

Identifying Short Term Trends of Nifty Index and Equity Future Markets

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Abstract. The behavior of speculative price has always been a subject of extremes interest. After going through the past performance of future indexes of NSE & future equities & Concept of Corporate Finance I found that the behavior of the short term future price movement will be predictable on the basis of “some fundamentals i.e. book value & dividend and with some technical i.e. returns & Sharpe ratio”. Using all this parameters I found a Point from where the price will move quickly on first time crossing & will halt at a point & take some time & if cross the level then again move quickly to next point. By this model you will find all this point by just collecting the data & calculate as per my model. My finding will help you to take better decision to play intraday for future indexes of nifty & future equity.

As we know that price will depend upon the market demand & supply so “we can only predict by this model but it may not work if the demand & supply will suddenly change”.

1 Introduction

Future is an agreement between two parties to buy (Long) or sell (Short) an asset at a certain time in the future at a certain price is made through an organized and regulated exchange with standardized lot size. There are broadly three types of participants in the derivatives market - hedgers, traders (also called speculators) and arbitrageurs.

Hedgers face risk associated with the prices of underlying assets and use derivatives to reduce their risk. Speculators/Traders They try to predict the future movements in prices of underlying assets and based on the view, take positions in Future contracts. Arbitrage is a deal by exploiting a price difference between cash & future & take position to lock profit.

Future is ‘zero sum game’ means that for every buyer or seller gain an equivalent sum lost by the counterparty to a profitable trade less the brokerage, STT, turnover tax etc of paid by both the players.

Trader continuously searches new technique to predict future price movement thus I have developed this experimental model to predict future price of an equity related index future or equity future.

2. Objective of the Study

To predict the next day prediction of the future price movement i.e. future price range of the underline assets & the price above which market movement will go more positive & the price below which the market movement will go more negative.

3. Concept Note:

- **P/BV Ratio or Price to Book Value Ratio:**

Price to Book Value Ratio is one of the most widely used ratios to find price relative to the value. Book value is calculated by dividing net-worth by the number of outstanding shares.

$$P/BV = \text{Market price per share}/(\text{net-worth}/ \text{number of outstanding share})$$

- **Dividend yield or Price to Dividend Ratio:**

Dividends are the profits that the company pays out to its equity holders. Dividends can be compared with the share price for a sense on cheapness or expensiveness of equities.

$$\text{Dividend Yield} = \text{Dividend per share (DPS)}/\text{Current price of stock}$$

- **Time Value money:**

The money available at the present time is worth more than the same amount in the future since it has the potential to earn returns.

- **Total Return:**

In order to get a true picture of returns, the dividends received from the index constituent stocks also need to be included in the index movement. Such an index, which includes the dividends received, is called the total return index.

- **Risk Adjusted Return:**

Sharpe ratio is very commonly used measure of risk-adjusted returns. It is calculated as below

$$\text{Risk Adjusted Returns} = (R_s - R_f)/\text{Standard Deviation}$$

- **Return on Capital Invested:**

This price to book value ratio indicates how much we are paying to buy each Rs. of book value of equity. We can combine this price to book value ratio with RoE ratio to assess the adequacy of the return on invested capital to facilitate investment decision making.

Return on Invested Capital = ROE/PBV

4. **Research Methodology**

Assumes Future price of today is the expected price for the expiry day of the series of the contract. The paper assumes hedger participant want to protect his portfolio and will short in the future thinking that the market will downside in this series whereas the trader go long thinking that the market will not go down more & will get benefit hence the contract create for this entire series thinking that today price is the best price in this series.

