

ZERODHA

Technical Analysis - Part 2

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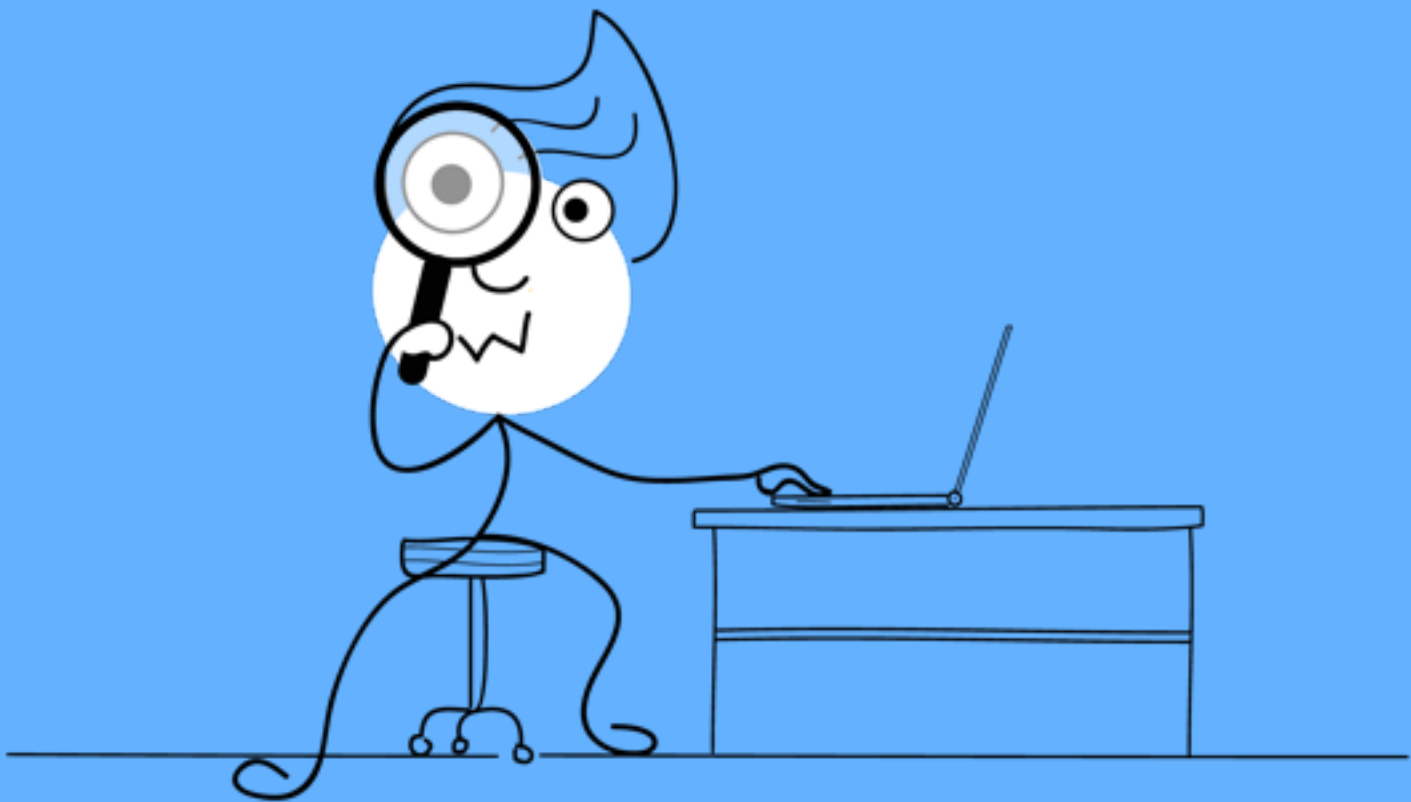


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Multiple Candlestick Patterns (Part 3)

The morning star and the evening star are the last two candlestick patterns we will be studying.

Before we understand the morning star pattern, we need to understand two common price behaviors – gap up opening and gap down opening. Gaps (a general term used to indicate both gap up and gap down) are a common price behavior. A gap on a daily chart happens when the stock closes at one price but opens on the following day at a different price.



10.1 – The Gaps

Gap up opening – A gap up opening indicates buyer's enthusiasm. Buyers are willing to buy stocks at a price higher than the previous day's close. Hence, because of enthusiastic buyer's outlook, the stock (or the index) opens directly above the previous day's close. For example consider the closing price of ABC Ltd was Rs.100 on Monday. After the market closes on Monday assume ABC Ltd announces their quarterly results. The numbers are so good that on Tuesday morning the buyers are willing to buy the stock at any price. This enthusiasm would lead to stock price jumping to Rs.104 directly. This means though there was no trading activity between Rs.100 and Rs.104, yet the stock jumped to Rs.104. This is called a gap up opening. Gap up opening portrays bullish sentiment.

In the following image the green arrows points to a gap up openings.



Gap down opening – Similar to gap up opening, a gap down opening shows the enthusiasm of the bears. The bears are so eager to sell, that they are willing to sell at a price lower than the previous day's close. In the example stated above, if the quarterly results were bad, the sellers would want to get rid of the stock and hence the market on Tuesday could open directly at Rs.95 instead of Rs.100. In this case, though there was no trading activity between Rs.100 and Rs.95 yet the stock plummeted to Rs.95. Gap down opening portrays bearish sentiment.

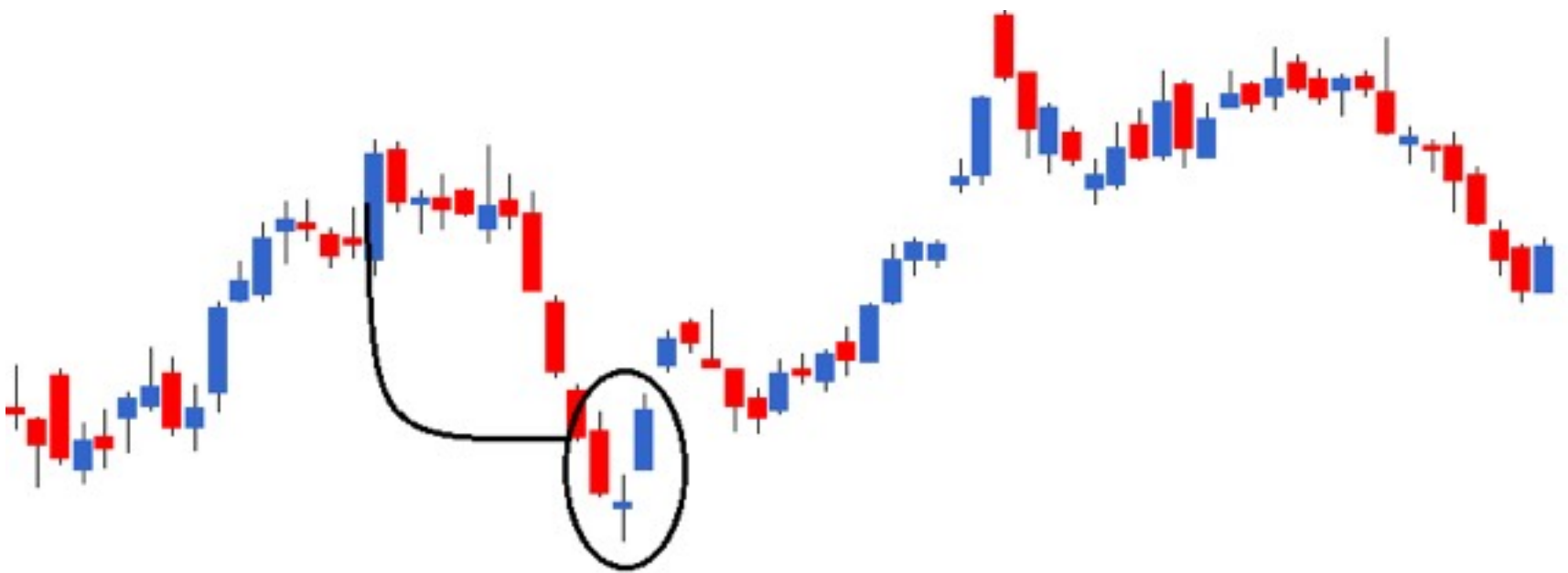
In the following image the green arrows points to a gap down opening.

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10.2 – The Morning Star

The morning star is a bullish candlestick pattern which evolves over a three day period. It is a downtrend reversal pattern. The pattern is formed by combining 3 consecutive candlesticks. The morning star appears at the bottom end of a down trend. In the chart below the morning star is encircled.



The morning star pattern involves 3 candlesticks sequenced in a particular order. The pattern is encircled in the chart above. The thought process behind the morning star is as follow:

1. Market is in a downtrend placing the bears in absolute control. Market makes successive new lows during this period
2. On day 1 of the pattern (P1), as expected the market makes a new low and forms a long red candle. The large red candle shows selling acceleration
3. On day 2 of the pattern (P2) the bears show dominance with a gap down opening. This reaffirms the position of the bears
4. After the gap down opening, nothing much happens during the day (P2) resulting in either a doji or a spinning top. Note the presence of doji/spinning top represents indecision in the market
5. The occurrence of a doji/spinning sets in a bit of restlessness within the bears, as they would have otherwise expected another down day especially in the backdrop of a promising gap down opening
6. On the third day of the pattern (P3) the market/stock opens with a gap up followed by a blue candle which manages to close above P1's red candle opening
7. In the absence of P2's doji/spinning top it would have appeared as though P1 and P3 formed a bullish engulfing pattern
8. P3 is where all the action unfolds. On the gap up opening itself the bears would have been a bit jittery. Encouraged by the gap up opening buying persists through the day, so much so that it manages to recover all the losses of P1
9. The expectation is that the bullishness on P3 is likely to continue over the next few trading sessions and hence one should look at buying opportunities in the market

Unlike the single and two candlestick patterns, both the risk taker and the risk averse trader can initiate the trade on P3 itself. Waiting for a confirmation on the 4th day may not be necessary while trading based on a morning star pattern.

The long trade setup for a morning star would be as follows:

1. Initiate a long trade at the close of P3 (around 3:20PM) after ensuring that P1, P2, and P3 together form a morning star
2. To validate the formation of a morning star on P3 the following conditions should satisfy:
 - a. P1 should be a red candle
 - b. With a gap down opening, P2 should be either a doji or a spinning top

c. P3 opening should be a gap up, plus the current market price at 3:20 PM should be higher than the opening of P1

3. The lowest low in the pattern would act as a stop loss for the trade

10.3 – The evening star

The evening star is the last candlestick pattern that we would learn in this module.

The evening star is a bearish equivalent of the morning star. The evening star appears at the top end of an uptrend. Like the morning star, the evening star is a three candle formation and evolves over three trading sessions.



The reasons to go short on an evening star are as follows:

1. The market is in an uptrend placing the bulls in absolute control
2. During an uptrend the market/stock makes new highs
3. On the first day of the pattern (P1), as expected the market opens high, makes a new high and closes near the high point of the day. The long blue candle formed on day 1 (P1) shows buying acceleration
4. On the 2nd day of the pattern (P2) the market opens with a gap reconfirming the bull's stance in the market. However after the encouraging open the market/stock does not move and closes by forming a doji/spinning top. The closing on P2 sets in a bit of panic for bulls
5. On the 3rd day of the pattern (P3), the market opens gap down and progresses into a red candle. The long red candle indicates that the buyers are taking control. The price action on P3 sets the bulls in panic

6. The expectation is that the bulls will continue to panic and hence the bearishness will continue over the next few trading session. Therefore one should look at shorting opportunities

The trade setup for an evening star is as follows:

1. Short the stock on P3, around the close of 3:20 PM after validating that P1 to P3 form an evening star
2. To validate the evening star formation on day 3, one has to evaluate the following:
 - a. P1 should be a blue candle
 - b. P2 should be a doji or a spinning top with a gap up opening
 - c. P3 should be a red candle with a gap down opening. The current market price at 3:20PM on P3 should be lower than the opening price of P1
3. Both risk taker and risk averse can initiate the trade on P3
4. The stop loss for the trade will be the highest high of P1, P2, and P3.

10.4 – Summarizing the entry and exit for candlestick patterns

Before we conclude this chapter let us summarize the entry and stop loss for both long and short trades. Remember during the study of candlesticks we have not dealt with the trade exit (aka targets). We will do so in the next chapter.

Risk taker – The risk taker enters the trade on the last day of the pattern formation around the closing price (3:20 PM). The trader should validate the pattern rules and if the rules are validated; then the opportunity qualifies as a trade.

Risk averse – The risk averse trader will initiate the trade after he identifies a confirmation on the following day. For a long trade the colour of candle should be blue and for a short trade the color of the candle should be red.

As a rule of thumb, higher the number of days involved in a pattern the better it is to initiate the trade on the same day.

The stoploss for a long trade is the lowest low of the pattern. The stoploss for a short trade is the highest high of the pattern.

10.5 – What next?

We have looked at 16 candlestick patterns, and is that all you may wonder?.

No, not really. There are many candlestick patterns and I could go on explaining these patterns but that would defeat the ultimate goal.

The ultimate goal is to understand and recognize the fact that candlesticks are a way of thinking about the markets. You need not know all the patterns.

Think about car driving, once you learn how to drive a car, it does not matter which car you drive. Driving a Honda is pretty much the same as driving a Hyundai or Ford. Driving comes naturally irrespective of which car you are driving. Likewise once you train your mind to read the thought process behind a candlestick it does not matter which pattern you see. You will exactly know how to react and how to set up a trade based on the chart that you are seeing. Of course in order to reach this stage, you will have to go through the rigor of learning and trading the standard patterns.

So my advice to you would be to know the patterns that we have discussed here. They are some of the most frequent and profitable patterns to trade on the Indian markets. As you progress, start developing trades based on the thought process behind the actions of the bulls and the bears. This, over time is probably the best approach to study candlesticks.

Key takeaways from this chapter

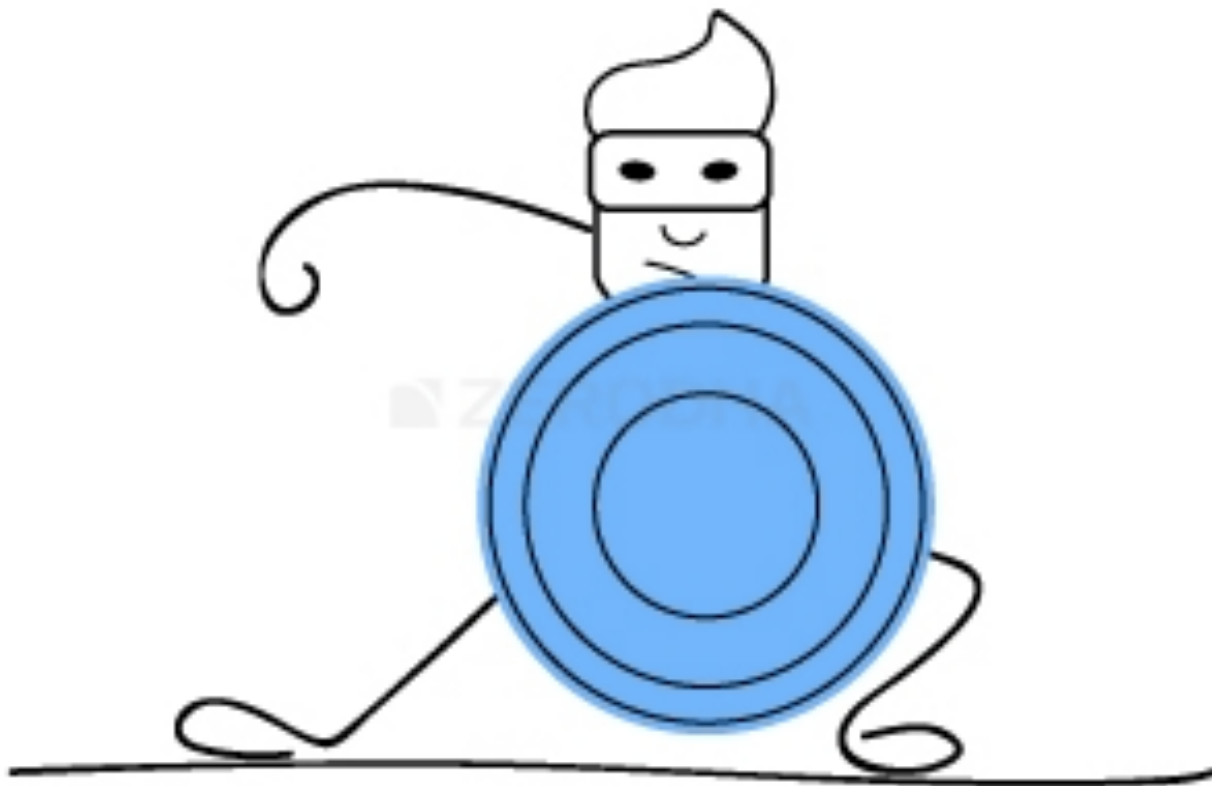
1. Star formation occurs over three trading sessions. The candle of P2 is usually a doji or a spinning top
2. If there is a doji on P2 in a star pattern, it is called a doji star (morning doji star, evening doji star) else it is just called the star pattern (morning star, evening star)
3. Morning star is a bullish pattern which occurs at the bottom end of the trend. The idea is to go long on P3 with the lowest low of the pattern being the stop loss for the trade
4. Evening star is a bearish pattern, which occurs at the top end of an up trend. The idea is to go short on P3, with the highest high of the pattern acting as a stop loss
5. The star formation evolves over a 3 days period, hence both the risk averse and risk taker are advised to initiate the trade on P3
6. Candlesticks portray the traders thought process. One should nurture this thought process as he dwells deeper into the candlestick study

The Support and Resistance

While discussing candlestick patterns, we had learnt about the entry and the stoploss points, however the target price was not discussed. We will discuss the same in this chapter.

The best way to identify the target price is to identify the support and the resistance points. The support and resistance (S&R) are specific price points on a chart which are expected to attract maximum amount of either buying or selling. The support price is a price at which one can expect more buyers than sellers. Likewise the resistance price is a price at which one can expect more sellers than buyers.

On a standalone basis traders can use S&R to identify trade entry points as well.

