

# Technical Analysis



## 1.1 – Overview

The previous module set us on a good plane with the basic understanding about the stock markets. Taking cues from the previous module, we now know that developing a well researched point of view is critical for stock market success. A good point of view should have a directional view and should also include information such as:

1. Price at which one should buy and sell stocks
2. Risk involved
3. Expected reward
4. Expected holding period

Technical Analysis (also abbreviated as TA) is a popular technique that allows you to do just that. It not only helps you develop a point of view on a particular stock or index but also helps you define the trade keeping in mind the entry, exit and risk perspective.

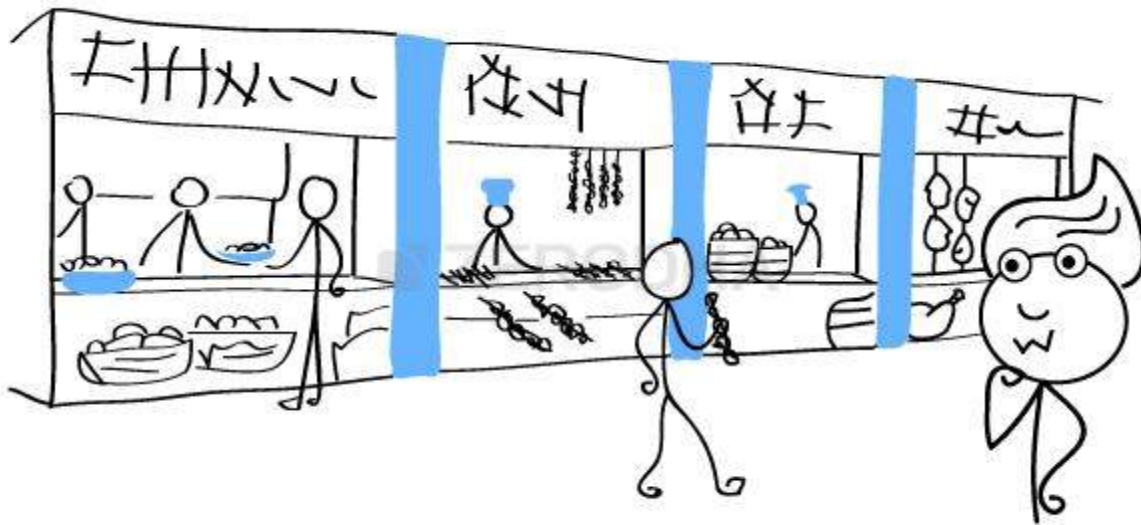
Like all research techniques, Technical Analysis also comes with its own attributes, some of which can be highly complex. However technology makes it easy to understand. We will discover these attributes as we proceed along this module.

## 1.2 – Technical Analysis, what is it?

Consider this analogy.

Imagine you are vacationing in a foreign country where everything including the language, culture, climate, and food is new to you. On day 1, you do the regular touristy activities, and by evening you are very hungry. You want to end your day by having a great dinner. You ask around for a good restaurant and you are told about a nice food street which is close by. You decide to give it a try.

To your surprise, there are many vendors selling different varieties of food. Everything looks different and interesting. You are absolutely clueless as to what to eat for dinner. To add to your dilemma you cannot ask around as you do not know the local language. So given all this, how will you make a decision on what to eat?



Well, you have two options to figure out what to eat.

**Option 1:** You visit a vendor, figure out what they are cooking / selling. Check on the ingredients used, cooking style, probably taste a bit and figure out if you actually like the food. You repeat this exercise across a few vendors, after which you would most likely end up eating at a place that satisfies you the most.

The advantage with this technique is that you know exactly what you are eating since you have researched about it on your own. However on the flip side, the methodology you adopted is not really scalable as there could be about 100 odd vendors, and with limited time at your disposal, you can probably cover about 4 or 5 vendors. Hence there is a high probability that you could have missed the best tasting food on the street!