Assume the return of today is the expected ROE (Return on Equity) for this series & hence The ROC (Return on Capital) is calculated by the ROE/PBV. The study is based on this below example: Consider a business with a net-worth of Rs. 100,000 and Market capitalization is Rs. 500,000 and RoE of 45%. Given these numbers, the PBV ratio is 5. If the RoE is 45% and the investor is paying 5 times of the book (Price to Book Value is 5) to buy equity, the money would generate only one fifth of this ROE i.e. 9%. This number has to be at least equal to the targeted return on capital required by the investor to make the investment worthwhile. For example, if the investor wants 15% minimum return on capital invested, the investor would not be willing to pay more than 3 times vizRs. 300,000 to buy equity because 45% on Rs. 100,000 would translate to 15% on Rs.300,000. Assume that accumulated dividend of the index or securities for this year is invested today into the index then participants will get the return as the index return. As per nifty index Total Return Concept.

The CNX Nifty reflects the return one would get if an investment is made in the index portfolio. As the CNX Nifty is computed in real- time, it takes into account only the stock price movements. However, the price indices do not consider the return from dividend payments of index constituent stocks. Only the capital gains and losses due to price movement are measured by the price index. In order to get a true picture of returns, the dividends received from the index constituent stocks also need to be included in the index movement. Such an index, which includes the dividends received, is called the total return index. The total return index reflects the returns on the index from stock prices fluctuation plus dividend payments by constituent index stocks. Hence the single equity share price is not considering the price of the dividend return hence this small return is added in this model. Because the participant will take decision due to dividend.

Assume the ROG i.ee Growth of (ROC+ROD(Return on Dividend)) is as per the time value money as assume that interest as per the today index or securities return for the series with the time remaining to expiry as the period.

Time value of money is the concept that money has the ability to be invested to earn more money. Therefore, money received earlier is worth more than money received later. The Compounded Growth Rate method of calculating returns takes this into consideration. As below

$$(1 + r)^{\frac{\text{day remaining to expiry}}{\text{total number of day of the series}}} - 1$$

Assume to calculate risk adjusted return as the Return of portfolio is ROC+ROD+ROG & Risk free rate as the rate in future as assume in nse& standard deviation of return of ROC+ROD+ROG.

Fluctuation in returns is used as a measure of risk. Therefore, to measure risk, generally the periodic returns (daily / weekly / fortnightly / monthly) are first worked out, and then their fluctuation is measured against the average return. The fluctuation or variation may be to the higher or lower side. Both are taken as risky. An investor can invest with the government and earn a risk-free rate of return (Rf).

T-Bill index is a good measure of this risk-free return. Through investment in a scheme, a risk is taken, and a return earned (Rs). The difference between the two returns i.e. Rs– Rf is called risk premium. It is like a premium that the investor has earned for the risk taken, as compared to government’s risk-free return Rf. This risk premium is to be compared with the risk taken. Sharpe Ratio uses Standard Deviation as a measure of risk.

Calculation of the Model

- i. Calculate ROE the daily return of the future price of the index or security.
- ii. Calculate ROCI_r the return as per the book value of the index or security.
- iii. Calculate ROD D_rthe return of dividend reinvestment on that day.
- iv. Calculate I_r + D_r
- v. Calculate the G_r Expected Growth of the above Return up to the series expiry by
 - a. the time value money method. As below
 - b. $(1+(I_r + D_r))^{\text{(day remaining /total day of the series)}}$
- vi. Calculate Rithe Rate of interest to be pay in future market investment on next day upto the expiry.
- vii. Calculate R_rthe risk adjusted return as

$$((I_r + D_r + G_r - R_i) / (\text{SD of the return of index future}))$$

- viii. Calculate Risk adjusted price of the future as
 - ix. Closing Price + R_r * closing future value of the day
 - x. Calculate Support 1 by deducting 1* standard deviation of R_r from the Risk adjusted price of the future
 - xi. Calculate Support 3 by deducting 3* standard deviation of R_r from the Risk adjusted price of the future
 - xii. Calculate Support 2 by deducting 2* standard deviation of R_r from the Risk adjusted price of the future
 - xiii. Resistance 1 by adding 1* standard deviation of R_r with the Risk adjusted price of the future
 - xiv. Resistance 2 by adding 2* standard deviation of R_r with the Risk adjusted price of the future
 - xv. Resistance 3 by adding 3.5 * standard deviation of R_r with the Risk adjusted price of the future