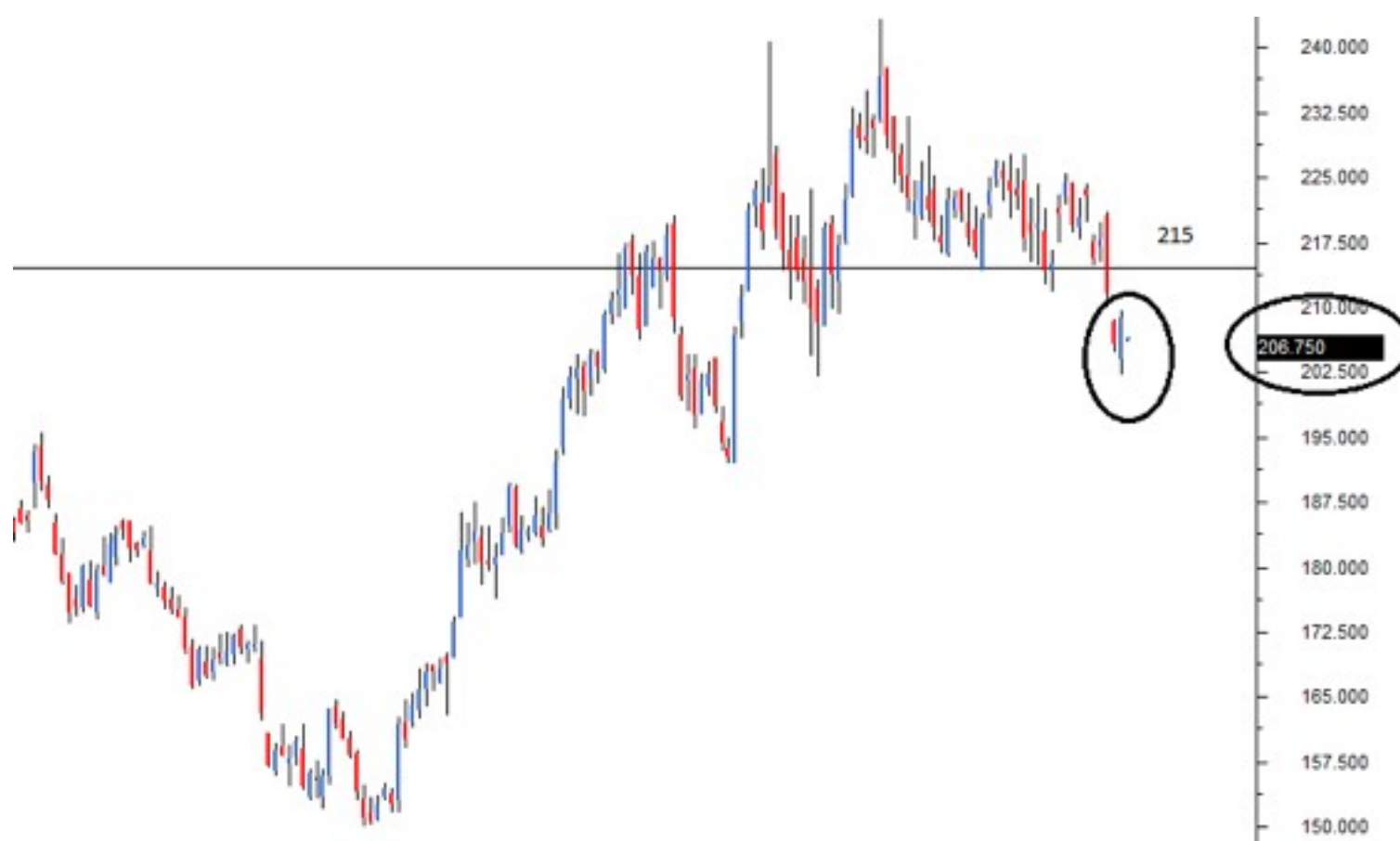


11.1 – The Resistance

As the name suggests, resistance is something which stops the price from rising further. The resistance level is a price point on the chart where traders expect maximum supply (in terms of selling) for the stock/index. **The resistance level is always above the current market price.**

The likelihood of the price rising up to the resistance level, consolidating, absorbing all the supply, and then declining is high. The resistance is one of the critical technical analysis tools which market participants look at in a rising market. The resistance often acts as a trigger to sell.

Here is the chart of Ambuja Cements Limited. The horizontal line coinciding at Rs.215 on the chart, marks the resistance level for Ambuja Cements.



I have deliberately compressed the chart to include more data points, the reasons for which I will shortly explain. But before that there are two things that you need to pay attention to while looking at the above chart:

1. The resistance level, indicated by a horizontal line, is higher than the current market price.
2. While the resistance level is at 215, the current candle is at 206.75. The current candle and its corresponding price level are encircled for your reference

For a moment let us imagine Ambuja cements at Rs.206 forming a bullish marubuzo with a low of 202. We know this is a signal to initiate a long trade, and we also know that the stoploss for this trade is at 202. With the new found knowledge on resistance, we now know that we can set 215 as a possible target for this trade!

Why 215 you may wonder? The reasons are simple:-

1. Resistance of 215 implies there is a likelihood of excess supply
2. Excess supply builds selling pressure
3. Selling pressure tends to drag the prices lower

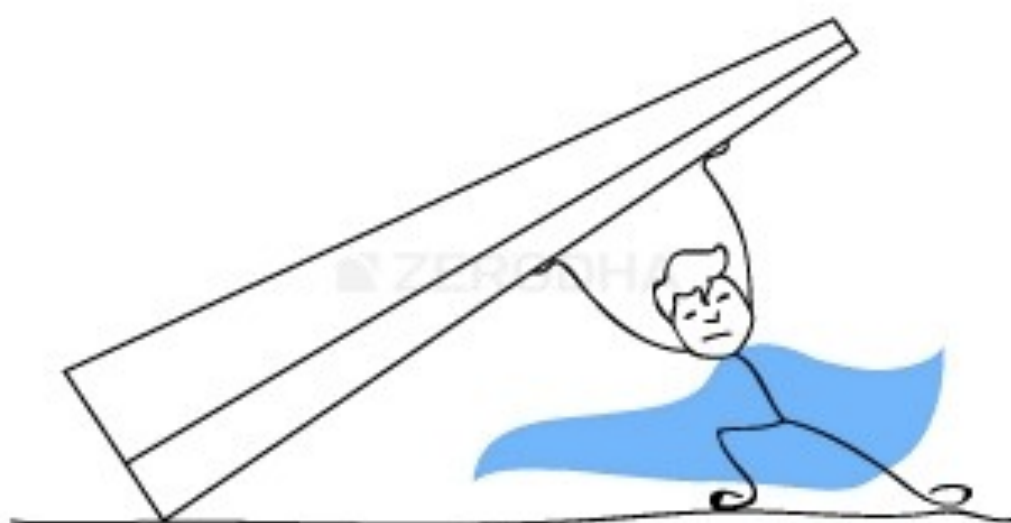
Hence for reasons stated above, when a trader is long he can look at resistance points to set targets and to set exit points for the trade.

Also, with the identification of the resistance the long trade can now be completely designed as follows:

Entry – 206, Stoploss – 202, and Target – 215.

The next obvious question is how do we identify the resistance level? Identifying price points as either a support or resistance is extremely simple. The identification process is the same for both support and resistance. If the current market price is below the identified point, it is called a resistance point; else it is called a support point.

Since the process is the same, let us proceed to understand ‘support’, and we will follow it up with the procedure to identify S&R.



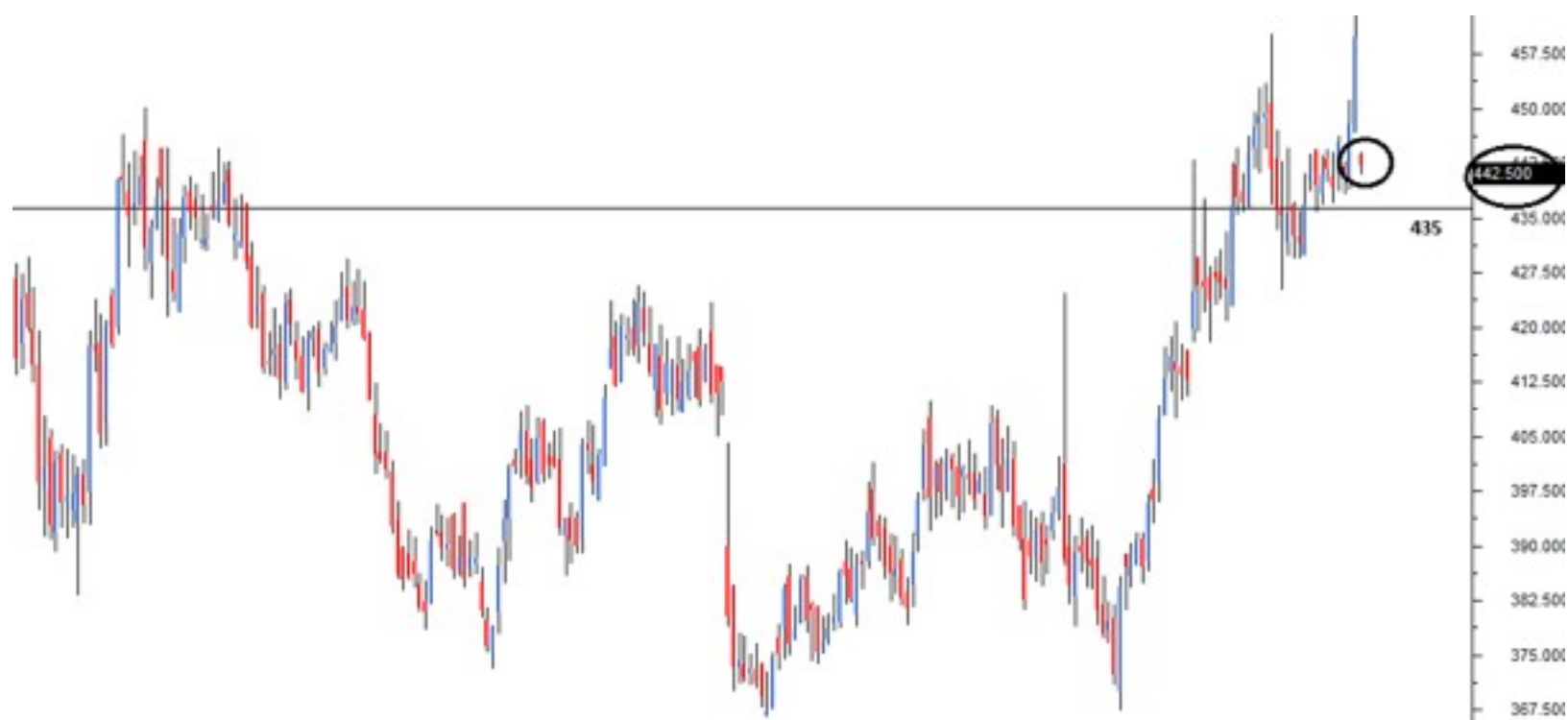
11.2 – The Support

Having learnt about resistance, understanding the support level should be quite simple and intuitive. As the name suggests, the support is something that prevents the price from falling further.

The support level is a price point on the chart where the trader expects maximum demand (in terms of buying) coming into the stock/index. Whenever the price falls to the support line, it is likely to bounce back. The support level is **always below** the current market price.

There is a maximum likely hood that the price could fall till the support, consolidate, absorb all the demand, and then start to move upwards. The support is one of the critical technical level market participants look for in a falling market. The support often acts as a trigger to buy.

Here is the chart of Cipla Limited. The horizontal line coinciding at 435 on chart marks the support level for Cipla.



Few things that you need to notice on the chart above:

1. The support level, indicated by the horizontal line is below the current market price
2. While the support level is at 435, the current candle is at 442.5. The current candle and its corresponding price level are encircled for your reference

Like we did while understanding resistance, let us imagine a bearish pattern formation – perhaps a shooting star at 442 with a high of 446. Clearly with a shooting star, the call is to short Cipla at 442, with 446 as the stoploss. Since we know 435 the immediate support, we can set the target at 435.

So what makes Rs.435 target worthy? The following reasons back the decision:

1. Support at 435 implies there is a maximum likely hood of excess demand to emerge
2. Excess demand builds buying pressure

3. Buying pressure tends to drag the price higher

Hence for the reasons stated above, when a trader is short, he can look at support points to set targets and to set exit points for the trade.

Also, with the identification of the support, the short trade is now completely designed.

Entry – 442, stoploss – 446, and target – 435.

11.3 – Construction/Drawing of the Support and Resistance level

Here is a 4 step guide to help you understand how to identify and construct the support and the resistance line.

Step 1) Load data points – If the objective is to identify short term S&R load at least 3-6 months of data points. If you want to identify long term S&R, load at least 12 – 18 months of data points. When you load many data points, the chart looks compressed. This also explains why the above two charts looks squeezed.

- a. Long term S&R – is useful for swing trading
- b. Short term S&R – is useful intraday and BTST trades

Here is a chart where I have loaded 12 months of data points



Step 2) Identify at least 3 price action zones – A price action zone can be described as ‘sticky points’ on chart where the price has displayed at least one of the behaviors:

- a. Hesitated to move up further after a brief up move
- b. Hesitated to move down further after a brief down move
- c. Sharp reversals at particular price point

Here are a series of charts that identifies the above 3 points in the same order:

In the chart below, the encircled points indicate the price hesitating to move up further after a brief up move:



In the chart below, the encircled points indicate the price hesitating to move down further after a brief down move:

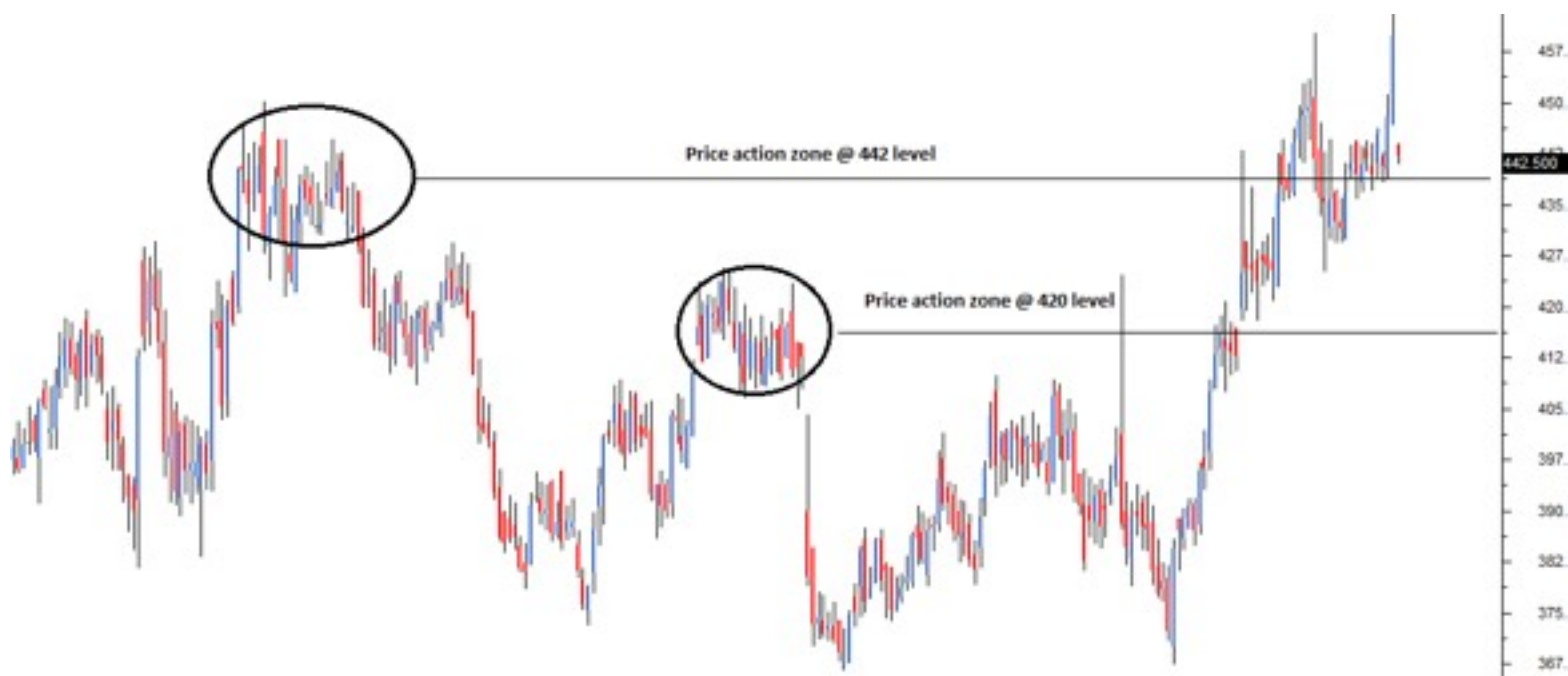


In the chart below, the encircled points indicate sharp price reversals:



Step 3) Align the price action zones – When you look at a 12 month chart, it is common to spot many price action zones. But the trick is to identify at least 3 price action zones that are at the same price level.

For example here is a chart where two price action zones are identified but they are not at the same price point.



Look at the following chart, I have encircled 3 price action zones that are around the same price points:



A very important point to note while identifying these price action zones is to make sure these price zone are well spaced in time. Meaning, if the 1st price action zone is identified on 2nd week on May, then it will be meaningful to identify the 2nd price action zone at any point after 4th week of May (well spaced in time). The more distance between two price action zones, the more powerful is the S&R identification.

Step 4) Fit a horizontal line – Connect the three price action zones with a horizontal line. Based on where this line fits in with respect to the current market price, it either becomes a support or resistance.

Have a look at this chart



Starting from left:

- a. The 1st circle highlights a price action zone where there is a sharp reversal of price
- b. The 2nd circle highlights a price action zone where price is sticky
- c. The 3rd circle highlights a price action zone where there is a sharp reversal of price
- d. The 4th circle highlights a price action zone where price is sticky
- e. The 5th circle highlights the current market price of Cipla – 442.5

In the above chart all the 4 price action zones are around the same price points i.e at 429. Clearly, the horizontal line is below the current market price of 442.5, thus making 429 as an immediate support price for Cipla.

Please note, whenever you run a visual exercise in Technical Analysis such as identifying S&R, you run the risk of approximation. Hence always give room for error. The price level is usually depicted in a range and not at a single price point. It is actually a zone or an area that acts as support or resistance.

So going by the above logic, I would be happy to consider a price range around 426 to 432 as a support region for Cipla. There is no specific rule for this range, I just subtracted and added 3 points to 429 to get my price range for support!

Here is another chart, where both S&R have been identified for Ambuja Cements Limited.



The current price of Ambuja is 204.1, the support is identified at 201 (below current market price), and the resistance at 214 (above current market price). So if one were to short Ambuja at 204, the target, based on support can be at 201. Probably this would be a good intraday trade. For a trader going long at 204, 214 can be a reasonable target expectation based on resistance.

Notice in both the support and the resistance level, there at least 3 price action zone identified at the price level, all of which are well spaced in time.

11.4 – Reliability of S&R

The support and resistance lines are only indicative of a possible reversal of prices. They by no means should be taken for as certain. Like anything else in technical analysis, one should weigh the possibility of an event occurring (based on patterns) in terms of probability.

For example, based on the chart of Ambuja Cements –

Current Market Price = 204

Resistance = 214

The expectation here is that if at all Ambuja cements starts to move up it is likely to face a resistance at 214. Meaning, at 214 sellers could emerge who can potentially drag the prices lower. What is the guarantee that the sellers would come in at 214? In other words, what is dependence of the resistance line? Honestly, your guess is as good as mine.

However, historically it can be seen that whenever Ambuja reached 214, it reacted in a peculiar way leading to the formation of a price action zone. The comforting factor here is that the price action zone is well spaced in time. This mean **214 stands as a time tested price action zone**. Therefore keeping the very first rule of technical analysis in perspective i.e **“History tends to repeat itself”** we go with the belief that support and resistance levels will be reasonably honored.

Purely from my personal trading experience well constructed S&R points are usually well respected.

11.5 – Optimization and checklist

Perhaps, we are now at the most important juncture in this module. We will start discovering few optimization techniques which will help us identify high quality trades. Remember, when you seek quality, quantity is always compromised, but this is a compromise that is worth making. The idea is to identify quality trading signals as opposed to identifying plenty, but worthless trades.

Optimization in general is a technique wherein you fine tune a process for best possible results. The process in this context is about identifying trades.

Let us go back to candlesticks patterns, maybe to the very first we learnt – bullish marubuzo. A bullish marubuzo suggests a long trade near the close of the marubuzo, with the low of the marubuzo acting as the stoploss.

Assume the following credentials for the bullish marubuzo:

Open = 432, High = 449, Low = 430, Close = 448

Hence the entry for the long trade is approximately at 448, with 430 as the stoploss.

Now what if the low of the marubuzo also coincides with a good time tested support? Do you see a remarkable confluence of two technical theories here?

We have a double confirmation to go long. Think about it on following terms:

1. A recognized candlestick pattern (bullish marubuzo) suggests the trader to initiate a long trade
2. A support near the stoploss price suggests the trader the presence of significant buying interest around the low

While dealing with a fairly random environment such as the markets, what a trader really needs is a well crafted trade setup. The occurrence of the above two conditions (marubuzo + support near the low) suggests the same action i.e to initiate a long trade in this case.

This leads us to an important idea. What if we had a checklist (call it a framework if you like) for every trade that we consider? The checklist would act as a guiding principle before initiating a trade. The trade should comply to the conditions specified in the checklist. If it does, we take the trade; else we just drop it and look for another trade opportunity that complies with the checklist.

