5.50	2.76	4.15	19.35	29.11	20.14	16.61	DOWN
08-03-2018	929.25	916	926.425	13.25	14.22	2.55	-1.75	2.55	0.00	2.75	3.95	19.34	27.75	17.85	16.67	DOWN
09-03-2018	932.625	922	925.525	10.63	14.04	3.38	-6.00	3.38	0.00	2.78	3.75	19.81	26.70	14.81	16.58	DOWN
12-03-2018	934.725	926.7	933.625	9.20	13.80	2.10	-4.70	2.10	0.00	2.75	3.56	19.91	25.81	12.90	16.39	DOWN

3. Observation

Data analysis of combined strategy of Stochastic Oscillator and ADX.

To get the combined outcomes we apply the following formula,

=IF(AND(ADXoutcome="up",Stochasticoutcome="sell"),"sell",IF(AND(ADXoutcome ="up", Stochasticoutcome ="buy"),"LONG",IF(AND(ADXoutcome ="down", Stochasticoutcome ="buy"),"BUY",IF(AND(ADXoutcome ="down", Stochasticoutcome ="sell"),"shortSELL","Hold"))))

For Table 4	
2nd column	Value of %K Fast
3rd column	Value of %D Fast = %K Slow
4thcolumn	Value of %D Slow
5th column	Outcome of Stochastic
6th column	Value of ADX
7th column	Outcome of ADX
8th column	Combined Outcomes. When both the indicators are in same direction than it makes strong decision. Buy: when Stochastic indicates Buy and ADX indicates Down trend. Sell/Short Sell: when Stochastic indicates Sell and ADX indicates Up trend. Hold: when both indicators are in opposite direction.

Table-4 Observation table of combined strategy

DATE	%K FAST	%D Fast = %K Slow	%D Slow	Stochastic Outcomes	ADX	ADX Outcomes	COMBINED OUTCOMES
07-10-2019	7.79	8.79	20.71	HOLD	24.12	UP	**Hold**
09-10-2019	63.64	25.91	19.77	BUY	24.13	UP	**LONG**
10-10-2019	30.97	34.13	22.95	HOLD	24.14	UP	**Hold**
11-10-2019	30.20	41.60	33.88	HOLD	23.96	UP	**Hold**
14-10-2019	47.69	36.28	37.34	HOLD	23.79	UP	**Hold**
15-10-2019	83.27	53.72	43.87	HOLD	23.71	UP	**Hold**
16-10-2019	69.82	66.93	52.31	HOLD	23.79	UP	**Hold**
17-10-2019	67.43	73.50	64.72	HOLD	23.86	UP	**Hold**
18-10-2019	84.04	73.76	71.40	HOLD	24.00	UP	**Hold**
22-10-2019	64.71	72.06	73.11	SELL	24.48	UP	**SELL**
23-10-2019	67.16	71.97	72.60	HOLD	24.94	UP	**Hold**
27-02-2018	76.06	85.44	64.13	HOLD	17.86	UP	**Hold**
28-02-2018	53.18	74.93	75.91	SELL	17.17	DOWN	**SHORTSELL**
01-03-2018	33.57	54.27	71.55	HOLD	16.69	DOWN	**Hold**
05-03-2018	18.43	35.06	54.75	HOLD	16.40	DOWN	**Hold**
06-03-2018	8.21	20.07	36.46	HOLD	16.42	DOWN	**Hold**
07-03-2018	6.12	10.92	22.01	HOLD	16.61	DOWN	**Hold**
08-03-2018	37.58	17.30	16.10	BUY	16.67	DOWN	**BUY**
09-03-2018	43.87	29.19	19.14	HOLD	16.58	DOWN	**Hold**
12-03-2018	75.39	52.28	32.92	HOLD	16.39	DOWN	**Hold**

V. Conclusion

A combined strategy of Stochastic Oscillator and ADX is applied on a stock which is selected by using fundamental factors, Free Float Market Capitalization and Price-to-Earnings Ratio (P\E Ratio). Stochastic is a momentum oscillator in stock market, it is helpful to identify instant change in security price or trend reversals. Stochastic measures each and every fluctuations of market, this is the biggest shortcoming. This shortcoming can be overcome by ADX which is a trend indicator that can be used to identify uptrend and downtrend. Hence the combined strategy of Stochastic and ADX is effective. With this strategy we try to understand the creation of Elliott Wave. In this paper, we examine both the indicator for creation of Elliott Wave and we conclude that as compared to Stochastic Oscillator, ADX is better in wave formation. Also Stochastic can be useful as a support indicator while performing Elliott Wave formation. This strategy is partially successful in Elliott Wave formation. Further research can be considered on other robust strategies.

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