Sample data Used in the Model:

For this experiment I consider the nifty 50 index future series closing price data & the Corresponding date nifty 50 index P/BV Ratio & Dividend Yield for index future price movement prediction. Data march 2016 series of nifty 50 future

I consider the Reliance future series closing price data & the Corresponding date Reliance P/BV Ratio & Dividend Yield for index future price movement prediction. Data march 2016 series of Reliance future

Data & Calculation for index nifty 50:

Date	PB	DY	Nifty 50	ROE	ROC	ROD	GR	RI	RR	S2	S1	RAP	R1	R2	R3
1-Mar-16	2.9	1.6	7229	3.14%	1.08%	0.05%	0.36%	0.79%	0.49%	7176	7221	7265	7309	7353	7420
2-Mar-16	2.96	1.57	7362	1.83%	0.62%	0.03%	0.20%	0.77%	0.06%	7278	7322	7366	7410	7454	7520
3-Mar-16	3	1.55	7450	1.20%	0.40%	0.02%	0.12%	0.74%	-0.14%	7360	7400	7439	7479	7518	7578
4-Mar-16	3.01	1.55	7460	0.14%	0.05%	0.00%	0.01%	0.71%	-0.46%	7354	7390	7426	7462	7498	7553
8-Mar-16	3	1.55	7453	-0.10%	-0.03%	0.00%	-0.01%	0.60%	-0.46%	7346	7382	7418	7455	7491	7546
9-Mar-16	3.02	1.54	7535	1.11%	0.37%	0.02%	0.09%	0.58%	-0.07%	7476	7503	7530	7557	7583	7624
10-Mar-16	3	1.55	7484	-0.68%	-0.23%	-0.01%	-0.05%	0.55%	-0.64%	7395	7416	7436	7456	7476	7507
11-Mar-16	3.01	1.54	7512	0.38%	0.13%	0.01%	0.03%	0.52%	-0.30%	7457	7473	7489	7505	7522	7546
14-Mar-16	3.02	1.54	7547	0.46%	0.15%	0.01%	0.03%	0.44%	-0.22%	7500	7515	7530	7545	7560	7583
15-Mar-16	2.99	1.55	7485	-0.81%	-0.27%	-0.01%	-0.05%	0.41%	-0.62%	7406	7422	7439	7456	7473	7498
16-Mar-16	3	1.55	7527	0.56%	0.19%	0.01%	0.03%	0.38%	-0.14%	7480	7498	7516	7535	7553	7580
17-Mar-16	3.01	1.54	7513	-0.19%	-0.06%	0.00%	-0.01%	0.36%	-0.54%	7440	7457	7473	7489	7505	7529
18-Mar-16	3.05	1.52	7605	1.23%	0.40%	0.02%	0.06%	0.33%	0.21%	7576	7599	7621	7644	7667	7701