Discipline, they say makes up for the 80% of the trader's success. The checklist in my opinion forces you to be disciplined; it helps you avoid taking abrupt and reckless trading decision.

In fact to begin with we have the first two very important factors of the checklist:

1. The stock should form a recognizable candlestick pattern

a. Note: We have learnt some of the popular patterns in this module. To begin with you can use just these patterns to comply with checklist

2. S&R should confirm to the trade. The stoploss price should be around S&R

a. For a long trade, the low of the pattern should be around the support

b. For a short trade, the high of the pattern should be around the resistance

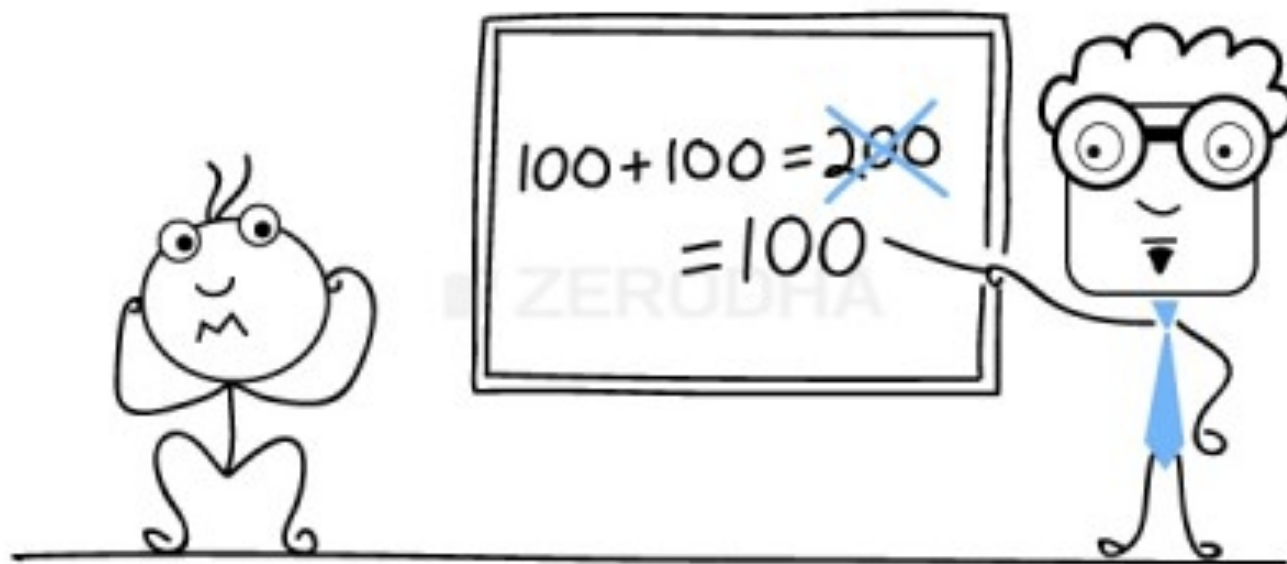
Going forward in this module, as and when we learn new TA concepts, we will build this checklist. But just to quench your curiosity, the final checklist will have 6 checklist points. In fact when we have the grand 6 checklist points, we will weigh down each one of them. For example, checklist point number 4 may not be as important as point number 1, but nevertheless it is more important than 100 other factors that distract the trader.

Key takeaways from this chapter

1. S&R are price points on the chart
2. Support is a price point below the current market price that indicate buying interest
3. Resistance is a price point above the current market price that indicate selling interest
4. To identify S&R, place a horizontal line in such a way that it connects at least 3 price action zones, well spaced in time. The more number of price action zones (well spaced in time) the horizontal line connects, the stronger is S&R
5. S&R can be used to identify targets for the trade. For a long trade, look for the immediate resistance level as target. For a short trade, look for the immediate support level as target.
6. Lastly, comply with the checklist for optimal trading results

Volumes

Volume plays a very integral role in technical analysis as it helps us to confirm trends and patterns. Consider volumes as means to gain insights into how other participants perceive the market.



Volumes indicate how many shares are bought and sold over a given period of time. The more active the share, higher would be its volume. For example, you decide to buy 100 shares of Amara Raja Batteries at 485, and I decide to sell 100 shares of Amara Raja Batteries at 485. There is a price and quantity match, which results in a trade. You and I together have created a volume of 100 shares. Many people tend to assume volume count as 200 (100 buy + 100 sell) which is not the right way to look at volumes.

The following fictional example as per Table 3.1 should help you understand how volumes add up on a typical trading day:

Table 3.1 - Cumulative Volume

Sl No	Time	Buy Quantity	Sell Quantity	Price	Volume	Cumulative Volume
1	9:30 AM	400	400	62.20	400	400
2	10:30 AM	500	500	62.75	500	900
3	11:30 AM	350	350	63.10	350	1,250
4	12:30 PM	150	150	63.50	150	1,400
5	1:30 PM	625	625	63.75	625	2,025
6	2:30 PM	475	475	64.20	475	2,500
7	3:30 PM	800	800	64.50	800	3,300

At 9:30 AM there were 400 shares exchanged at the price of 62.20. An hour later, 500 shares were traded at 62.75. So at 10:30 AM if you were to check the total volume for the day, it would be 900 (400 + 500). Likewise 350 shares at 63.10 were traded at 11:30 AM, and upto 11:30 AM, the volume was 1,250 (400+500+350). So on, and so forth.

Here is a screen shot from the live market highlighting the volumes for some of the shares. The screen shot was taken around 2:55 PM on 5th of August 2014.

Trading sym...	%Change	LTP	Bid qty	Bid rate	Ask rate	Ask qty	Open	High	Low	Prev clo...	Volum...	Open int...	Total bi...	Total as...	Predictive Cls...	Chart
CUMMINSIN...	6.84	669.50	25	669.50	669.75	40	634.90	689.85	634.90	626.65	1272737	0	57443	60226	669.42	
AMARAJABAT...	2.17	496.50	278	496.50	496.70	91	486.20	502.50	486.20	485.9	251213	0	30501	32160	496.76	
THOMASCOO...	1.26	137.00	670	137.00	137.05	1	136.00	141.00	134.00	135.35	909927	0	70253	144193	136.93	
ITC-EQ	0.45	356.10	1145	356.10	356.30	299	356.00	357.20	348.55	354.55	2710598	0	323394	635449	356.28	
CIPLA-EQ	0.14	441.40	45	441.45	441.50	114	442.55	443.20	435.00	440.85	642951	0	86604	114350	441.36	
TCS-EQ	-0.13	2522.70	29	2522.65	2522.70	3	2544.90	2545.00	2490.10	2526.05	554603	0	49898	64877	2522.84	
NAUKRI-EQ	-0.17	700.00	10	696.60	700.70	34	704.90	705.00	691.25	701.20	85427	0	18269	20364	700.31	
WIPRO-EQ	0.07	549.05	33	549.05	549.25	629	549.80	551.65	543.75	548.65	892777	0	95387	127862	549.07	

If you notice, the volume on Cummins India Limited is 12,72,737 shares, likewise the volume on Naukri (Info Edge India Limited) is 85,427 shares.

The volume information that you see here is the cumulative volume. Meaning, at 2:55 PM, a total of 12,72,737 shares of Cummins were traded at various price points ranging from 634.90 (low) and 689.85 (high).

With 35 minutes left for the markets to close, it is only logical to expect the volumes to increase (of course assuming traders continue to trade the stock for the rest of the day). In fact here is another screen shot taken at 3:30 PM for the same set of stocks with volume highlighted.

Trading sym...	%Change	LTP	Bid qty	Bid rate	Ask rate	Ask qty	Open	High	Low	Prev clo	Volume	Open int.	Total bi	Total as	Predictive Cls	Chart
CUMMINSIN	0.00	670.75	199	669.20	670.00	219	634.90	689.85	634.90	670.75	1349736	0	47355	51452	670.06	
AMARAJABAT	0.00	497.70	120	497.35	497.90	255	486.20	502.50	486.20	497.70	296044	0	26838	26745	497.28	
THOMASOOO	0.00	136.95	525	136.15	136.50	250	136.00	141.00	134.00	136.95	1127454	0	49217	125882	136.93	
ITC-EQ	0.00	356.00	390	355.35	355.60	1000	356.00	357.20	348.55	356.00	3189281	0	223708	520007	355.98	
CIPLA-EQ	0.00	440.50	111	439.70	440.15	1000	442.55	443.20	435.00	440.50	784899	0	67819	71621	440.60	
TCS-EQ	0.00	2523.70	39	2524.00	2524.50	2	2544.90	2545.00	2490.10	2523.70	702219	0	40869	39951	2523.62	
NAUKRI-EQ	0.00	698.60	95	695.50	697.95	80	704.90	705.00	691.25	698.60	86712	0	13421	8064	698.35	
WIPRO-EQ	0.00	549.55	258	548.25	548.55	485	549.80	551.85	543.75	549.55	1050542	0	78516	87850	549.55	

As you can see, the volume for Cummins India Limited has increased from 12,72,737 to 13,49,736. Therefore, for Cummins India the volume for the day is 13,49,736 shares. The volume for Naukri has increased from 85,427 to 86,712, making 86,712 shares as the volume for the day. It is important for you to note that the volumes shown here are cumulative.

12.1 – The volume trend table

Volume information on its own is quite useless. For example, we know that the volumes on Cummins India is 13,49,736 shares. So how useful is this information when read in isolation? If you think about it, it has no merit and hence would actually mean nothing. However when you associate today's volume information with the preceding price and volume trend, then volume information becomes lot more meaningful. In the table 3.2 below you will find a summary of how to use volume information:

The first line in the table above says, when the price increases along with an increase in volume, the expectation is bullish.

Table 3.2 - Volume Analysis Interpretation

Sl No	Price	Volume	What is the expectation?
1	Increases	Increases	Bullish
2	Increases	Decreases	Caution – weak hands buying
3	Decreases	Increases	Bearish
4	Decreases	Decreases	Caution – weak hands selling

Before we understand the table above in detail, think about this – we are talking about an ‘increase in volume’. What does this actually mean? What is the reference point? Should it be an increase over the previous day’s volume number or the previous week’s aggregate volume?

As a practice, traders usually compare today’s volume over the average of the last 10 days volume. Generally the rule of thumb is as follows:

High Volume = Today’s volume > last 10 days average volume

Low Volume = Today’s volume < last 10 days average volume

Average Volume = Today’s volume = last 10 days average volume

To get the last 10 day average, all you need to do is draw a moving average line on the volume bars and the job is done. Of course, we will discuss moving averages in the next chapter.



In the chart above, you can see that volumes are represented by blue bars (at the bottom of the chart). The red line overlaid on the volume bars indicates the 10 day average. As you notice, all the volume bars that are over and above the 10 day average can be considered as increased volume where some institutional activity (or large participation) has taken place.

Keeping this in perspective, I would suggest you now look at the volume – price table.

12.2 – Thought process behind the volume trend table

When institutional investors buy or sell they obviously do not transact in small chunks. For example, think about LIC of India, they are one of the biggest domestic institutional investors in India. If they would buy shares of Cummins India, would you think they would buy 500 shares? Obviously not, they would probably buy 500,000 shares or even more. Now, if they were to buy 500,000 shares from the open market, it will start reflecting in volumes. Besides, because they are buying a large chunk of shares, the share price also tends to go up. Usually institutional money is referred to as the “smart money”. It is perceived that ‘smart money’ always makes wiser moves in the market compared to retail traders. Hence following the smart money seems like a wise idea.

If both the price and the volume are increasing this only means one thing – a big player is showing interest in the stock. Going by the assumption that smart money always makes smart choices the expectation turns bullish and hence one should look at buying opportunity in the stock.

Or as a corollary, whenever you decide to buy, ensure that the volumes are substantial. This means that you are buying along with the smart money.

This is exactly what the **1st row** in the volume trend table indicates – expectation turns bullish when both the price and volume increases.

What do you think happens when the price increases but the volume decreases as indicated in the **2nd row**? Think about it on the following terms:

1. Why is the price increasing?
 - a. Because market participants are buying
2. Are there any institutional buyers associated with the price increase?
 - a. Not likely

3. How would you know that there are no meaningful purchase by institutional investors
 - a. Simple, if they were buying then the volumes would have increased and not decrease

4. So what does an increase in price, associated by decreasing volumes indicate?

- a. It means the price is increasing because of a small retail participation and not really influential buying. Hence you need to be cautious as this could be a possible bull trap

Going forward, the **3rd row** says, a decrease in price along with an increase in volume sets a bearish expectation. Why do you think so?

A decrease in price indicates that market participants are selling the stock. Increase in volumes indicates the presence of smart money. Both events occurring together (decrease in price + increase in volumes) should imply that smart money is selling stocks. Going by the assumption that the smart money always makes smart choices, the expectation is bearish and hence one should look at selling opportunity in the stock.

Or as a corollary, whenever you decide to sell, ensure that the volumes are good. This means that you too are selling, along with the smart money.

Moving forward, what do you think happens when both volume and price decrease as indicated in the **4th row**?

Think about it in on following terms:

1. Why is the price decreasing?

- a. Because market participants are selling.

2. Are there any institutional sellers associated with the price decrease?

- a. Not likely

3. How would you know that there are no meaningful sell orders by institutional investors

- a. Simple, if they were selling then the volume would increase and not decrease

4. So how would you infer a decline in price and a decline in volume?

- a. It means the price is decreasing because of small retail participation, and not really influential (read as smart money) selling. Hence you need to be cautious as this could be a possible bear trap.

12.3 – Revisiting the checklist

Let us revisit the checklist and reevaluate from the volumes perspective. Imagine this hypothetical technical situation in a stock:

1. Occurrence of a bullish engulfing pattern – this suggests a long trade for reasons discussed previously
2. A support level around the low of bullish engulfing – support indicates demand. Therefore the occurrence of a bullish engulfing pattern near the support area suggests there is indeed a strong demand for the stock and hence the trader can look at buying the stock.
 - a. With a recognizable candlestick pattern and support near the stoploss, the trader gets a double confirmation to go long

Now along with support near the low, imagine high volumes on the 2nd day of the bullish engulfing pattern i.e on P2 (blue candle). What can you infer from this?

The inference is quite clear – high volumes plus increase in price confirms to us that large influential market participants are positioning themselves to buy the stock.

With all three independent variables i.e candlesticks, S&R, and volumes suggest to take the same action i.e to go long. If you realize this is a triple confirmation!

The point that I want to drive across is the fact that volumes are very powerful as it helps the trader in confirming a trade. For this reason it is an important factor and therefore must be included in the checklist.

Here is how the updated checklist now stands:

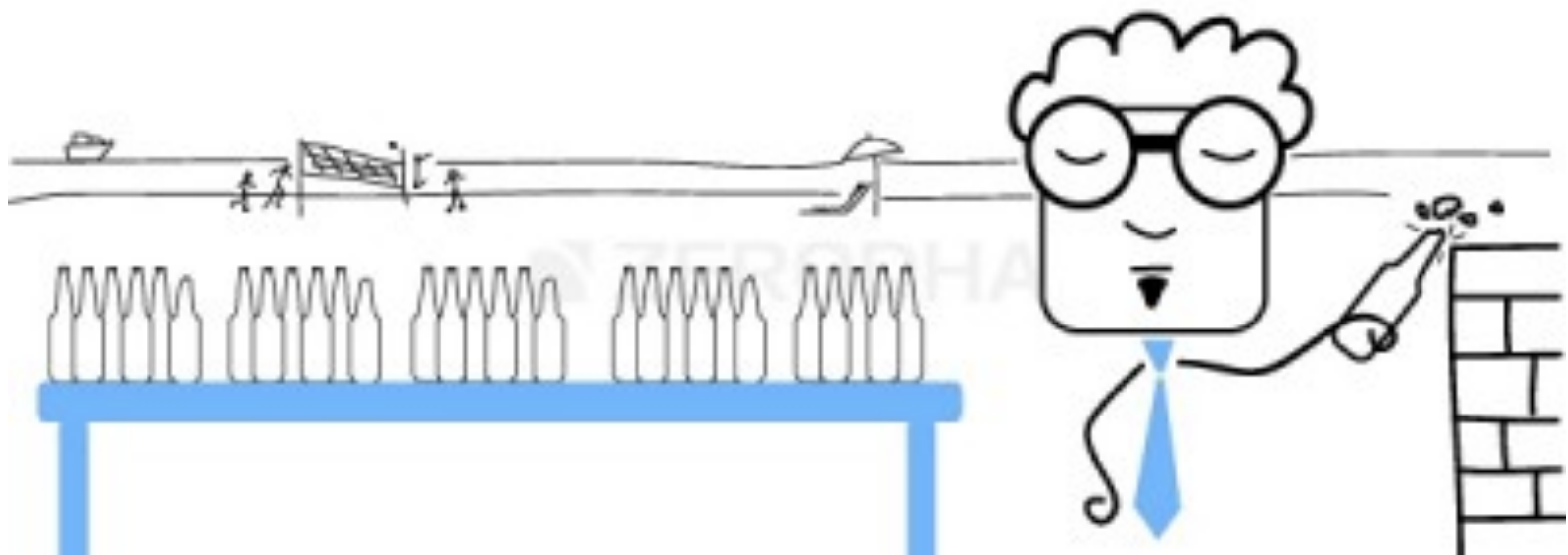
1. The stock should form a recognizable candlestick pattern
2. S&R should confirm the trade. The stoploss price should be around S&R
 - a. For a long trade, the low of the pattern should be around the support
 - b. For a short trade, the high of the pattern should be around the resistance
3. Volumes should confirm to the trade
 - a. Presence of above average volumes on both buy and sell day
 - b. Low volumes are not encouraging and hence do feel free to hesitate taking a trade where the volumes are low

Key takeaways from the chapter

1. Volumes are used to confirm a trend
2. 100 share buy and 100 shares sell makes the total volume 100, not 200
3. The end of day volumes indicates the cumulative volume across trades executed throughout the day
4. High volumes indicates the presence of smart money
5. Low volumes indicate retail participation
6. When you initiate a trade to either go long or short always make sure if volumes confirm
7. Avoid trading on low volume days

Moving Averages

We have all learnt about averages in school, moving average is just an extension of that. Moving averages are trend indicators and are frequently used due to their simplicity and effectiveness. Before we learn moving averages, let us have a quick recap on how averages are calculated.



Assume 5 people are sitting on a nice sunny beach enjoying a nice chilled bottled beverage. The sun is so bright and nice that each one of them end up drinking several bottles of the beverage. Assume the final count to be something like this:

Table 4.1 - Total Number of bottles consumed

Sl No	Person	No of Bottles
1	A	7
2	B	5
3	C	6
4	D	3
5	E	8
Total # of bottles consumed		29

Assume a 6th person walks in to find out 29 bottles of beverages lying around them. He can quickly get a sense of 'roughly' how many bottles each of them consumed by dividing [**the total number of bottles**] by [**total number of people**].

In this case it would be:

$$=29/5$$

$$=5.8 \text{ bottles per head.}$$

So, the average in this case tells us roughly how many bottles each person had consumed. Obviously there would be few of them who had consumed above and below the average. For example, Person E drank 8 bottles of beverage, which is way above the average of 5.8 bottles. Likewise, person D drank just 3 bottles of beverage, which is way below the average of 5.8 bottles. Therefore average is just an estimate and one cannot expect it to be accurate.

Extending the concept to stocks, here are the closing prices of ITC Limited for the last 5 trading sessions. The last 5 day average close would be calculated as follows:

Table 4.2 - Closing Price of ITC

Date	Closing Price
14/07/14	344.95
15/07/14	342.35
16/07/14	344.20
17/07/14	344.25
18/07/14	344.0
Total	1179.75

$$= 1179.75 / 5$$

$$= 343.95$$

Hence the average closing price of ITC over the last 5 trading sessions is 343.95.