**Option 2:** You just stand in a corner and observe all the vendors. You try and find a vendor who is attracting the maximum crowd. Once you find such a vendor you make a simple assumption - 'The vendor is attracting so many customers which means he must be making the best food!' Based on your assumption and the crowd's preference you decide to go to that particular vendor for your dinner. Chances are that you could be eating the best tasting food available on the street.

The advantage of this method is the scalability. You just need to spot the vendor with the maximum number of customers and bet on the fact that the food is good based on the crowd's preference. However, on the flipside the crowd need not always be right.

If you could recognize, option 1 is very similar to Fundamental Analysis where you research about a few companies thoroughly. We will explore about Fundamental Analysis in greater detail in the next module.

Option 2 is very similar to Technical Analysis where one scans for opportunities based on the current trend aka the preference of the market.

Technical Analysis is a research technique to identify trading opportunities in market based on the actions of market participants. The actions of markets participants can be visualized by means of a stock chart. Over time, patterns are formed within these charts and each pattern conveys a certain message. The job of a technical analyst is to identify these patterns and develop a point of view.

Like any research technique, technical analysis stands on a bunch of assumptions. As a practitioner of technical analysis, you need to trade the markets keeping these assumptions in perspective. Of course we will understand these assumptions in details as we proceed along.

Also, at this point it makes sense to throw some light on a matter concerning FA and TA. Often people get into the argument contending a particular research technique is a better approach to market. However in reality there is no such thing as the best research approach. Every research method has its own merits and demerits. It would be futile to spend time comparing TA and FA in order to figure out which is a better approach.

Both the techniques are different and not comparable. In fact a prudent trader would spend time educating himself on both the techniques so that he can identify great trading or investing opportunities.

### 1.3 – Setting expectations

Often market participants approach technical analysis as a quick and easy way to make a windfall gain in the markets. **On the contrary, technical analysis is anything but quick and easy.** Yes, if done right, a windfall gain is possible but in order get to that stage one has to put in the required effort to learn the technique.

If you approach TA as a quick and easy way to make money in markets, trading catastrophe is bound to happen. When a trading debacle happens, more often than not the blame is on technical analysis and not on the trader's inability to efficiently apply Technical Analysis to markets. Hence before you start delving deeper into technical analysis it is important to set expectations on what can and cannot be achieved with technical analysis.

1. **Trades** – TA is best used to identify short term trades. Do not use TA to identify long term investment opportunities. **Long term investment opportunities are best identified using fundamental analysis.** Also, **If you are a fundamental analyst, use TA to calibrate the entry and exit points**
2. **Return per trade** – TA based trades are usually short term in nature. Do not expect huge returns within a short duration of time. The trick with being successful with TA

is to identify frequent short term trading opportunities which can give you small but consistent profits.

3. **Holding Period** – Trades based on technical analysis can last anywhere between few minutes and few weeks, and usually not beyond that. We will explore this aspect when we discuss the topic on timeframes.
  4. **Risk** – Often traders initiate a trade for a certain reason, however in case of an adverse movement in the stock, the trade starts making a loss. Usually in such situations, traders hold on to their loss making trade with a hope they can recover the loss. Remember, TA based trades are short term, in case the trade goes sour, do remember to cut the losses and move on to identify another opportunity.
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### **Key takeaways from this chapter**

1. Technical Analysis is a popular method to develop a point of view on markets. Besides, TA also helps in identifying entry and exit points
2. Technical Analysis visualizes the actions of market participants in the form of stock charts
3. Patterns are formed within the charts and these patterns help a trader identify trading opportunities
4. TA works best when we keep a few core assumptions in perspective
5. TA is used best to identify short terms trades

# Introducing Technical Analysis



## 2.1- Overview

In the previous chapter we briefly understood what Technical Analysis was all about. In this chapter we will focus on the versatility and the assumptions of Technical Analysis.