Figure 1 : Nifty 50 March 2016 future data & calculation

Terms of the table

PB= Price to book value ratio

DY= dividend yield

Nifty 50= closing price of nifty 50 future march 2016 series

ROE= return of the closing price from the previous closing price

ROC= ROE/PB

ROD= Dividend invested Return

GR= the return of ROD+ROC growth till expiry as per time value money

RI= Rate of interest is assume 10% per annum

RR= Sharpe ratio

RAP= Risk adjusted price

S1&S2= Support 1 & Support 2

R1&R2& R3 = Resistance 1 & Resistance 2&Resistace 3

4. Data Analysis (Reliance Industries)

Date	PB	DY	Reliance	ROE	ROC	ROD	GR	RI	RR	S2	S1	RAP	R1	R2
1-Mar-16	1.475	1.07%	984	1.21%	0.82%	0.00%	0.26%	0.79%	0.21%	949	968	986	1004	1023
2-Mar-16	1.502	1.05%	1002	1.86%	1.24%	0.00%	0.38%	0.77%	0.67%	966	988	1009	1030	1052
3-Mar-16	1.515	1.04%	1011	0.86%	0.57%	0.00%	0.17%	0.74%	0.00%	959	985	1011	1037	1063
4-Mar-16	1.506	1.05%	1004	-0.65%	-0.43%	0.00%	-0.12%	0.71%	-1.18%	943	968	993	1018	1043
8-Mar-16	1.527	1.03%	1019	1.45%	0.95%	0.00%	0.23%	0.60%	0.52%	968	996	1024	1052	1080
9-Mar-16	1.555	1.01%	1038	1.83%	1.17%	0.00%	0.27%	0.58%	0.78%	977	1011	1046	1080	1114
10-Mar-16	1.514	1.04%	1010	-2.68%	-1.77%	0.00%	-0.40%	0.55%	-1.95%	927	959	990	1022	1053
11-Mar-16	1.515	1.04%	1010	0.06%	0.04%	0.00%	0.01%	0.52%	-0.33%	948	977	1007	1037	1066
14-Mar-16	1.519	1.04%	1014	0.31%	0.21%	0.00%	0.04%	0.44%	-0.15%	963	988	1012	1037	1061
15-Mar-16	1.523	1.03%	1016	0.22%	0.14%	0.00%	0.02%	0.41%	-0.18%	975	994	1014	1033	1053
16-Mar-16	1.524	1.03%	1017	0.11%	0.07%	0.00%	0.01%	0.38%	-0.23%	981	998	1014	1031	1048
17-Mar-16	1.525	1.03%	1017	0.03%	0.02%	0.00%	0.00%	0.36%	-0.26%	985	1000	1015	1029	1044
18-Mar-16	1.542	1.02%	1028	1.10%	0.71%	0.00%	0.09%	0.33%	0.40%	1001	1017	1032	1048	1064

Figure 2 : Reliance March 2016 data & calculation

Terms of the table

PB= Price to book value ratio

DY= dividend yield

Nifty 50= closing price of nifty 50 future march 2016 series

ROE= return of the closing price from the previous closing price

ROC= ROE/PB

ROD= Dividend invested Return

GR= the return of ROD+ROC growth till expiry as per time value money

RI= Rate of interest is assume 10% per annum

RR= Sharpe ratio

RAP= Risk adjusted price

S1&S2= Support 1 & Support 2

R1&R2= Resistance 1 & Resistance 2

5. Prediction from the Model

- On Next day when the price is below the risk adjusted price (RAP) Then market mood will negative & will touch the Support level 1 & if it break down then it will try to touch the support level 2.
- On Next day when the price is above the risk adjusted price (RAP) Then market mood will positive & will touch the resistance level 1 & if it cross the level then will try to touch the resistance level 2.
- If the closing price is above the resistance 2 levels then it indicate that market will breakout & next day market will up.
- If the closing price is below the support level 2 then it indicate that the market will breakdown & next day market will down

A. Analysis & Result of the model for nifty 50:

Date	S2	S1	RAP	R1	R2	R3	Real market	open	high	low	close
1-Mar-16	7176	7221	7265	7309	7353	7420	2-Mar-16	7328	7370	7303	7362
2-Mar-16	7278	7322	7366	7410	7454	7520	3-Mar-16	7401	7462	7365	7450
3-Mar-16	7360	7400	7439	7479	7518	7578	4-Mar-16	7470	7480	7405	7460
4-Mar-16	7354	7390	7426	7462	7498	7553	8-Mar-16	7473	7498	7414	7453
8-Mar-16	7346	7382	7418	7455	7491	7546	9-Mar-16	7433	7540	7408	7535
9-Mar-16	7476	7503	7530	7557	7583	7624	10-Mar-16	7583	7583	7435	7484
10-Mar-16	7395	7416	7436	7456	7476	7507	11-Mar-16	7485	7544	7447	7512
11-Mar-16	7457	7473	7489	7505	7522	7546	14-Mar-16	7550	7594	7528	7547
14-Mar-16	7500	7515	7530	7545	7560	7583	15-Mar-16	7545	7556	7470	7485
15-Mar-16	7406	7422	7439	7456	7473	7498	16-Mar-16	7485	7536	7430	7527
16-Mar-16	7480	7498	7516	7535	7553	7580	17-Mar-16	7588	7602	7487	7513
17-Mar-16	7440	7457	7473	7489	7505	7529	18-Mar-16	7536	7615	7527	7605
18-Mar-16	7576	7599	7621	7644	7667	7701					