13.1 – The ‘moving’ average (also called the simple moving average)

Consider a situation where you want to calculate the average closing price of Marico Limited for the **latest 5 days**. The data is as follows:

Table 4.3 - Closing price of Marico

Date	Closing Price
21/07/14	239.2
22/07/14	240.6
23/07/14	241.8
24/07/14	242.8
25/07/14	247.9
Total	1212.3

$$= 1212.2 / 5$$

$$= 242.5$$

Hence the average closing price of Marico over the last 5 trading sessions is 242.5

Moving forward, the next day i.e 28th July (26th and 27th were Saturday and Sunday respectively) we have a new data point. This implies now the ‘new’ latest 5 days would be 22nd, 23rd, 24th, 25th and 28th. We will drop the data point belonging to the 21st as our objective is to calculate the latest 5 day average.

Table 4.4 - Latest 5 days closing price of Marico

Date	Closing Price
22/07/14	240.6
23/07/14	241.8
24/07/14	242.8
25/07/14	247.9
28/07/14	250.2
Total	1223.3

$$= 1223.5 / 5$$

$$= 244.66$$

Hence the average closing price of Marico over the last 5 trading sessions is 244.66

As you can see, we have included the latest data (28th July), and discarded the oldest data (21st July) to calculate the 5 day average. On 29th, we would include 29th data and exclude 22nd data, on 30th we would include 30th data point but eliminate 23rd data, so on and so forth.

So essentially, we are moving to the latest data point and discarding the oldest to calculate the latest 5 day average. Hence the name “moving” average!

In the above example, the calculation of moving average is based on the closing prices. Sometimes, moving averages are also calculated using other parameters such as high, low, and open. However the closing prices are used mostly by the traders and investors as it reflects the price at which the market finally settles down.

Moving averages can be calculated for any time frame, from minutes, hours to years. Any time frame can be selected from the charting software based of your requirements.

For those of you familiar with excel, here is a screenshot of how moving averages are calculated on MS Excel. Notice how the cell reference moves in the average formula, eliminating the oldest to include the latest data points.

TABLE 4.5 - Calculation of Moving Averages on MS Excel

Cell Ref	Date	Close Price	5 Day Average	Average Formula
D3	1-Jan-14	1287.7		
D4	2-Jan-14	1279.25		
D5	3-Jan-14	1258.95		
D6	6-Jan-14	1249.7		
D7	7-Jan-14	1242.4		
D8	8-Jan-14	1268.75	1263.6	AVERAGE(D3:D7)
D9	9-Jan-14	1231.2	1259.81	AVERAGE(D4:D8)
D10	10-Jan-14	1201.75	1250.2	AVERAGE(D5:D9)
D11	13-Jan-14	1159.2	1238.76	AVERAGE(D6:D10)
D12	14-Jan-14	1157.25	1220.66	AVERAGE(D7:D11)
D13	15-Jan-14	1141.35	1203.63	AVERAGE(D8:D12)
D14	16-Jan-14	1152.5	1178.15	AVERAGE(D9:D13)
D15	17-Jan-14	1139.6	1162.41	AVERAGE(D10:D14)
D16	20-Jan-14	1140.6	1149.98	AVERAGE(D11:D15)
D17	21-Jan-14	1166.35	1146.26	AVERAGE(D12:D16)
D18	22-Jan-14	1165.4	1148.08	AVERAGE(D13:D17)
D19	23-Jan-14	1168.25	1152.89	AVERAGE(D14:D18)

As it is evident, the moving average changes as and when the closing price changes. A moving average as calculated above is called a 'Simple Moving Average' (SMA). Since we are calculating it as per the latest 5 days of data it is called referred to as 5 Day SMA.

The averages for the 5 day (or it could be anything like 5, 10, 50, 100, 200 days) are then joined to form a smooth curving line known as the moving average line, and it continues to move as the time progresses.

In the chart shown below, I have overlaid a 5 day SMA over ACC's candlestick graph.



So what does a moving average indicate and how does one use it? Well, there are many applications of moving average and shortly I will introduce a simple trading system based on moving averages. But before that, let us learn about the Exponential Moving Average.

13.2 – The exponential moving average

Consider the data points used in the this example,

Table 4.6 - Closing Prices for the last 5 days

Date	Closing Price
22/07/14	240.6
23/07/14	241.8
24/07/14	242.8
25/07/14	247.9
28/07/14	250.2
Total	1214.5

When one calculates the average across these numbers there is an unstated assumption. We are essentially giving each data point equal importance. Meaning, we are assuming that the data point on 22nd July is as important as the data point on 28th July. However, when it comes to markets, this may not always be true

Remember the basic assumption of technical analysis – markets discount everything. This means the latest price that you see (on 28th July) discounts all the known and unknown information. This also implies the price on 28th is more sacred than the price on 25th.

Going by this, one would like to assign weightage to data points based on the ‘newness’ of the data. Therefore the data point on 28th July gets the highest weightage, 25th July gets the next highest weightage, 24th July gets the 3rd highest, and so on.

By doing so, I have essentially scaled the data points according to its newness – the latest data point gets the maximum attention and the oldest data point gets the least attention.

The average calculated on this scaled set of numbers gives us the Exponential Moving Average (EMA). I deliberately skipped the EMA calculation part, simply because most of the technical analysis software lets us drag and drop the EMA on prices. Hence we will focus on EMA’s application as opposed to its calculation.

Here is a chart of Cipla Ltd. I have plotted a 50 day SMA (black) and a 50 day EMA (red) on Cipla’s closing prices. Though both SMA and EMA are for a 50 day period, you can notice that the EMA is more reactive to the prices and hence it sticks closer to the price.



The reason why EMA is quicker to react to the current market price is because EMA gives more importance to the most recent data points. This helps the trader to take quicker trading decisions. Hence for this reason, traders prefer the use of the EMA over the SMA.

13.3 – A simple application of moving average

The moving average can be used to identify buying and selling opportunities with its own merit. When the stock price trades above its average price, it means the traders are willing to buy the

stock at a price higher than its average price. This means the traders are optimistic about the stock price going higher. Therefore one should look at buying opportunities.

Likewise, when the stock price trades below its average price, it means the traders are willing to sell the stock at a price lesser than its average price. This means the traders are pessimistic about the stock price movement. Therefore one should look at selling opportunities.

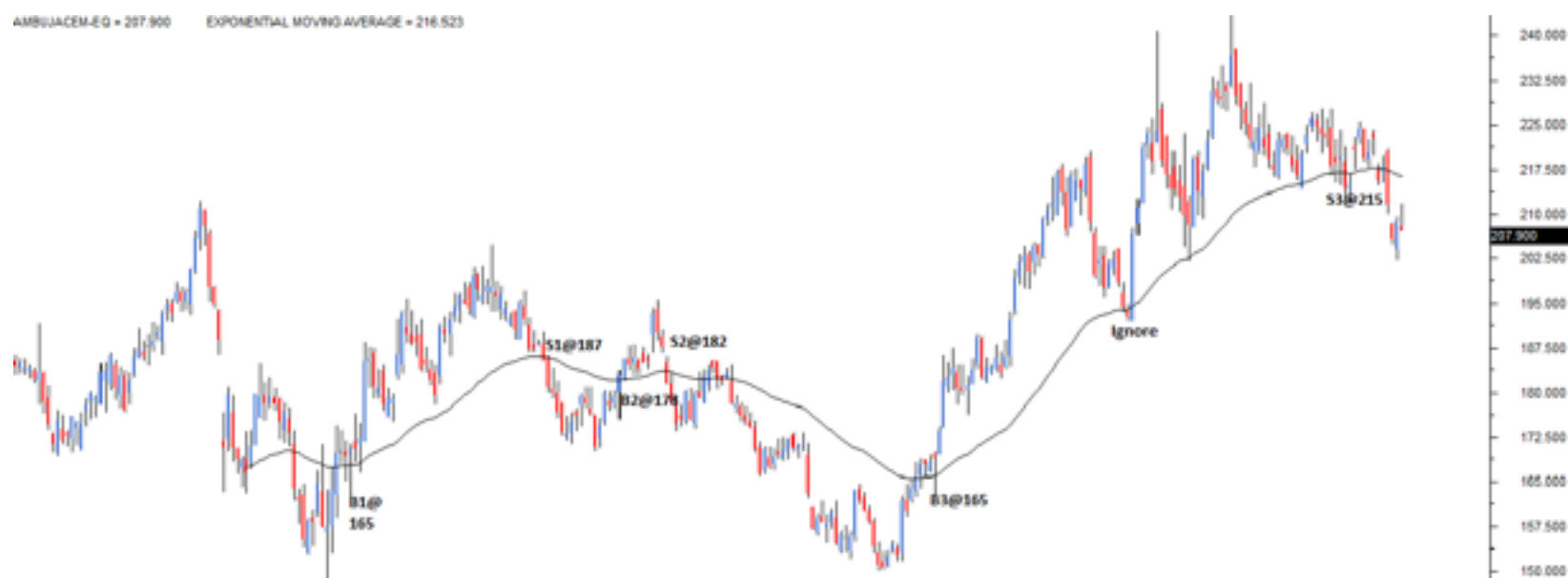
We can develop a simple trading system based on these conclusions. A trading system can be defined as a set of rules that help you identify entry and exit points.

We will now try and define one such trading system based on a 50 day exponential moving average. Remember a good trading system gives you a signal to enter a trade and a signal to close out the trade. We can define the moving average trading system with the following rules:

Rule 1) Buy (go long) when the current market price turns greater than the 50 day EMA. Once you go long, you should stay invested till the necessary sell condition is satisfied

Rule 2) Exit the long position (square off) when the current market price turns lesser than the 50 day EMA

Here is a chart that shows the application of the trading system on Ambuja cements. The black line on the price chart is the 50 day exponential moving average.



Starting from left, the first opportunity to buy originated at 165, highlighted on the charts as B1@165. Notice, at point B1, the stock price moved to a point higher than its 50 day EMA. Hence as per the trading system rule, we initiate a fresh long position.

Going by the trading system, we stay invested till we get an exit signal, which we eventually got at 187, marked as S1@187. This trade generated a profit of Rs.22 per share.

The next signal to go long came at B2@178, followed by a signal to square off at S2@182. This trade was not impressive as it resulted in a profit of just Rs.4. However the last trade, B3@165, and S3@215 was quite impressive resulting in a profit of Rs.50.

Here is a quick summary of these trades based on the trading system fared:

Table 4.7 - Trade Summary

Sl No	Buy Price	Sell Price	Gain/Loss	% Return
1	165	187	22	13%
2	178	182	4	2.2%
3	165	215	50	30%

From the above table, it is very clear that the first and last trades were profitable, but the 2nd trade was not so profitable. If you inspect why this happened, it is evident that during the 1st and the 3rd trade, the stock was trending but during the 2nd trade the stock moved sideways.

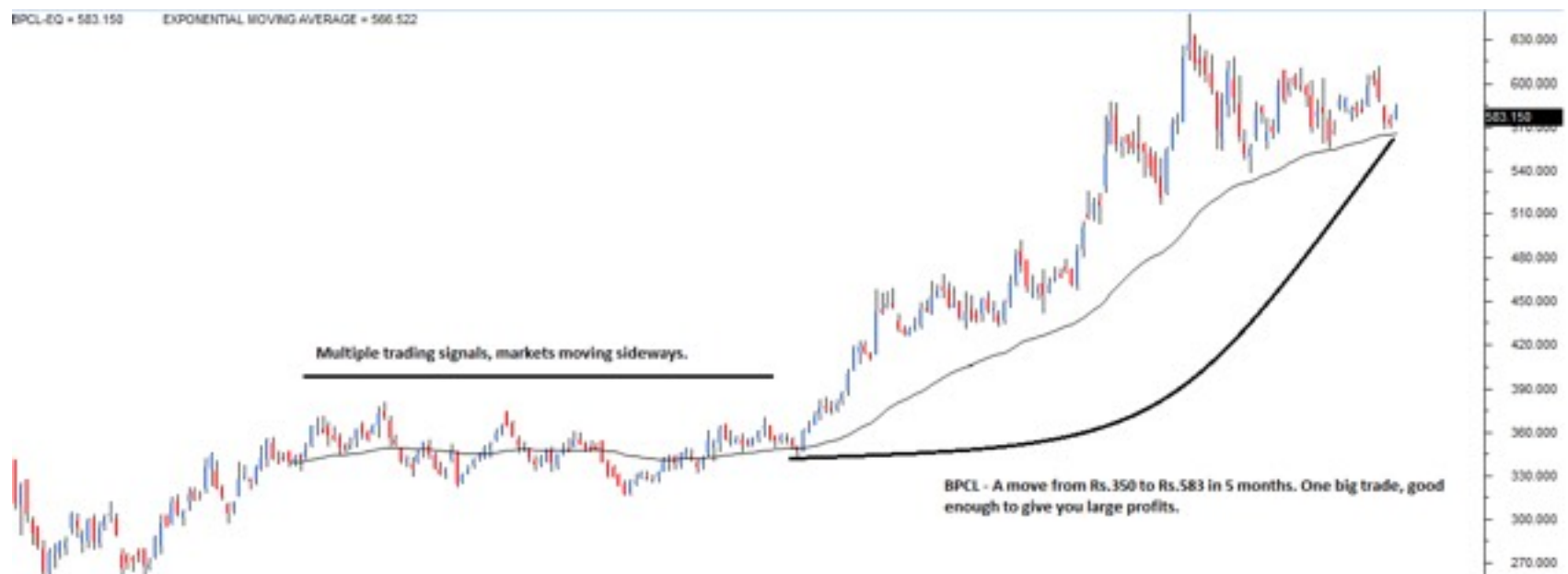
This leads us to a very important conclusion about the moving averages. Moving averages works brilliantly when there is a trend and fails to perform when the stock moves sideways. This basically means the 'Moving average' in its simplest form is a trend following system.

From my own personal experience of trading based on moving averages, I have noticed a few important characteristics:

1. Moving averages gives you many trading signals (buy and sell) during a sideways market. Most of these signals result in marginal profits, if not for losses
2. However usually one of those many trades results in a massive rally (like the B3@165 trade) leading to impressive gains
3. It would be very difficult to segregate the big winner from the many small trades
4. Hence the trader should not be selective in terms of selecting signals that moving average system suggest. In fact the trader should trade all the trades that the system suggests
5. Remember the losses are minimum in a moving average system, but that 1 big trade is good enough to compensate all the losses and can give you sufficient profits
6. The profit making trade ensures you are in the trend as long as the trend lasts. Sometime even upto several months. For this reason, MA can be used as a proxy for identifying long term investment ideas

7. The key to MA trading system is to take all the trades and not be judgmental about the signals being generated by the system.

Here is another example of BPLC, where the MA system suggested multiple trades during the sideways market, however none of them were really profitable. However, the last trade resulted in a 67% profit in about 5 months.



13.4 – Moving average crossover system

As its evident now the problem with the plain vanilla moving average system is that it generates far too many trading signals in a sideways market. A moving average crossover system is an improvisation over the plain vanilla moving average system. It helps the trader to take fewer trades in a sideways market.

In a MA crossover system, instead of the usual single moving average, the trader combines two moving averages. This is usually referred to as ‘smoothing’.

A typical example of this would be to combine a 50 day EMA, with a 100 day EMA. The shorter moving average (50 days in this case) is also referred to as the faster moving average. The longer moving average (100 days moving average) is referred to as the slower moving average.

The shorter moving average takes lesser number of data points to calculate the average and hence it tends to stick closer to the current market price, and therefore reacts more quickly. A longer moving average takes more number of data points to calculate the average and hence it tends to stay away from the current market price. Hence the reactions are slower.

Here is the chart of Bank of Baroda, showing you how the two moving averages stack up when loaded on a chart.



As you can see, the black 50 day EMA line is closer to the current market price (as it reacts faster) when compared to the pink 100 day EMA (as it reacts slower).

Traders have modified the plain vanilla MA system with the crossover system to smoothen out the entry and exit points. In the process, the trader gets far fewer signals, but the chances of the trade being profitable are quite high.

The entry and exit rules for the crossover system is as stated below:

- Rule 1)** – Buy (fresh long) when the short term moving averages turns greater than the long term moving average. Stay in the trade as long as this condition is satisfied
- Rule 2)** – Exit the long position (square off) when the short term moving average turns lesser than the longer term moving average

Let us apply the MA crossover system to the same BPCL example that we looked at. For ease of comparison, I have reproduced the BPCL's chart with a single 50 day MA.



Notice, when the markets were moving sideways, MA suggested at least 3 trading signals. However the 4th trade was the winner which resulted in 67% profit.

The chart shown below shows the application of a MA crossover system with 50 and 100 day EMA.



The black line plots the 50 day moving average and the pink line plots the 100 day moving average. As per the cross over rule, the signal to go long originates when the 50 day moving average (short term MA) crosses over the 100 day moving average (long term MA). The crossover point has been highlighted with an arrow. Please do notice how the crossover system keeps the trader away from the 3 unprofitable trades. This is the biggest advantage of a cross over system.

A trader can use any combination to create a MA cross over system. Some of the popular combinations for a swing trader would be:

- a. 9 day EMA with 21 day EMA – use this for short term trades (upto few trading session)
- b. 25 day EMA with 50 day EMA – use this to identify medium term trade (upto few weeks)
- c. 50 day EMA with 100 Day EMA – use this to identify trades that lasts upto few months
- d. 100 day EMA with 200 day EMA – use this to identify long term trades (investment opportunities), some of them can even last for over a year or more.

Remember, longer the time frame the lesser the number of trading signals.

Here is an example of a 25 x 50 EMA crossover. There are three trading signals that qualify under the crossover rule.



Needless to say, the MA crossover system can also be applied for intraday trading. For instance one could use the 15 x 30 minutes crossover to identify intraday opportunities. A more aggressive trader could use 5 x 10 minute crossover.

You may have heard this popular saying in the markets – “The trend is your friend”. Well, the moving averages help you identify this friend.

Remember, MA is a trend following system – as long as there is a trend, the moving averages work brilliantly. It does not matter which time frame you use or which cross over combination you use.

Key takeaways from this chapter

1. A standard average calculation is a quick approximation of a series of numbers
2. In a average calculation where the latest data is included, and the oldest is excluded is called a Moving Average
3. The simple moving average (SMA) gives equal weightage to all data points in the series
4. An exponential moving average (EMA) scales the data according to its newness. Recent data gets the maximum weightage and the oldest gets the least weightage
5. For all practical purposes, use an EMA as opposed to SMA. This is because the EMA gives more weightage to the most recent data points
6. The outlook is bullish when the current market price is greater than the EMA. The outlook turns bearish when the current market price turns lesser than the EMA
7. In a non trending market, moving averages may result in whipsaws thereby causing frequent losses. To overcome this a EMA crossover system is adopted
8. In a typical crossover system, the price chart is over laid with two EMAs. The shorter EMA is faster to react, while the longer EMA is slower to react
9. The outlook turns bullish when the faster EMA crosses and is above the slower EMA. Hence one should look at buying the stock. The trade lasts upto a point where the faster EMA starts going below the slower EMA
10. The longer the time frame one chooses for a crossover system, the lesser the trading signals.

Indicators (Part 1)



If you look at a stock chart displayed on a trader's trading terminal, you are most likely to see lines running all over the chart. These lines are called the 'Technical Indicators'. A technical indicator helps a trader analyze the price movement of a security.

Indicators are independent trading systems introduced to the world by successful traders. Indicators are built on preset logic using which traders can supplement their technical study (candlesticks, volumes, S&R) to arrive at a trading decision. Indicators help in buying, selling, confirming trends, and sometimes predicting trends.

Indicators are of two types namely leading and lagging. A leading indicator leads the price, meaning it usually signals the occurrence of a reversal or a new trend in advance. While this sounds interesting, you should note, not all leading indicators are accurate. Leading indicators are notorious for giving false signals. Therefore, the trader should be highly alert while using leading indicators. In fact the efficiency of using leading indicators increases with trading experience.

A majority of leading indicators are called oscillators as they oscillate within a bounded range. Typically an oscillator oscillates between two extreme values – for example 0 to 100. Based on the oscillator's reading (for example 55, 70 etc) the trading interpretation varies.