## 2.2 – Application on asset types

Probably one of the greatest versatile features of technical analysis is the fact you can apply TA on any asset class as long as the asset type has historical time series data. Time series data in technical analysis context is information pertaining to the price variables namely – open high, low, close, volume etc.

Here is an analogy that may help. Think about learning how to drive a car. Once you learn how to drive a car, you can literally drive any type of car. Likewise you only need to learn technical analysis once. Once you do so, you can apply the concept of TA on any asset class – equities, commodities, foreign exchange, fixed income etc.

This is also probably one of the biggest advantages of TA when compared to the other fields of study. For example when it comes to fundamental analysis of equity, one has to study the profit and loss, balance sheet, and cash flow statements. However fundamental analysis for commodities is completely different.

If you are dealing with agricultural commodity like Coffee or Pepper then the fundamental analysis includes analyzing rainfall, harvest, demand, supply, inventory etc. However the fundamentals of metal commodities are different, so is for energy commodities. So every time you choose a commodity, the fundamentals change.

However the concept of technical analysis will remain the same irrespective of the asset you are studying. For example, an indicator such as 'Moving average convergence divergence' (MACD) or 'Relative strength index' (RSI) is used exactly the same way on equity, commodity or currency.

## 2.3 – Assumption in Technical Analysis

Unlike fundamental analysts, technical analysts don't care whether a stock is undervalued or overvalued. In fact the only thing that matters is the stocks past trading data (price and volume) and what information this data can provide about the future movement in the security.

Technical Analysis is based on few key assumptions. One needs to be aware of these assumptions to ensure the best results.

**1) Markets discount everything** – This assumption tells us that, all known and unknown information in the public domain is reflected in the latest stock price. For example there could be an insider in the company buying the company's stock in large quantity in anticipation of a good quarterly earnings announcement. While he does this secretly, the price reacts to his actions thus revealing to the technical analyst that this could be a good buy.

**2) The 'how' is more important than 'why'** – This is an extension to the first assumption. Going with the same example as discussed above – the technical analyst would not be interested in questioning why the insider bought the stock as long he knows how the price reacted to the insider's action.

**3) Price moves in trend** – All major moves in the market is an outcome of a trend. The concept of trend is the foundation of technical analysis. For example the recent upward movement in the NIFTY Index to 7700 from 6400 did not happen overnight. This move happened in a phased manner, in over 11 months. Another way to look at it is, once the trend is established, the price moves in the direction of the trend.

**4) History tends to repeat itself** – In the technical analysis context, the price trend tends to repeat itself. This happens because the market participants consistently react to price movements in a remarkably similar way, each and every time the price moves in a certain direction. For example in up trending markets, market participants get greedy and want to buy irrespective of the high price. Likewise in a down trend, market participants want to sell irrespective of the low and unattractive prices. This human reaction ensures that the price history repeats itself.

## 2.4 – The Trade Summary

The Indian stock market is open from **9:15 AM to 15:30 PM**. During the 6 hour 15 minute market session, there are millions of trades that take place. Think about an individual stock – every minute there is a trade that gets executed on the exchange. The question is, as a market participant, do we need to keep track of all the different price points at which a trade is executed?

To illustrate this further, let us consider this imaginary stock in which there are many trades. Look at the picture below. Each point refers to a trade being executed at a particular time. If one manages to plot a graph which includes every second from 9:15 AM to 15:30 PM, the graph will be cluttered with many points. Hence in the chart below, for ease of understating I've plotted a limited time scale period:



Market opened at 9:15 AM and closed at 15:30 PM during which there were many trades. It will be practically impossible to track all these different price points. **In fact what one needs is a summary of the trading action and not really the details on all the different price points.**

By tracking the Open, high, low and close we can draw a summary of the price action.

**The open** – When the markets open for trading, the first price at which a trade executes is called the opening Price.

**The high** – This represents the highest price at which the market participants were willing to transact for the given day.

**The Low** – This represents the lowest level at which the market participants were willing to transact for the given day.