Figure 3 : Nifty 50 March 2016 Future Compares with model data

As per the model its show that if market will trade above RAP it will positive & also it face resistance in the R1 price then R2 then R3 & vice versa.



Figure 4 : Nifty 50 21- March- 2016 Future intraday chart compare with model data

As per the model its show that if market will trade above 7621 it will positive same as the graph & also it face resistance in the R1 price & when it cross a big move done & try to touch the R2 within a few time.

B. Analysis & Result of the model for Reliance:

Real on next day as per previous day expectation											
Date	S2	S1	RAP	R1	R2	date	open	high	low	close	
1-Mar-16	949	968	986	1004	1023	2-Mar-16	995	1005	989	1002.3	it face resistance in R1 & support at rap
2-Mar-16	966	988	1009	1030	1052	3-Mar-16	1007	1014.65	997.05	1010.95	due to low volatility it close at rap
3-Mar-16	959	985	1011	1037	1063	4-Mar-16	1012	1012.2	1002	1004.4	it trade below rap hence negative mood
4-Mar-16	943	968	993	1018	1043	8-Mar-16	1006	1022.75	1004.55	1018.95	above rap its positive & face resistance R1
8-Mar-16	968	996	1024	1052	1080	9-Mar-16	1015	1039.5	1014.85	1037.55	
9-Mar-16	977	1011	1046	1080	1114	10-Mar-16	1038	1040.5	1007.05	1009.7	below rap hence negative mood & touch s1
10-Mar-16	927	959	990	1022	1053	11-Mar-16	1011	1023.5	1005.05	1010.35	above rap hence positive touch R1
11-Mar-16	948	977	1007	1037	1066	14-Mar-16	1016	1020.9	1008.4	1013.5	hold positive mood above rap
14-Mar-16	963	988	1012	1037	1061	15-Mar-16	1016	1022	1010.3	1015.7	
15-Mar-16	975	994	1014	1033	1053	16-Mar-16	1015	1020.9	1000	1016.8	
16-Mar-16	981	998	1014	1031	1048	17-Mar-16	1027	1040	1014	1017.15	above rap its positive & after cross R1 then R2
17-Mar-16	985	1000	1015	1029	1044	18-Mar-16	1020	1032.2	1018.6	1028.35	
18-Mar-16	1001	1017	1032	1048	1064						

Figure 5 : Reliance March 2016 Future data compare with model data



Figure 6: Reliance 21- March- 2016 Future intraday chart compare with model data

As per the model its show that if market will trade above 1032 it will positive same as the graph & also it face resistance in the R1 price & when it cross a big move done & try to touch the R2 within a few time.

6. Conclusion

As the price to book value, the dividend declared & closing price are constant you can't change to adjust the accuracy. This model accuracy will adjust by one of the parameter i.e. standard deviation & also another parameter the rate of interest for future. So adjust this as per the historical price & you will get the better accuracy.

7. Reference

CNX NIFTY Index Methodology book You can down load from the <http://www.nseindia.com>

NISM-Series-XV-Research Analyst Certification Examination Workbook

Data are downloaded from <http://www.nseindia.com>

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Author : Parameswara Publisher : Mcgraw-Hill Education India Pvt.Ltd - New Delhi
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