A lagging indicator on the other hand lags the price; meaning it usually signals the occurrence of a reversal or a new trend after it has occurred. You may think, what would be the use of getting a

signal after the event has occurred? Well, it is better late than never. One of the most popular lagging indicators is the moving averages.

You might be wondering if the moving average is an indicator in itself, why we discussed it even before we discussed the indicators formally. The reason is that moving averages is a core concept on its own. It finds its application within several indicators such as RSI, MACD, Stochastic etc. Hence, for this reason we discussed moving average as a standalone topic.

Before we proceed further into understanding individual indicators, I think it is a good idea to understand what momentum means. Momentum is the rate at which the price changes. For example if stock price is Rs.100 today and it moves to Rs.105 the next day, and Rs.115, the day after, we say the momentum is high as the stock price has changed by 15% in just 3 days. However if the same 15% change happened over let us say 3 months, we can conclude the momentum is low. So the more rapidly the price changes, the higher the momentum.

14.1 – Relative Strength Index

Relative strength Index or just RSI, is a very popular indicator developed by J.Welles Wilder. RSI is a leading momentum indicator which helps in identifying a trend reversal. RSI indicator oscillates between 0 and 100, and based on the latest indicator reading, the expectations on the markets are set.

The term “Relative Strength Index” can be a bit misleading as it does not compare the relative strength of two securities, but instead shows the internal strength of the security. RSI is the most popular leading indicator, which gives out strongest signals during the periods of sideways and non trending ranges.

The formula to calculate the RSI is as follows:

$$RSI = 100 - \frac{100}{1 + RSHA}$$

RS = Average Gain / Average Loss

Let us understand this indicator with the help of the following example:

Assume the stock is trading at 99 on day 0, with this in perspective; consider the following data points:

Table 5.1 - RSI Calculation

Sl No	Closing Price	Points Gain	Points Lost
1	100	1	0
2	102	2	0
3	105	3	0
4	107	2	0
5	103	0	4
6	100	0	3
7	99	0	1
8	97	0	2
9	100	3	0
10	105	5	0
11	107	2	0
12	110	3	0
13	114	4	0
14	118	4	0
	Total	29	10

In the above table, points gained/lost denote the number of points gained/lost with respect to the previous day close. For example if today's close is 104 and yesterday's close was 100, points gained would be 4 and points lost would be 0. Similarly, if today's close was 104 and previous day's close was 107, the points gained would be 0 and points lost would be 3. Please note that, the losses are computed as positive values.

We have used 14 data points for the calculation, which is the default period setting in the charting software. This is also called the 'lookback period'. If you are analyzing hourly charts the default period is 14 hours, and if you are analyzing daily charts, the default period is 14 days.

The first step is to calculate 'RS' also called the RSI factor. RS as you can see in the formula, is the ratio of average points gained by the average points lost.

Average Points Gained = 29/14

= 2.07

Average Points Lost = 10/14

= 0.714

RS = 2.07/0.714

= 2.8991

Plugging in the value of RS in RSI formula,

= 100 - [100/ (1+2.8991)]

= 100 - [100/3.8991]

= 100 - 25.6469

RSI = 74.3531

As you can see RSI calculation is fairly simple. The objective of using RSI is to help the trader identify over sold and overbought price areas. Overbought implies that the positive momentum in the stock is so high that it may not be sustainable for long and hence there could be a correction. Likewise, an oversold position indicates that the negative momentum is high leading to a possible reversal.

Take a look at the chart of Cipla Ltd, you will find a lot of interesting developments:



To begin with, the red line below the price chart indicates the 14 period RSI. If you notice the RSI's scale you will realize its upper bound to 100, and lower bound to 0. However 100 and 0 are not visible in the chart.

When the RSI reading is between 30 and 0, the security is supposed to be oversold and ready for an upward correction. When the security reading is between 70 and 100, the security is supposed to be heavily bought and is ready for a downward correction.

The first vertical line marked from left shows a level where RSI is below 30, in fact RSI is 26.8. Hence RSI suggests that the stock is oversold. In this particular example, the RSI value of 26.8, also coincides with a bullish engulfing pattern. This gives the trader a double confirmation to go long! Needless to say, both volumes and S&R should also confirm to this.

The second vertical line, points to a level where the RSI turns 81, a value which is considered overbought. Hence, if not for looking at shorting opportunities, the trader should be careful in his decision to buy the stock. Again, if you notice the candles, they form a bearish engulfing pattern. So a bearish engulfing pattern, backed by an RSI of 81 is a sign to short the stock. What follows this is a quick and a short correction in the stock.

The example that I have shown here is quite nice, meaning both the candlestick pattern and RSI perfectly align to confirm the occurrence of the same event. This may not always be true. This leads us to another interesting way to interpret RSI. Imagine the following two scenarios:

Scenario 1) A stock which is in a continuous uptrend (remember the uptrend can last from few days to few years) the RSI will remain stuck in the overbought region for a long time, and this is because the RSI is upper bound to 100. It cannot go beyond 100. Invariably the trader would be looking at shorting opportunities but the stock on the other hand will be in a different orbit. Example – Eicher motors Limited, the stock has generate a return of close to 100% year on year.

Scenario 2) A stock which is in a continuous downtrend the RSI will be stuck in the oversold region since the RSI is lower bound to 0. It cannot go beyond 0. In this case as well the trader will be looking at buying opportunities but the stock will be going down lower. Example – Suzlon Energy, the stock has generated a return of negative 34% year on year.

This leads us to interpret RSI in many different ways besides the classical interpretation (which we discussed earlier)

1. If the RSI is fixed in an overbought region for a prolonged period, look for buying opportunities instead of shorting. The RSI stays in the overbought region for a prolonged period because of an excess positive momentum

2. If the RSI is fixed in an oversold region for a prolonged period, look for selling opportunities rather than buying. RSI stays in the oversold region for a prolonged period because of an excess negative momentum
3. If the RSI value starts moving away from the oversold value after a prolonged period, look for buying opportunities. For example, the RSI moves above 30 after a long time may mean that the stock may have bottomed out, hence a case of going long.
4. If the RSI value starts moving away from the overbought value after a prolonged period, look for selling opportunities. For example, RSI moving below 70 after a long time. This means the stock may have topped out, hence a case for shorting

14.2 - One last note

None of the parameters used while analyzing RSI should be treated with rigidity. For example, J.Welles Wilder opted to use a look back period of 14 days simply because that was the value which gave the best results considering the market conditions in 1978 (which is when RSI was introduced to the world). You may choose to use 5,10,20, or even 100 days look back period if you wish too. In fact this is how you develop your edge as a trader. You need to analyze what works for you and adopt the same. Please note, fewer the days you use to calculate the RSI, the more volatile the indicator would be.

Also, J.Welles Wilder decided to use 0-30 level to indicate oversold regions and 70-100 level to indicate overbought region. Again this is not set in stone, you can arrive at you own combination.

I personally prefer to use 0-20 level and 80-100 level to identify oversold and overbought regions respectively. I use this along with the classical 14 day look back period.

Of course, I urge you to explore parameters that work for you. In fact this is how you would eventually develop as a successful trader.

Finally, do remember RSI is not used often as a standalone indicator by traders, it is used along with other candlestick patterns and indicators to study the market.

Key takeaways from this chapter

1. Indicators are independent trading systems developed, and introduced by successful traders
2. Indicators are leading or lagging. Leading indicators signals the possible occurrence of an event. Lagging indicators on the other hand confirms an ongoing trend
3. RSI is a momentum oscillator which oscillates between 0 and 100 level
4. A value between 0 and 30 is considered oversold, hence the trader should look at buying opportunities
5. A value between 70 and 100 is considered overbought, hence the trader should look at selling opportunities
6. If the RSI value is fixed in a region for a prolonged period, it indicates excess momentum and hence instead of taking a reversed position, the trader can consider initiating a trade in the same direction.

Indicators (Part 2)



15.1 Moving Average Convergence and Divergence (MACD)

The Moving Average Convergence and Divergence (MACD) indicator was developed by Gerald Appel in the late seventies. Traders consider MACD as the grand old daddy of Indicators. Though invented in the seventies, MACD is still considered as one of the most reliable indicators by momentum traders.

As the name implies, MACD is all about the convergence and divergence of the two moving averages. Convergence occurs when the two moving averages move towards each other, and a divergence occurs when the moving averages move away from each other.

A standard MACD is calculated using a 12 day EMA and a 26 day EMA. From the 12 day EMA, the 26 day EMA is subtracted to extract the convergence and divergence (CD) value, also called the 'MACD Line'. Both the EMA's are based on the closing prices. Let us go through the math first as per table 6.1 and then figure out the applications of MACD.

Table 6.1 - MACD line calculation

Date	Close	12 Day EMA	26 Day EMA	MACD Line
1-Jan-14	6302			
2-Jan-14	6221			
3-Jan-14	6211			
6-Jan-14	6191			
7-Jan-14	6162			
8-Jan-14	6175			
9-Jan-14	6168			
10-Jan-14	6171			
13-Jan-14	6273			
14-Jan-14	6242			
15-Jan-14	6321			
16-Jan-14	6319			
17-Jan-14	6262	6230		
20-Jan-14	6304	6226		
21-Jan-14	6314	6233		
22-Jan-14	6339	6242		
23-Jan-14	6346	6254		
24-Jan-14	6267	6269		
27-Jan-14	6136	6277		
28-Jan-14	6126	6274		
29-Jan-14	6120	6271		
30-Jan-14	6074	6258		
31-Jan-14	6090	6244		
3-Feb-14	6002	6225		
4-Feb-14	6001	6198		
5-Feb-14	6022	6176		
6-Feb-14	6036	6153	6198	-45
7-Feb-14	6063	6130	6188	-58
10-Feb-14	6053	6107	6182	-75
11-Feb-14	6063	6083	6176	-94
12-Feb-14	6084	6066	6171	-106
13-Feb-14	6001	6061	6168	-107

Let us go through the table starting from left:

1. We have the dates, starting from 1st Jan 2014
2. Next to the dates we have the closing price of Nifty
3. We leave the first 12 data points (closing price of Nifty) to calculate the 12 day EMA
4. We then leave the first 26 data points to calculate the 26 day EMA
5. Once we have both 12 and 26 day EMA running parallel to each other (like on 6th Feb 2014) we calculate the MACD line
6. MACD line = [12 day EMA – 26 day EMA]. For example on 6th Feb 2014, 12 day EMA was 6153, and 26 day EMA was 6198, hence the MACD line would be $6153 - 6198 = -45$

When we calculate the MACD line over a series of 12 and 26 day EMAs, we get an MACD line which oscillates above and below the central line.

TABLE 6.2 - MACD Calculation in detail

Date	Close	12 Day EMA	26 Day EMA	MACD Line
1-Jan-14	6302			
2-Jan-14	6221			
3-Jan-14	6211			
6-Jan-14	6191			
7-Jan-14	6162			
8-Jan-14	6175			
9-Jan-14	6168			
10-Jan-14	6171			
13-Jan-14	6273			
14-Jan-14	6242			
15-Jan-14	6321			
16-Jan-14	6319			
17-Jan-14	6262	6230		
20-Jan-14	6304	6226		
21-Jan-14	6314	6233		
22-Jan-14	6339	6242		
23-Jan-14	6346	6254		
24-Jan-14	6267	6269		
27-Jan-14	6136	6277		
28-Jan-14	6126	6274		
29-Jan-14	6120	6271		
30-Jan-14	6074	6258		
31-Jan-14	6090	6244		
3-Feb-14	6002	6225		
4-Feb-14	6001	6198		
5-Feb-14	6022	6176		

TABLE 6.2 - MACD Calculation in detail

Date	Close	12 Day EMA	26 Day EMA	MACD Line
6-Feb-14	6036	6153	6198	-45
7-Feb-14	6063	6130	6188	-58
10-Feb-14	6053	6107	6182	-75
11-Feb-14	6063	6083	6176	-94
12-Feb-14	6084	6066	6171	-106
13-Feb-14	6001	6061	6168	-107
14-Feb-14	6048	6051	6161	-111
17-Feb-14	6073	6045	6157	-112
18-Feb-14	6127	6045	6153	-108
19-Feb-14	6153	6048	6147	-100
20-Feb-14	6091	6060	6144	-84
21-Feb-14	6155	6068	6135	-67
24-Feb-14	6186	6079	6129	-50
25-Feb-14	6200	6092	6126	-34
26-Feb-14	6239	6103	6122	-19
28-Feb-14	6277	6118	6119	-1
3-Mar-14	6221	6136	6117	20
4-Mar-14	6298	6148	6112	36
5-Mar-14	6329	6172	6113	59
6-Mar-14	6401	6196	6121	75
7-Mar-14	6527	6223	6131	92
10-Mar-14	6537	6256	6147	110
11-Mar-14	6512	6288	6165	124
12-Mar-14	6517	6324	6181	143
13-Mar-14	6493	6354	6201	153
14-Mar-14	6504	6380	6220	160

There are few questions that need to be answered:

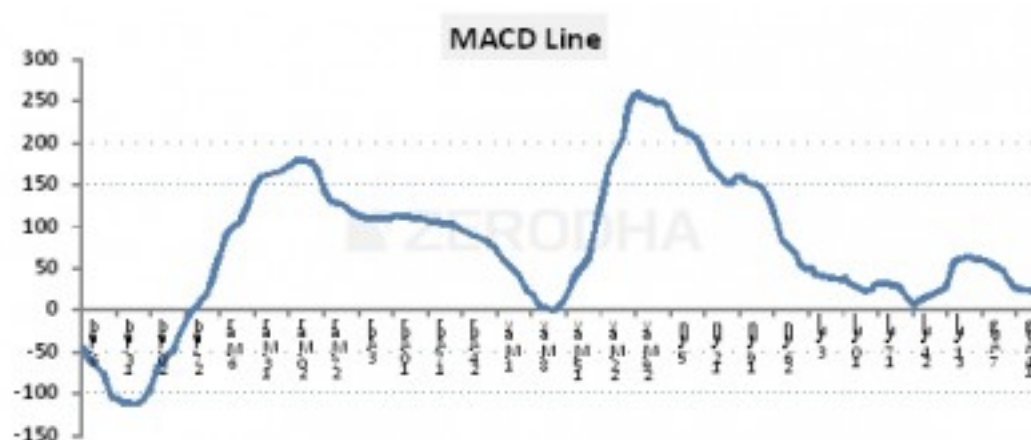
1. What does a negative MACD Line indicate?
2. What does a positive MACD Line indicate?
3. What does the magnitude of the MACD line actually mean? As in, what information does a -90 MACD Line convey versus a - 30 MACD line?

The sign associated with the MACD line just indicates the direction of the stock's drift. For example if the 12 Day EMA is 6380, and 26 Day EMA is 6220 then the MACD line is +160. Under what circumstance do you think the 12 day EMA will be greater than the 26 day EMA? Well, we had looked into this aspect in the moving average chapter. The shorter term average will generally be higher than the longer term only when the stock prices are trending upwards. Also, do remember, the shorter term average will always be more reactive to the current market price than the longer term average. Hence a positive sign tells us that there is positive momentum in the stock, and the stock is drifting upwards. The higher the momentum, the higher is the magnitude. For example, +160 indicate a positive trend which is stronger than +120.

However, while dealing with the magnitude, always remember the price of the stock influences the magnitude. For example, higher the underlying price such as Bank Nifty, naturally, the higher will be the magnitude of the MACD line.

When the MACD line is negative, it means the 12 day EMA is lower than the 26 day EMA. Therefore the momentum is negative. Higher the magnitude of the MACD line, the more strength in the negative drift.

The difference between the two moving averages is called the MACD spread. The spread decreases (convergence) when the momentum is dying, and increases (divergence) when the momentum is increasing. To visualize convergence and the divergence traders usually plot the chart of the MACD line. The following is the MACD line chart of Nifty for data points starting from 1st Jan 2014 to 18th Aug 2014.



As you can see the MACD line oscillates over a central zero line. The basic interpretation of the MACD indicator is that:

1. When the MACD Line crosses the zero line from the negative territory to positive territory, it means there is divergence between the two averages. This is a sign of increasing bullish momentum; therefore one should look at buying opportunities. From the chart above, we can see this panning out around 27th Feb
2. When the MACD line crosses the zero line from positive territory to the negative territory it means there is convergence between the two averages. This is a sign of increasing bearish momentum; therefore one should look at selling opportunities. As you can see, there were two instance during which the MACD almost turned negative (8th May, and 24th July) but the MACD just stopped at the zero line and reversed directions

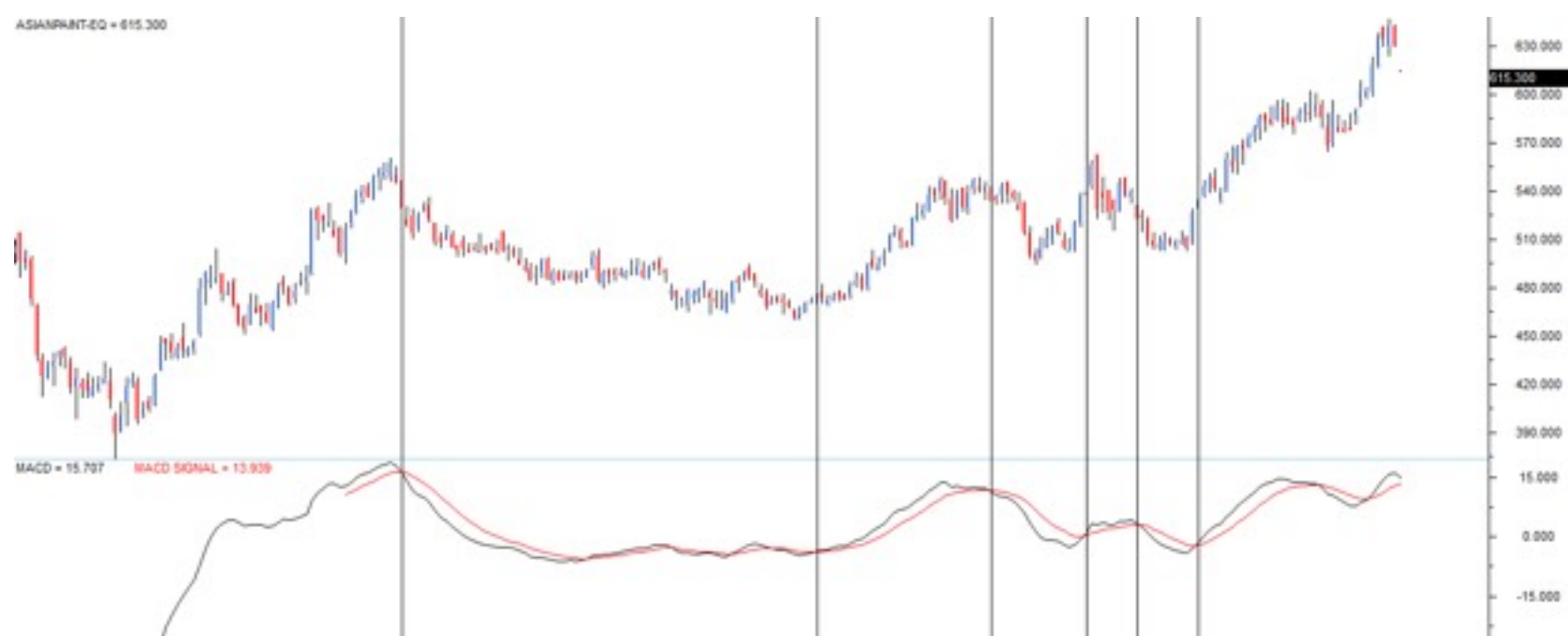
Critics argue that while a trader waits for the MACD line to crossover the zero line, a bulk of the move would have already transpired in the stock. To overcome this, there is an improvisation over this basic MACD line. The improvisation comes in the form of an additional MACD component which is the 9 day signal line. A 9 day signal line is a simple moving average (SMA) of the MACD line. If you think about this, we now have two lines:

1. A MACD line
2. A 9 day SMA of the MACD line also called the signal line

With these two lines, a trader can follow a simple 2 line crossover strategy as discussed in the moving averages chapter, and no longer wait for the zero line cross over.

1. The sentiment is bullish when the 9 day SMA crosses over the MACD Line wherein the 9 day SMA is greater than the MACD line. When this happens, the trader should look at buying opportunities
2. The sentiment is bearish when the 9 day SMA crosses over the MACD line wherein the 9 day SMA is lesser than the MACD line. When this happens, the trader should look at selling opportunities

The chart below plots the MACD indicator on Asian Paints Limited. You can see the MACD indicator below the price chart.



The indicator uses standard parameters of MACD:

1. 12 day EMA of closing prices
2. 26 day EMA of closing prices
3. MACD line (12D EMA – 26D EMA) represented by the black line
4. 9 day SMA of the MACD line represented by the red line

The vertical lines on the chart highlight the crossover points on the chart where a signal to either buy or sell has originated.

For example, the first vertical line starting from left points to a crossover where the MACD signal (9 day SMA) lies below the MACD line and hence one should look for a selling opportunity. The 2nd vertical line from left, points to a crossover where the MACD signal line lies above the MACD line, hence one should look at buying opportunity.

Please note, at the core of the MACD system, are moving averages. Hence the MACD indicator has similar properties like that of a moving average system. They work quite well when there is a strong trend and are not too useful when the markets are moving sideways.

Needless to say, the MACD parameters are not set in stone. One is free to change the 12 day, and 26 day EMA to whatever time frame one prefers. I personally like to use the MACD in its original form, as introduced by Gerald Appel.

15.2 – The Bollinger Bands

Introduced by John Bollinger in the 1980s, Bollinger bands (BB) is perhaps one of the most useful indicators used in technical analysis. BB are used to determine overbought and oversold levels, where a trader will try to sell when the price reaches the top of the band and will execute a buy when the price reaches the bottom of the band.

The BB has 3 components:

1. Middle line which is The 20 day simple moving average of the closing prices
2. An upper band – this is the +2 standard deviation of the middle line
3. A lower band – this is the -2 standard deviation of the middle line

The standard deviation (SD) is a statistical concept; which measures the variance of a particular variable from its average. In finance, the standard deviation of the stock price represents the volatility of a stock. For example, if the standard deviation of a stock is 12%, it is as good as saying that the volatility of the stock is 12%.

In BB, the standard deviation is applied on the 20 day SMA. The upper band indicates the +2 SD. By using a +2 SD, we simply multiply the SD by 2, and add it to the average.

For example if the 20 day SMA is 7800, and the SD is 75 (or 0.96%), then the +2 SD would be $7800 + (75 \times 2) = 7950$. Likewise, a -2 SD indicates we multiply the SD by 2, and subtract it from the average. $7800 - (2 \times 75) = 7650$.

We now have the components of the BB:

1. 20 day SMA = 7800
2. Upper band = 7950
3. Lower band = 7650

Statistically speaking, the current market price should hover around the average price of 7800. However, if the current market price is around 7950, then it is considered expensive with respect to the average, hence one should look at shorting opportunities with an expectation that the price will scale back to its average price.

Therefore the trade would be to sell at 7950, with a target of 7800.

Likewise if the current market price is around 7650, it is considered cheap with respect to the average prices, and hence one should look at buying opportunities with an expectation that the prices will scale back to its average price.

Therefore the trade would be to buy at 7650, with a target of 7800.

The upper and lower bands act as a trigger to initiate a trade.

The following is the chart of BPCL Limited,



The central black line is the 20 day SMA. The two red lines placed above and below the black line are the +2 SD, and -2SD. The idea is to short the stock when the price touches the upper band with an expectation that it will revert to average. Likewise one can go long when the price touches the lower band with an expectation it will revert to the average.

I have highlighted using a down arrow all the sell signals BB generated, while most of the signals worked quite well, there was a phase when the price stuck to the upper band. In fact the price continued to drift higher, and therefore even the upper band expanded. This is called an envelope expansion.

The BB's upper and lower band together forms an envelope. The envelope expands, whenever the price drifts in a particular direction indicating a strong momentum. The BB signal fails when there is an envelope expansion. This leads us to an important conclusion; BB works well in sideways markets, and fails in a trending market.

Personally whenever, I use BB I expect the trade to start working in my favor almost immediately. If it does not, I start validating the possibility of an envelope expansion.

15.3 – Other Indicators

There are numerous other technical indicators, and the list is endless. The question is, should you know all these indicators to be a successful trader? The answer is a simple no. Technical indicators are good to know, but they by no means should be your main tool of analysis.

I have personally met many aspiring traders who spend a lot of time, and energy learning different indicators, but this in the long run is futile. The working knowledge of few basic indicators, such as the ones discussed in this module are sufficient.

15.4 – The Checklist

In the previous chapters, we started building a checklist that acts as a guiding force behind the trader's decision to buy or sell. It is time to revisit that checklist.

The indicators act as tool which the traders can use to confirm their trading decisions, it is worthwhile to check what the indicators are conveying before placing a buy or a sell order. While the dependence on indicators is not as much S&R, volumes or candlestick patterns, it is always good to know what the basic indicators are suggesting. For this reason, I would recommend adding indicators in the checklist, but with a twist to it. I will explain the twist in a bit, but before that let us reproduce the updated checklist.

1. The stock should form a recognizable candlestick pattern
2. S&R should confirm to the trade. The stoploss price should be around S&R
 - a. For a long trade, the low of the pattern should be around the support
 - b. For a short trade, the high of the pattern should be around the resistance
3. Volumes should confirm
 - a. Ensure above average volumes on both buy and sell day
 - b. Low volumes are not encouraging, hence do feel free to hesitate while taking trade where the volumes are low
4. Indicators should confirm
 - a. Scale the size higher if the confirm
 - b. If they don't confirm, go ahead with the original plan

The sub bullet points under indicators are where the twist lies.

Now, hypothetically imagine a situation where you are looking at opportunity to buy shares of Karnataka Bank Limited. On a particular day, Karnataka Bank has formed a bullish hammer, assume everything ticks on the checklist:

1. Bullish hammer is a recognizable candlestick pattern
2. The low of the bullish hammer also coincides with the support
3. The volumes are above average
4. There is also an MACD crossover (signal line turns greater than the MACD line)

With all four checklist points being ticked off I would be very glad to buy Karnataka Bank. Hence I place an order to buy, let us say for 500 shares.

However, imagine a situation where the first 3 checklist conditions are met but the 4th condition (indicators should confirm) is not satisfied. What do you think I should do?

I would still go ahead and buy, but instead of 500 shares, I'd probably buy 300 shares.

This should hopefully convey to you how I tend to (and advocate) the use of indicators.

When Indicators confirm, I increase my bet size, but when Indicators don't confirm I still go ahead with my decision to buy, but I scale down my bet size.

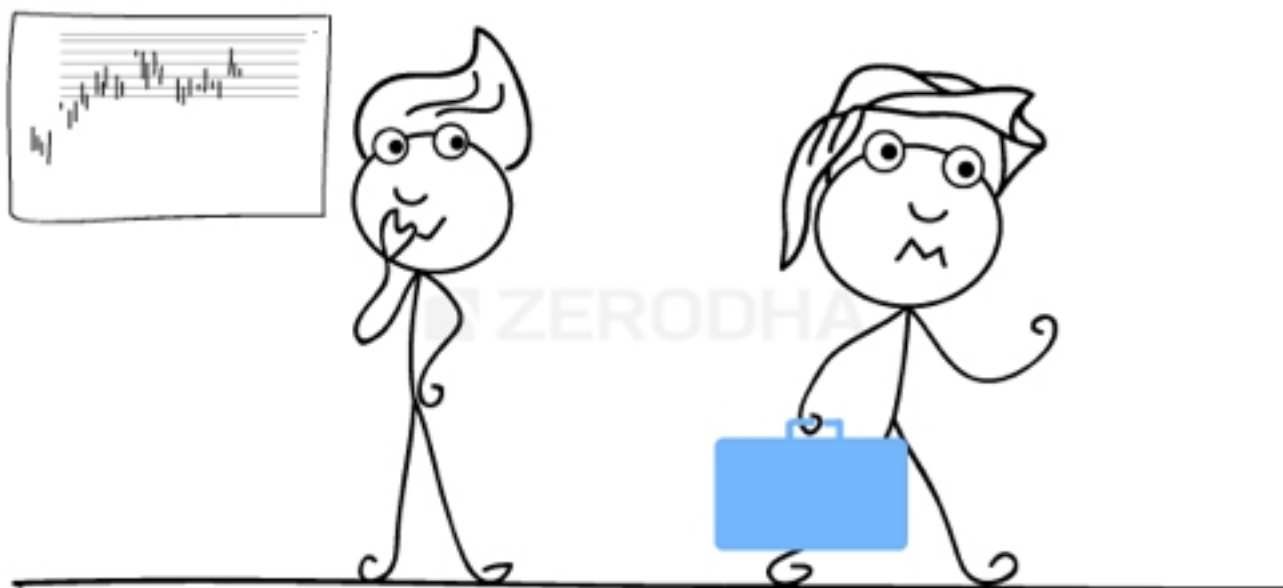
However I would not do this with the first three checklist points. For example, if the low of the bullish hammer does not coincide in and around the support, then I'll really reconsider my plan to buy the stock; in fact I may skip the opportunity, and look for another opportunity.

But I do not treat the indicators with the same conviction. It is always good to know what indicators convey, but I don't base my decisions on that. If the indicators confirm, I increase the bet size, if they don't, I still go ahead with my original game plan.

Key takeaways from this chapter

1. A MACD is a trend following system
2. MACD consists of a 12 Day, 26 day EMA
3. MACD line is 12d EMA – 26d EMA
4. Signal line is the 9 day SMA of the MACD line
5. A crossover strategy can be applied between MACD Line, and the signal line
6. The Bollinger band captures the volatility. It has a 20 day average, a +2 SD, and a -2 SD
7. One can short when the current price is at +2SD with an expectation that the price reverts to the average
8. One can go long when the current price is at -2SD with an expectation that the price reverts to the average
9. BB works well in a sideways market. In a trending market the BB's envelope expands, and generates many false signals
10. Indicators are good to know, but it should not be treated as the single source for decision making.

The Fibonacci Retracements



The topic on Fibonacci retracements is quite intriguing. To fully understand and appreciate the concept of Fibonacci retracements, one must understand the Fibonacci series. The origins of the Fibonacci series can be traced back to the ancient Indian mathematic scripts, with some claims dating back to 200 BC. However, in the 12th century, Leonardo Pisano Bogollo an Italian mathematician from Pisa, known to his friends as Fibonacci discovered Fibonacci numbers.

The Fibonacci series is a sequence of numbers starting from zero arranged in such a way that the value of any number in the series is the sum of the previous two numbers.

The Fibonacci sequence is as follows:

0, 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144, 233, 377, 610...

Notice the following:

$$233 = 144 + 89$$

$$144 = 89 + 55$$

$$89 = 55 + 34$$

Needless to say the series extends to infinity. There are few interesting properties of the Fibonacci series.

Divide any number in the series by the previous number; the ratio is always approximately 1.618.

For example:

$$610/377 = 1.618$$

$$377/233 = 1.618$$

$$233/144 = 1.618$$

The ratio of 1.618 is considered as the Golden Ratio, also referred to as the Phi. Fibonacci numbers have their connection to nature. The ratio can be found in human face, flower petals, animal bodies, fruits, vegetables, rock formation, galaxial formations etc. Of course let us not get into this discussion as we would be digressing from the main topic. For those interested, I would suggest you search on the internet for golden ratio examples and you will be pleasantly surprised. Further into the ratio properties, one can find remarkable consistency when a number in the Fibonacci series is divided by its immediate preceding number.

For example:

$$89/144 = 0.618$$

$$144/233 = 0.618$$

$$377/610 = 0.618$$

At this stage, do bear in mind that 0.618, when expressed in percentage is 61.8%.

Similar consistency can be found when any number in the Fibonacci series is divided by a number two places higher.

For example:

$$13/34 = 0.382$$

$$21/55 = 0.382$$

$$34/89 = 0.382$$

0.382 when expressed in percentage terms is 38.2%

Also, there is consistency when a number in the Fibonacci series is divided by a number 3 place higher.

For example:

$$13/55 = 0.236$$

$$21/89 = 0.236$$

$$34/144 = 0.236$$

$$55/233 = 0.236$$

0.236 when expressed in percentage terms is 23.6%.

16.1 – Relevance to stocks markets

It is believed that the Fibonacci ratios i.e 61.8%, 38.2%, and 23.6% finds its application in stock charts. Fibonacci analysis can be applied when there is a noticeable up-move or down-move in prices. Whenever the stock moves either upwards or downwards sharply, it usually tends to retrace back before its next move. For example if the stock has run up from Rs.50 to Rs.100, then it is likely to retrace back to probably Rs.70, before it can move Rs.120.

‘The retracement level forecast’ is a technique using which one can identify upto which level retracement can happen. These retracement levels provide a good opportunity for the traders to enter new positions in the direction of the trend. The Fibonacci ratios i.e 61.8%, 38.2%, and 23.6% helps the trader to identify the possible extent of the retracement. The trader can use these levels to position himself for trade.

Have a look at the chart below:



I've encircled two points on the chart, at Rs.380 where the stock started its rally and at Rs.489, where the stock prices peaked.

I would now define the move of 109 (380 – 489) as the Fibonacci upmove. As per the Fibonacci retracement theory, after the upmove one can anticipate a correction in the stock to last up to the Fibonacci ratios. For example, the first level up to which the stock can correct could be 23.6%. If this stock continues to correct further, the trader can watch out for the 38.2% and 61.8% levels.

Notice in the example shown below, the stock has retraced up to 61.8%, which coincides with 421.9, before it resumed the rally.



We can arrive at 421 by using simple math as well –

Total Fibonacci up move = 109

61.8% of Fibonacci up move = 61.8% * 109 = 67.36

Retracement @ 61.8% = 489- 67.36 = 421.6

Likewise, we can calculate for 38.2% and the other ratios. However one need not manually do this as the software will do this for us.

Here is another example where the chart has rallied from Rs.288 to Rs.338. Therefore 50 points move makes up for the Fibonacci upmove. The stock retraced back 38.2% to Rs.319 before resuming its up move.



The Fibonacci retracements can also be applied to stocks that are falling, in order to identify levels upto which the stock can bounce back. In the chart below (DLF Limited), the stock started to decline from Rs.187 to Rs. 120.6 thus making 67 points as the Fibonacci down move.



After the down move, the stock attempted to bounce back retracing back to Rs.162, which is the 61.8% Fibonacci retracement level.

16.2 – Fibonacci Retracement construction

As we now know Fibonacci retracements are movements in the chart that go against the trend. To use the Fibonacci retracements we should first identify the 100% Fibonacci move. The 100% move can be an upward rally or a downward rally. To mark the 100% move, we need to pick the most recent peak and trough on the chart. Once this is identified, we connect them using a Fibonacci retracement tool. This is available in most of the technical analysis software packages including Zerodha's Pi

Here is a step by step guide:

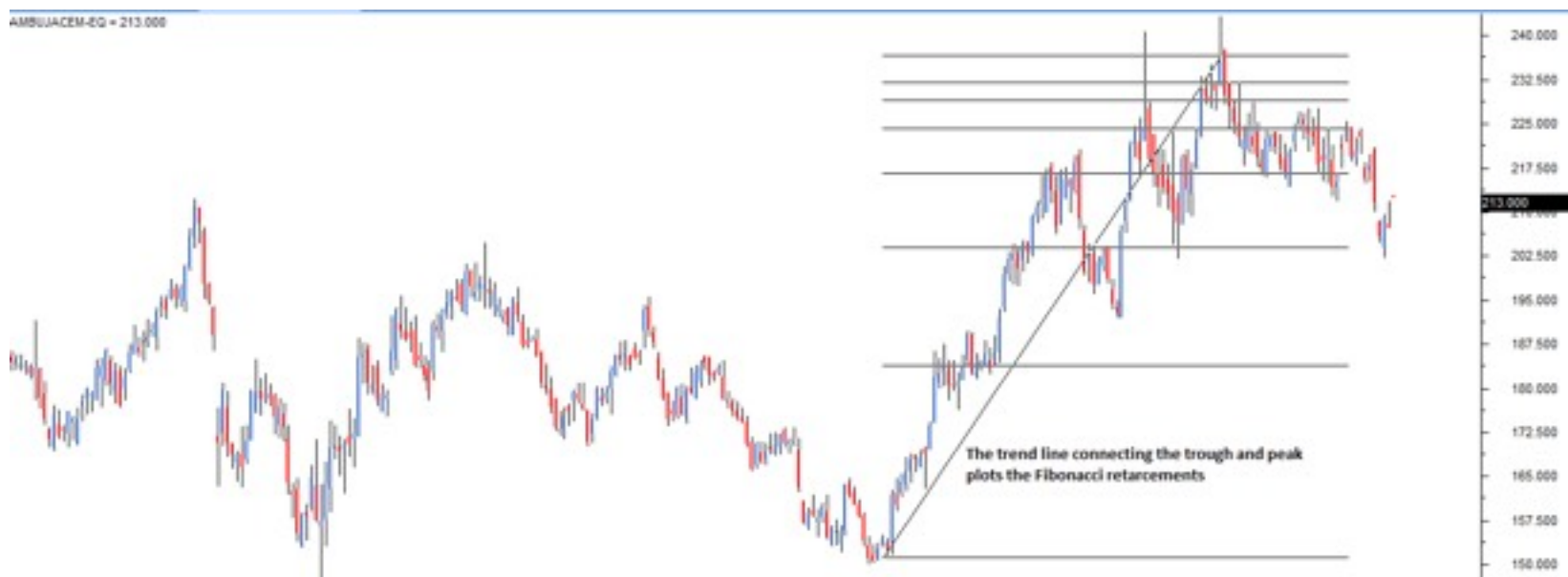
Step 1) Identify the immediate peak and trough. In this case the trough is at 150 and peak is at 240. The 90 point moves make it 100%.



Step 2) Select the Fibonacci retracement tool from the chart tools



Step 3) Use the Fibonacci retracement tool to connect the trough and the peak.



After selecting the Fibonacci retracement tool from the charts tool, the trader has to click on trough first, and without un-clicking he has to drag the line till the peak. While doing this, simultaneously the Fibonacci retracements levels starts getting plotted on the chart. However, the software completes the retracement identification process only after you finish selecting both the trough and the peak. This is how the chart looks after selecting both the points.



You can now see the fibonacci retracement levels are calculated and loaded on the chart. Use this information to position yourself in the market.

16.3 – How should you use the Fibonacci retracement levels?

Think of a situation where you wanted to buy a particular stock but you have not been able to do so because of a sharp run up in the stock. In such a situation the most prudent action to take would be to wait for a retracement in the stock. Fibonacci retracement levels such as 61.8%, 38.2%, and 23.6% act as a potential level upto which a stock can correct.

By plotting the Fibonacci retracement levels the trader can identify these retracement levels, and therefore position himself for an opportunity to enter the trade. However please note like any indicator, use the Fibonacci retracement as a confirmation tool.

I would buy a stock only after it has passed the other checklist items. In other words my conviction to buy would be higher if the stock has:

1. Formed a recognizable candlestick pattern
2. The stoploss coincides with the S&R level
3. Volumes are above average

Along with the above points, if the stoploss also coincides with the Fibonacci level then I know the trade setup is well aligned to all the variables and hence I would go in for a strong buy. The usage of the word 'strong' just indicates the level of conviction in the trade set up. The more confirming factors we use to study the trend and reversal, more robust is the signal. The same logic can also be applied for the short trade.

Key takeaways from this chapter

1. The Fibonacci series forms the basis for Fibonacci retracement
2. A Fibonacci series has many mathematical properties. These mathematical properties are prevalent in many aspects of nature
3. Traders believe the Fibonacci series has its application in stock charts as it identified potential retracement levels
4. Fibonacci retracements are levels (61.8%, 38.2%, and 23.6%) upto which a stock can possibly retrace before it resumes the original directional move
5. At the Fibonacci retracement level the trader can look at initiating a new trade. However, before initiating the trade other points in the checklist should also confirm.

The Dow Theory (Part 1)



The Dow Theory has always been a very integral part of technical analysis. The Dow Theory was used extensively even before the western world discovered candlesticks. In fact even today Dow Theory concepts are being used. In fact traders blend the best practices from Candlesticks and Dow Theory.

The Dow Theory was introduced to the world by Charles H. Dow, who also founded the Dow-Jones financial news service (Wall Street Journal). During his time, he wrote a series of articles starting from 1900s which in the later years was referred to as 'The Dow Theory'. Much credit goes to William P Hamilton, who compiled these articles with relevant examples over a period of 27 years. Much has changed since the time of Charles Dow, and hence there are supporters and critics of the Dow Theory.

17.1 – The Dow Theory Principles

The Dow Theory is built on a few beliefs. These are called the Dow Theory tenets. These tenets were developed by Charles H Dow over the years of his observation on the markets. There are 9 tenets that are considered as the guiding force behind the Dow Theory. They are as follows:

Sl No.	Tenet	What does it mean?
1	Indices discounts everything	The stock market indices discount everything which is known & unknown in the public domain. If a sudden and unexpected event occurs, the stock market indices quickly recalibrates itself to reflect the accurate value
2	Overall there are 3 broad market trends	Primary Trend, Secondary Trend, and Minor Trends
3	The Primary Trend	This is the major trend of the market that lasts from a year to several years. It indicates the broader multiyear direction of the market. While the long term investor is interested in the primary trend, an active trader is interested in all trends. The primary trend could be a primary uptrend or a primary down trend
4	The Secondary Trend	These are corrections to the primary trend. Think of this as a minor counter reaction to the larger movement in the market. Example – corrections in the bull market, rallies & recoveries in the bear market. The counter trend can last anywhere between a few weeks to several months
5	Minor Trends/Daily fluctuations	These are daily fluctuations in the market, some traders prefer to call them market noise
6	All Indices must confirm with each other	We cannot confirm a trend based on just one index. For example the market is said to be bullish only if CNX Nifty, CNX Nifty Midcap, CNX Nifty Smallcap etc all move in the same upward direction. It would not be possible to classify markets as bullish, just by the action of CNX Nifty alone

Sl No	Tenet	What does it mean?
7	Volumes must confirm	The volumes must confirm along with price. The trend should be supported by volume. In an uptrend the volume must increase as the price rises and should reduce as the price falls. In a downtrend, volume must increase when the price falls and decrease when the price rises. You could refer chapter 12 for more details on volume
8	Sideway markets can substitute secondary markets	Markets may remain sideways (trading between a range) for an extended period. Example:- Reliance Industries between 2010 and 2013 was trading between 860 and 990. The sideways markets can be a substitute for a secondary trend
9	The closing price is the most sacred	Between the open, high, low and close prices, the close is the most important price level as it represents the final evaluation of the stock during the day

17.2 – The different phases of Market



Dow Theory suggests the markets are made up of three distinct phases, which are self repeating. These are called the Accumulation phase, the Mark up phase, and the Distribution phase.

The Accumulation phase usually occurs right after a steep sell off in the market. The steep sell off in the markets would have frustrated many market participants, losing hope of any sort of up-trend in prices. The stock prices would have plummeted to rock bottom valuations, but the buyers would still be hesitant of buying fearing there could be another sell off. Hence the stock price languishes at low levels. This is when the 'Smart Money' enters the market.

Smart money is usually the institutional investors who invest from a long term perspective. They invariably seek value investments which is available after a steep sell off. Institutional investors start to acquire shares regularly, in large quantities over an extended period of time. This is what makes up an accumulation phase. This also means that the sellers who are trying to sell during the accumulation phase will easily find buyers, and therefore the prices do not decline further. Hence invariably the accumulation phase marks the bottom of the markets. More often than not, this is how the support levels are created. Accumulation phase can last up to several months.

Once the institutional investors (smart money) absorb all the available stocks, short term traders sense the occurrence of a support. This usually coincides with improved business sentiment. These factors tend to take the stock price higher. This is called the mark up phase. During the Mark up phase, the stock price rallies quickly and sharply. The most important feature of the mark up phase is the speed. Because the rally is quick, the public at large is left out of the rally.

New investors are mesmerized by the return and everyone from the analysts to the public see higher levels ahead.

Finally when the stock price reaches new highs (52 week high, all time high) everyone around would be talking about the stock market. The news reports turn optimistic, business environment suddenly appears vibrant, and everyone one (public) wants to invest in the markets. The public by and large, wants to get involved in the markets as there is a positive sentiment. This is when the distribution phase occurs.

The judicious investors (smart investors) who got in early (during the accumulation phase) will start offloading their shares slowly. The public will absorb all the volumes off loaded by the institutional investors (smart money) there by giving them the well needed price support. The distribution phase has similar price properties as that of the accumulation phase. In the distribution phase, whenever the prices attempt to go higher, the smart money off loads their holdings. Over a period of time this action repeats several times and thus the resistance level is created.

Finally when the institutional investors (smart money) completely sell off their holdings, there would no further support for prices, and hence what follows after the distribution phase is a complete sell off in the markets, also known as the mark down of prices. The selloff in the market leaves the public in an utter state of frustration.

Completing the circle, what follows the selloff phase is a fresh round of accumulation phase, and the whole cycle repeats again. It is believed that that entire cycle from accumulation phase to the selloff spans over a few years.

It is important to note that no two market cycles are the same. For example in the Indian context the bull market of 2006 – 07 is way different from the bull market of 2013-14. Sometimes the market moves from the accumulation to the distribution phase over a prolonged multi-year period. On the other hand, the same move from the accumulation to the distribution can happen over a few months. The market participant needs to tune himself to the idea of evaluating markets in the context of different phases, as this sets a stage for developing a view on the market.

17.3 – The Dow Patterns

Like in candlesticks, there are few important patterns in Dow Theory as well. The trader can use these patterns to identify trading opportunities. Some of the patterns that we will study are:

1. The Double bottom & Double top formation

2. The Triple Bottom & Triple Top
3. Range formation, and
4. Flag formation

The support and resistance is also a core concept for the Dow Theory, but because of its importance (in terms of placing targets and stop loss) we have discussed it much earlier a chapter dedicated to it.

17.4 – The Double bottom and top formation

A double top & double bottom is considered a reversal pattern. A double bottom occurs when the price of a stock hits a particular low price level and rebounds back with a quick recovery. Following the price recovery the stock trades at a higher level (relative to the low price) for at least 2 weeks (well spaced in time). After which the stock attempts to hit back to the low price previously made. If the stock holds up once again and rebounds, then a double bottom is formed.

A double bottom formation is considered bullish, and hence one should look at buying opportunities. Here is a chart that shows a double bottom formation in Cipla Limited:



Notice the time interval between the two bottom formations. It is evident that the price level was well spaced in time.

Likewise in a double top formation, the stock attempts to hit the same high price twice but eventually sells off. Of course the time gap between the two attempts of crossing the high should at least be 2 weeks. In the chart below (Cairn India Ltd), we can notice the double top at 336 levels. On close observation you will notice the first top was around Rs.336, and the second top was

around Rs.332. With some amount of flexibility a small difference such as this should be considered alright.



From my own trading experience, I find both double tops and double bottoms very useful while trading. I always look for opportunities where the double formation coincides with a recognizable candlesticks formation.

For instance, imagine a situation where in the double top formation, the 2nd top forms a bearish pattern such as shooting star. This means, both from the Dow Theory and candlestick perspective there is consensus to sell; hence the conviction to take the trade is higher.

17.5 – The triple top and bottom

The following chart shows a triple top formation for DLF Limited. Notice the sharp sell off after testing the price level for the 3rd time, thus completing the triple top.



As you may have guessed, a triple formation is similar to a double formation, except that the price level is tested thrice as opposed twice in a double bottom. The interpretation of the triple formation is similar to the double formation.

As a rule of thumb the more number of times the price tests, and reacts to a certain price level, the more sacred the price level is considered. Therefore by virtue of this, the triple formation is considered more powerful than the double formation.

Key takeaways from this chapter

1. Dow Theory was used in the western world even before candlesticks were formally introduced
2. Dow Theory works on 9 basic tenets
3. Market can be viewed in 3 basic phases – accumulation, mark up, and distribution phase
4. The accumulation phase is when the institutional investor (smart money) enters the market, mark up phase is when traders make an entry, and the final distribution phase is when the larger public enter the market
5. What follows the distribution phase is the mark down phase, following which the accumulation phase will complete the circle
6. The Dow theory has a few basic patterns, which are best used in conjunction with candlesticks
7. The double and triple formations are reversal patterns, which are quite effective
8. The interpretation of double and triple formations are the same

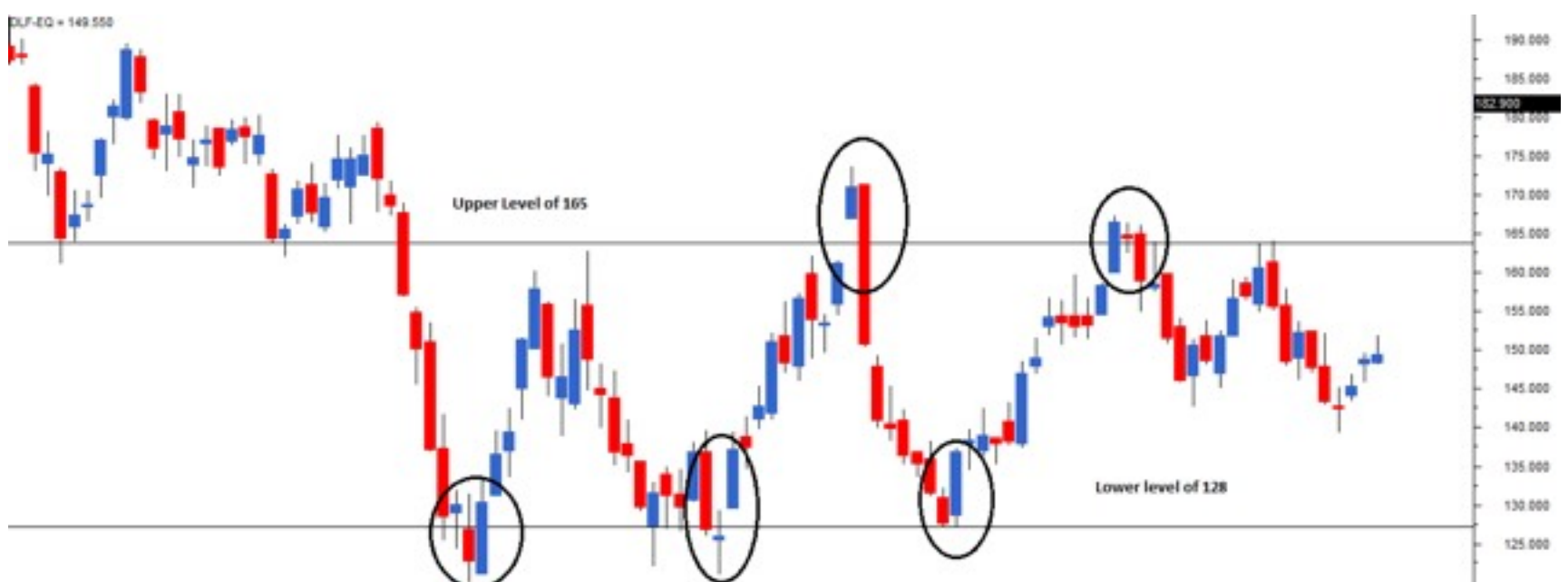
The Dow Theory (Part 2)

18.1 – Trading Range

The concept of range is a natural extension to the double and triple formation. In a range, the stock attempts to hit the same upper and lower price level multiple times for an extended period of time. This is also referred to as the sideways market. As the price oscillates in a narrow range without forming a particular trend, it is called a sideways market or sideways drift. So, when both the buyers and sellers are not confident about the market direction, the price would typically move in a range, and hence typical long term investors would find the markets a bit frustrating during this period.

However the range provides multiple opportunities to trade both ways (long and short) with reasonable accuracy for a short term trader. The upside is capped by resistance and the downside by the support. Thus it is known as a range bound market or a trading market as there are enough opportunities for both the buyers and the sellers.

In the chart below you can see the stock's behaviour in a typical range:

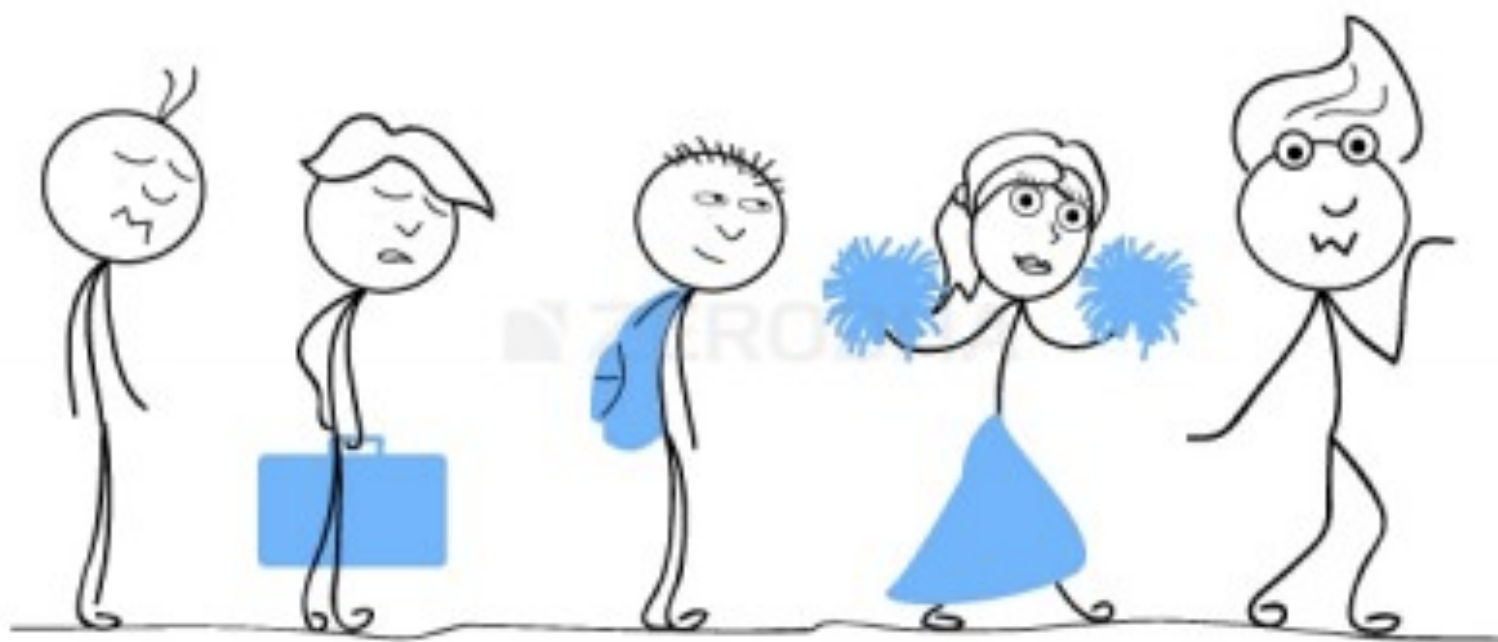


As you can see the stock hit the same upper (Rs.165) and the same lower (Rs.128) level multiple times, and continued to trade within the range. The area between the upper and lower level is called the width of the range. One of the easy trades to initiate in such a scenario would be to buy near the lower level, and sell near the higher level. In fact the trade can be both ways with the trader opting to short at the higher level and buying it back at the lower level.

In fact the chart above is a classic example of blending Dow Theory with candlestick patterns. Starting from left, notice the encircled candles:

1. The bullish engulfing pattern is suggesting a long
2. Morning doji star suggesting a long
3. Bearish engulfing pattern is suggesting a short
4. Bearish harami pattern is suggesting a short

The short term trader should not miss out such trades, as these are easy to identify trading opportunities with high probability of being profitable. The duration of the range can be anywhere between a few weeks to a couple of years. The longer the duration of the range the longer is the width of the range.



18.2 – The range breakout

Stocks do breakout of the range after being in the range for a long time. Before we explore this, it is interesting to understand why stocks trade in the range in the first place.

Stocks can trade in the range for two reasons:

1. When there are no meaningful fundamental triggers that can move the stock - These triggers are usually quarterly/ annual result announcement, new products launches, new geographic expansions, change in management, joint ventures, mergers, acquisitions etc. When there is nothing exciting or nothing bad about the company the stock tends to trade in a trading range. The range under these circumstances could be quite long lasting until a meaningful trigger occurs
2. In anticipation of a big announcement – When market anticipates a big corporate announcement the stock can swing in either directions based on the outcome of the announcement. Till the announcement is made both buyers and sellers would be hesitant to take action and hence the stock gets into the range. The range under such circumstances can be short-lived lasting until the announcement (event) is made.

The stock after being in the range can break out of the range. The range breakout more often than not indicates the start of a new trend. The direction in which the stock will breakout depends on the nature of the trigger or the outcome of the event. What is more important is the breakout itself, and the trading opportunity it provides.

A trader will take a long position when the stock price breaks the resistance levels and will go short after the stock price breaks the support level.

Think of the range as an enclosed compression chamber where the pressure builds up on each passing day. With a small vent, the pressure eases out with a great force. This is how the breakout happens. However, the trader needs to be aware of the concept of a ‘false breakout’.

A false breakout happens when the trigger is not strong enough to pull the stock in a particular direction. Loosely put, a false breakout happens when a ‘not so trigger friendly event’ occurs and impatient retail market participants react to it. Usually the volumes are low on false range breakouts indicating, there is no smart money involved in the move. After a false breakout, the stock usually falls back within the range.

A true breakout has two distinct characteristics:

1. Volumes are high and
2. After the breakout, the momentum (rate of change of price) is high

Have a look at the chart below:



The stock attempted to breakout of the range three times, however the first two attempts were false breakouts. The first 1st breakout (starting from left) was characterized by low volumes, and low momentum. The 2nd breakout was characterized by impressive volumes but lacked momentum.

However the 3rd breakout had the classic breakout attributes i.e high volumes and high momentum.

18.3 – Trading the range breakout

Traders buy the stock as soon as the stock breaks out of the range on good volumes. Good volumes confirm just one of the prerequisite of the range breakout. However, there is no way for the trader to figure out if the momentum (second prerequisite) will continue to build. Hence, the trader should always have a stoploss for range breakout trades.

For example – Assume the stock is trading in a range between Rs.128 and Rs.165. The stock breaks out of the range and surges above Rs.165 and now trades at Rs.170. Then trader would be advised to go long 170 and place a stoploss at Rs.165.

Alternatively assume the stock breaks out at Rs.128 (also called the breakdown) and trades at Rs.123. The trader can initiate a short trade at Rs.123 and treat the level of Rs.128 as the stoploss level.

After initiating the trade, if the breakout is genuine then the trader can expect a move in the stock which is at least equivalent to the width of the range. For example with the breakout at

Rs.168, the minimum target expectation would be 43 points since the width is $168 - 125 = 43$. This translates to a price target of $Rs.168 + 43 = 211$.

18.4 – The Flag formation

The flag formation usually takes place when the stock posts a sustained rally with almost a vertical or a steep increase in stock prices. Flag patterns are marked by a big move which is followed by a short correction. In the correction phase, the price would generally move within two parallel lines. Flag pattern takes the shape of a parallelogram or a rectangle and they have the appearance of a flag on the pole. The price decline can last anywhere between 5 and 15 trading session.



With these two events (i.e price rally, and price decline) occurring consecutively a flag formation is formed. When a flag forms, the stock invariably spurts back all of a sudden and continues to rally upwards.

For a trader who has missed the opportunity to buy the stock, the flag formation offers a second chance to buy. However the trader has to be quick in taking the position as the stock tends to move up all of a sudden. In the chart above the sudden upward moved is quite evident.

The logic behind the flag formation is fairly simple. The steep rally in the stock offers an opportunity for market participants to book profits. Invariably, the retail participants who are happy with the recent gains in the stock start booking profits by selling the stock. This leads to a decline in the stock price. As only the retail participants are selling, the volumes are on the lower side. The smart money is still invested in the stock, and hence the sentiment is positive for the stock. Many traders see this as an opportunity to buy the stock and hence the price rallies all of a sudden.

18.5 – The Reward to Risk Ratio (RRR)

The concept of reward to risk ratio (RRR) is generic and not really specific to Dow Theory. It would have been apt to discuss this under ‘trading systems and Risk management’. However RRR finds its application across every type of trading, be it trades based on technical analysis or investments through fundamentals. For this reason we will discuss the concept of RRR here.

The calculation of the reward to risk ratio is very simple. Look at the details of this short term long trade:

Entry: 55.75

Stop loss: 53.55

Expected target: 57.20

On the face of it, considering it is a short term trade, the trade looks alright. However, let us inspect this further:

What is the risk the trader is taking? - [Entry – Stoploss] i.e $55.75 - 53.55 = \mathbf{2.2}$

What is the reward the trader is expecting? - [Exit – Entry] i.e $57.2 - 55.75 = \mathbf{1.45}$

This means for a reward of 1.45 points the trader is risking 2.2 points or in other words the Reward to Risk ratio is $1.45/2.2 = 0.65$. Clearly this is not a great trade.

A good trade should be characterized by a rich RRR. In other words, for every Rs.1/- you risk on a trade your expected return should be at least Rs.1.3/- or higher, otherwise it is simply not a worth the risk.

For example consider this long trade:

Entry: 107

Stop loss: 102

Expected target: 114

In this trade the trader is risking Rs.5/- ($107 - 102$) for an expected reward of Rs.7/- ($114 - 107$). RRR in this case is $114/107 = 1.4$. This means for every Rs.1/- of risk the trader is assuming, he is expecting Rs.1.4 as reward. Not a bad deal.

The minimum RRR threshold should be set by each trader based on his/her risk appetite. For instance, I personally don't like to take up trades with a RRR of less than 1.5. Some aggressive traders don't mind a RRR of 1, meaning for every Rs.1 they risk they expect a reward of Rs.1. Some

would prefer the RRR to be at least 1.25. Ultra cautious traders would prefer their RRR to be upwards of 2, meaning for every Rs.1/- of risk they would expect at least Rs.2 as reward.

A trade must qualify the trader's RRR requirement. Remember a low RRR is just not worth the trade. Ultimately if RRR is not satisfied then even a trade that looks attractive must be dropped as it is just not worth the risk.

To give you a perspective think about this hypothetical situation:

A bearish engulfing pattern has been formed, right at the top end of a trade. The point at which the bearish engulfing pattern has formed also marks a double top formation. The volumes are very attractive as they are at least 30% more than the 10 day average volumes. Near the bearish engulfing patterns high the chart is showing a medium term support.

In the above situation, everything seems perfectly aligned to short trade. Assume the trade details are as below:

Entry: 765.67

Stop loss: 772.85

Target: 758.5

Risk: 7.18 (772.85 – 765.67) i.e [Stoploss – Entry]

Reward: 7.17 (765.67 – 758.5) i.e [Entry – Exit]

RRR: $7.17/7.18 = \sim 1.0$

As I mentioned earlier, I do have a stringent RRR requirement of at least 1.5. For this reason even though the trade above looks great, I would be happy to drop it and move on to scout the next opportunity.

As you may have guessed by now, RRR finds a spot in the checklist.

18.6 – The Grand Checklist

Having covered all the important aspects of Technical Analysis, we now need to look at the checklist again and finalize it. As you may have guessed Dow Theory obviously finds a place in the checklist as it provides another round of confirmation to initiate the trade.

1. The stock should form a recognizable candlestick pattern
2. S&R should confirm to the trade. The stoploss price should be around S&R
 - a. For a long trade, the low of the pattern should be around the support

b. For a short trade, the high of the pattern should be around the resistance

3. Volumes should confirm

a. Ensure above average volumes on both buy and sell day

b. Low volumes are not encouraging, and hence do feel free to hesitate while taking trade where the volumes are low

4. Look at the trade from the Dow Theory perspective.

a. Primary, secondary trends

b. Double, triple, range formations

c. Recognizable Dow formation

5. Indicators should confirm

a. Scale the trade size higher if indicators confirm to your plan of action

b. If the indicators do not confirm go ahead with the original plan

6. RRR should be satisfactory

a. Think about your risk appetite and identify your RRR threshold

b. For a complete beginner, I would suggest the RRR to be as high as possible as this provides a margin of safety

c. For an active trader, I would suggest a RRR of at least 1.5

When you identify a trading opportunity, always look how the trade is positioned from the Dow Theory perspective. For example if you are considering a long trade based on candlesticks, then look at what the primary and secondary trend is suggesting. If the primary trend is bullish, then it would be a good sign, however if we are in the secondary trend (which is counter to the primary) then you may want to think twice as the immediate trend is counter to the long trade.

If you follow the checklist mentioned above and completely understand its importance, I can assure you that your trading will improve multiple folds. So the next time you take a trade, ensure you comply with above checklist. If not for anything, at least you will have no reason to initiate a trade based on loose and unscientific logic.

18.7 – What next?

We have covered many aspects of technical analysis in this module. I can assure you the topics covered here are good enough to put you on a strong platform. You may believe there is a need to explore other patterns and indicators that we have not discussed here. If we have not discussed a pattern or an indicator here on Varsity, do remember it is for a specific purpose. So be assured that you have all that you need to begin your journey with Technical analysis.

If you can devote time to understanding each one of these topics thoroughly, then you can be certain about developing a strong TA based thinking framework. The next logical progression from here would be to explore ideas behind back testing trading strategies, risk management, and trading psychology. All of which we will cover in the subsequent modules.

In the next concluding chapter, we will discuss few practical aspects that will help you get started with Technical Analysis.

Key takeaways from this chapter

1. A range is formed when the stock oscillates between the two price points
2. A trader can buy at the lower price point, and sell at the higher price point
3. The stock gets into a range for a specific reason such as the lack of fundamental triggers, or event expectation
4. The stock can break out of the range. A good breakout is characterized by above average volumes and sharp surge in prices
5. If the trader has missed an opportunity to buy a stock, the flag formation offers another window to buy
6. RRR is a critical parameter for trade evaluation. Develop a minimum RRR threshold based on your risk appetite
7. Before initiating a trade the trader should look at the opportunity from the Dow Theory perspective

The Finale – Helping you get started



19.1 – The Charting Software

Over the last 18 chapters we have learnt many aspects of Technical Analysis. If you have read through all the chapters and understood what is being discussed, you are certainly at a stage where you can start trading based on Technical Analysis. The objective of this chapter is to help you get started with identifying technical trading opportunities.

Kindly note, the suggestions I have put forth in this chapter are based on my trading experience.

To begin with, you need a chart visualization software, simply called the ‘Charting Software’. The charting software helps you look at the various stock charts and analyze the same. Needless to say, the charting software is a very important tool for a technical analyst.

There are many charting software’s available. The two most popular ones are ‘Metastock’ and ‘Amibroker’. Majority of the technical analysts use one of the two charting software’s. Needless to say, these are paid software’s and you need to purchase the software license before using it.

There are a few online free charting tools that are available which you can use – these are available on Yahoo Finance, Google Finance and pretty much all the business media websites. How-

ever, my advice to you is – if you aspire to become a technical analyst, get access to a good charting software.

Think of the charting software as a DVD player, once you have a DVD player installed, you will still need to rent DVDs to watch movies. Similarly, once you have a charting software installed, you will still need to feed it with data to actually view the charts. The data feed required is provided by the data vendors.

There are many data vendors in India giving you access to data feeds. I would suggest you look up on the internet for reliable vendors. You just need to inform the data vendor which charting software you have, and he will provide you the data feeds in a format that is compatible with your charting software. Of course, the data feeds come at a cost. Once you sign up with a data vendor, he will first give you all the historical data, after which you will have to update the data from his server on a daily basis to stay current.

From my experience buying the latest version of a good charting software (Metastock or Amibroker) can cost you a onetime fee of anywhere between Rs.25,000/- and Rs.30,000/-. Add to this another Rs.15,000/- to Rs.25,000 towards the data feeds. Of course, while the software cost is one time, the cost of data feeds recurs annually. Do note, the older versions of the charting software may cost you much lesser.

Now, if you are in no mood to spend so much for the charting software & data feed combination there is another alternative. And that would be Zerodha's Pi J.

As you may know, Zerodha has a proprietary trading terminal called 'Pi'. Pi helps you in many ways; I would like to draw your attention to some of its features in the context of Technical Analysis:

1. **It is bundled** - Pi is a charting software and a data feed package bundled into a single software
2. **Great Visualizations** - Pi helps you visualize charts across multiple time frames including intraday charts
3. **Advanced Features** – Pi has advanced charting features and includes 80 built-in technical indicators and over 30 drawing tools
4. **Scripting your strategy** - Pi has a scripting language employing which you can code technical strategies and back test the same on historical data. Do note, on Varsity we will soon include a module on building trading strategies and scripting

5. **Easy Opportunity Recognition** - Pi has pattern recognition feature that lets you draw a pattern on the screen. Once you draw, just command Pi to scout for that pattern across the market and it will do just that for you
6. **Trade from Pi** - Pi also lets you execute trades directly from the chart (a huge plus point for a technical trader)
7. **Data Dump** - Pi has a massive historical data dump (over 50,000 candles) which means back testing your strategy will be more efficient
8. **Your personal trading assistant** - Pi's 'Expert Advisor', keeps you informed about the patterns being developed in the live markets
9. **Super Advanced features** - Pi has Artificial Intelligence and Genetic Algorithms. These are optimization tools which helps you optimize your trading algorithms
10. **It is free** - Zerodha is giving it free of cost to all its active traders

The list is quite exhaustive ranging from the basic to advanced features. I would strongly suggest you try out Pi before you decide to venture out for charting package and data feed bundle.



19.2 – Which timeframe to choose?

We discussed 'Timeframes in chapter 3. I would request you to read through it again to refresh your memory.

Selecting the timeframe while scanning for trading opportunities is perhaps one of the biggest confusion a newbie technical analyst has. There are many timeframes you can choose from – 1 minute, 5 minutes, 10 minutes, 15 minutes, EOD, Weekly, Monthly, and Yearly. It is quite easy to get confused with this.

As a thumb rule, the higher the timeframe, the more reliable the trading signal is. For example a 'Bullish Engulfing' pattern on the 15 minute timeframe is far more reliable than a 'Bullish Engulfing' pattern on a 5 minute timeframe. So keeping this in perspective, one has to choose a timeframe based on the intended length of the trade.

So how do you decide your intended length of your trade?

If you are starting out fresh or if you are not a seasoned trader I would suggest you avoid day trading. Start with trades with an intention to hold the trade for a few days. This is called 'Positional Trading' or 'Swing Trading'. An active swing trader usually keeps his trading position open for a few days. The best look back period for a swing trader is 6 months to 1 year.

On the other hand, a scalper is a seasoned day trader; typically he uses 1minute or 5 minutes timeframe.

Once you are comfortable with holding trades over multiple days, graduate yourself to 'Day Trading'. My guess is, your transition from a positional trader to a day trader will take some time. Needless to say for a dedicated and disciplined trader, the transition period is remarkably lesser.



19.3 – Look back period

Look back period is simply the number of candles you wish to view before taking a trading decision. For instance, a look back period of 3 months means you are looking at today's candle in the backdrop of at least the recent 3 months data. By doing this you will develop a perspective on today's price action with reference to last 3 months price action.

For swing trading opportunities, what is the ideal look back period? From my experience, I would suggest that a swing trader should look for at least 6 months to 1 year data. Likewise a scalper is better off looking at last 5 days data.

However, while plotting the S&R levels you should increase the look back period to at least 2 years.



19.4 – The opportunity universe

There are roughly about 6000 listed stocks in the Bombay Stock Exchange (BSE) and close to about 2000 listed stocks in the National Stock Exchange (NSE). Does it make sense for you to scan for opportunities across these thousands of stocks, on a daily basis? Obviously not. Over a period of time you need to identify a set of stocks that you are comfortable trading. These set of stocks would constitute your “Opportunity Universe’. On a daily basis you scan your opportunity universe to identify trading opportunities.

Here are some pointers to select stocks to build your opportunity universe:

1. Ensure the stock has adequate liquidity. One way to ensure adequate liquidity is to look at the bid ask spread. The lesser the spread, the more liquid the stock
 - a. Alternatively you can have ‘minimum volume criteria’. For example you can consider only those stocks where the volume per day is at least 500000
2. Make sure the stock is in the ‘EQ’ segment. This is basically because stocks in the ‘EQ’ segment can be day traded. I agree, I discouraged day trading for a newbie, however in a situation where you initiated a positional trade and the target is achieved the same day, there is no harm in closing the position intraday

3. This is a bit tricky, but make sure the stock is not operator driven. Unfortunately there is no quantifiable method to identify operator driven stocks. This comes to you by sheer experience

If you find it difficult to find stocks that comply with the above points, I would advise you to simply stick to the Nifty 50 or the Sensex 30 stocks. These are called the index stocks. Index stocks are carefully selected by the exchanges, this selection process ensures they comply with many points including the ones mentioned above.

Keeping Nifty 50 as your opportunity universe is probably a good idea for both swing trader and scalper.



19.5 – The Scout

Let us now proceed to understand how one should go about selecting stocks for trading. In other words, we will try and identify a process, employing which we can scan for trading opportunities. The process is mainly suited for a swing trader.

We have now set the 4 important aspects -

1. The charting software – Suggest you use Zerodha's Pi
2. Timeframe – End of Day data
3. Opportunity Universe – Nifty 50 stocks
4. Trade type – Positional trades with an option to square off intraday, provided the target hits the same day
5. Look back period – Between 6 months to 1 year. Increase to 2 years while plotting the S&R level

Having fixed these important practical aspects, I will now proceed to share my methodology of scanning trading opportunities. I have divided the process into 2 parts:

Part 1 – The Short listing process

1. I look at the chart of all the stocks within my opportunity universe
2. While looking at the chart, my attention is only on the recent 3 or maximum 4 candles
3. While looking at the recent 3 candles, I check if there is any recognizable candlestick pattern being developed
4. If I find an interesting pattern, I short list this stock for further investigation and I continue the scouting process. I always ensure I check all the 50 charts

Part 2 – The Evaluation process

At this stage, I am usually left with 4-5 shortlisted stocks (out of the 50 stocks in my opportunity universe) which exhibit a recognizable candlestick pattern. I then proceed to evaluate these 4-5 charts in detail. Typically I spend at least 15 - 20 minutes on each chart. Here is what I do when looking at the shortlisted chart:

1. I generally look at how strong the pattern is - I am specifically interested in checking if there is any need for me to be more flexible
 - a. For example, if a Bullish Marubuzo has a shadow, I evaluate the length of the shadow with reference to the range
2. After this I look at the 'prior trend'. For all bullish patterns, the prior trend should be a downtrend, and for all bearish patterns the prior trend should be an uptrend. I do pay a lot of attention to prior trends
3. At this stage if everything looks good (i.e. I have identified a recognizable pattern with a well defined prior trend), I proceed to inspect the chart further
4. After this I look at the volumes. The volume should be at least equal to or more than the 10 day average volume
5. Provided both the candlestick pattern and volumes confirm, I then proceed to check the existence of the support (in case of a long trade) and resistance (in case of a short trade) level
 - a. The S&R level should coincide (as much as possible) with the stoploss of the trade (as defined by the candlestick pattern)
 - b. If the S&R level is more than 4% away from the stoploss, I stop evaluating the chart further and proceed to the next chart

6. I then look for Dow patterns – particularly for double and triple top & bottom formations, flags formations and the possibility of a range breakout

a. Needless to say, I also establish the Primary and secondary market trend

7. If the steps 1 to 5 are satisfactory, I proceed to calculate the risk to reward ratio (RRR)

a. To calculate RRR, I first establish the target by plotting either the support or resistance level

b. The minimum RRR should be at least 1.5

8. At last I look at the MACD and RSI indicators to get a perspective, if they confirm and if I have spare cash I increase my trade size

Usually out of the 4-5 shortlisted stocks, at the most 1 or 2 may qualify for a trade. There are days when there are no trading opportunities. Deciding not to trade in itself is a big trading decision. Do remember this is a fairly stringent checklist, if a stock is confirming to the checklist, my conviction to trade is very high.

I have mentioned this many times in this module, I will mention this for one last time – once you place a trade, do nothing till either your target is achieved or stoploss is triggered. Of course you can trail your stoploss, which is a healthy practice. But otherwise do nothing, if your trade complies with the checklist and do remember the trade is highly curreted; hence the chance of being successful is high. So it makes sense to stay put with conviction.



19.6 – The Scalper

For a seasoned swing trader, scalping is another option. Scalping is a technique where the trader initiates a fairly large trade with an intention of holding the trade for few minutes. Here is a typical example of the trade done by a scalper –

1st Leg of the trade	2nd leg of the trade
Time – 10:15 AM	Time – 10:25 AM
Stock – Infosys	Stock – Infosys
Price – 3980	Price – 3976
Action – Sell	Action – Buy
Quantity – 1000 shares	Quantity – 1000 shares

Overall profit after applicable charges = Rs.2653/-

Do note, the overall profit is calculated considering that you are trading with Zerodha, the overall profitability would shrink remarkably if you are scaling with an expensive brokerage rates. Containing transaction charges is one of the keys to successful scalping.

A scalper is a highly focused trader with a sharp sense for price. He utilizes highly precise charts such with 1 minute and 5 minute timeframe to make his trading decisions. A successful scalper executes many such trades within the day. His objective is simple – large quantity trade with an intention to hold for few minutes. He intends to profit from the small moves in the stock.

If you aspire to be a scalper, here are few guidelines –

1. Do remember the checklist we have mentioned but do not expect all the checklist items to comply as the trade duration is very low
2. If I were to handpick just 1 or 2 items in the checklist for scalping, it would be candlestick pattern and volume
3. A risk reward ratio of even 0.5 to 0.75 is acceptable while scalping
4. Scalping should be done only on liquid stocks
5. Have an effective risk management system - be really quick to book a loss if need be

6. Keep a tab on the bid ask spread to see how the volumes are building
7. Keep a tab on global markets – for example if there is a sudden drop in the Hang Seng (Hong Kong stock exchange) it invariably leads to a sudden drop in local markets
8. Choose a low cost broker to ensure your costs are controlled
9. Use margins effectively, do not over leverage
10. Have a reliable intraday charting software
11. If you sense the day is going wrong, stop trading and move away from your terminal

Scalping as a day trading technique requires a great presence of mind and a machine like approach. A successful scalper embraces volatility and is indifferent to market swings.

Key takeaways from this chapter

1. If you aspire to become a technical trader ensure you equip yourself with good charting software. Zerodha's Pi is my preference
2. Choose EOD chart for both day trading and swing trading
3. Look at intraday charts if you like scalping the markets
4. The look back period should be at least 6 months to 1 year for swing trading
5. Nifty 50 is a great opportunity universe to begin with
6. The opportunity scanning can be done in 2 parts
7. Part 1 involves skimming through the charts of all the stocks in opportunity universe and short listing those charts that display a recognizable candlestick pattern
8. Part 2 involves investigating the shortlisted charts to figure out if they comply with the checklist
9. Scalping is advisable for seasoned swing traders