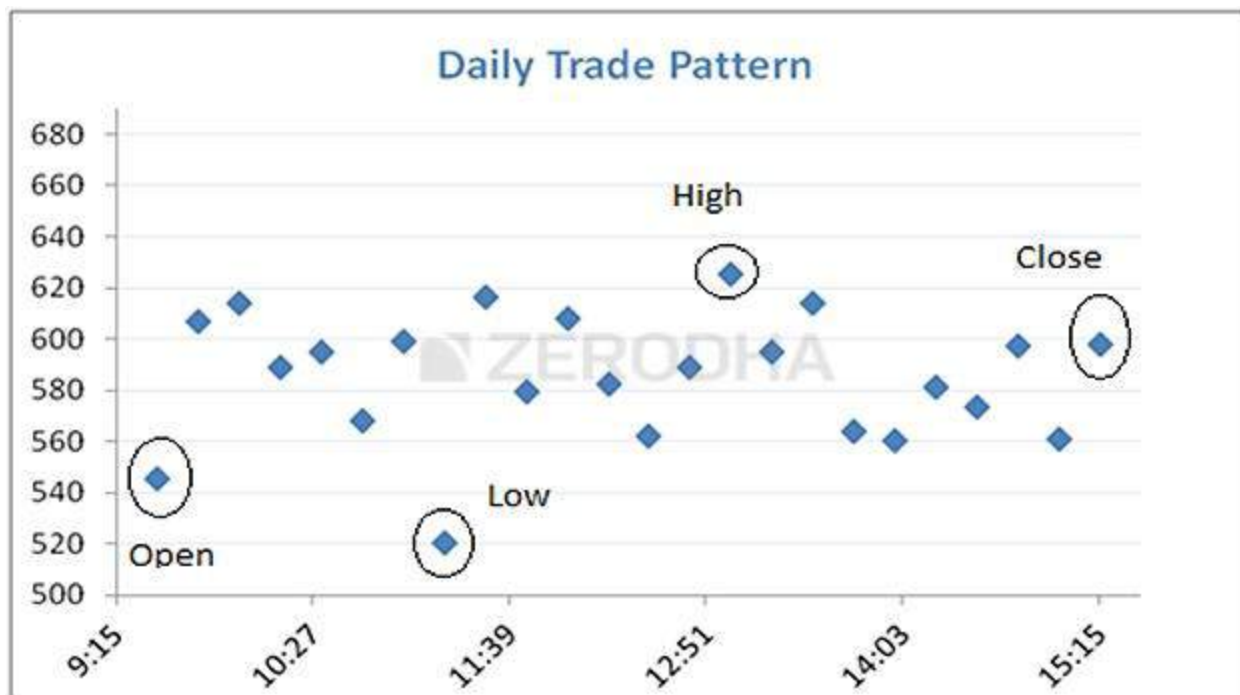
**The close** – The Close price is the most important price because it is the final price at which the market closed for a particular period of time. The close serves as an indicator for the intraday strength. If the close is higher than the open, then it is



considered a positive day else negative. Of course we will deal with this in a greater detail as we progress through the module.

The closing price also shows the market sentiment and serves as a reference point for the next day's trading. For these reasons, closing price is more important than the Open, High or Low prices.

The open, high, low, close prices are the main data points from the technical analysis perspective. Each of these prices have to be plotted on the chart and analyzed.



### Key takeaways from this chapter

1. Technical Analysis is not bound by its scope. The concepts of TA can be applied across any asset class as long as it has a time series data
2. TA is based on few core assumptions.
  1. Markets discount everything
  2. The how is more important than why
  3. Price moves in trends
  4. History tends to repeat itself
3. A good way to summarize the daily trading action is by marking the open, high, low and close prices usually abbreviated as OHLC

## The Chart Types



### 3.1– Overview

Having recognized that the Open (O), high (H), low (L), and close (C) serves as the best way to summarize the trading action for the given time period, we need a charting technique that displays this information in the most comprehensible way. If not for a good charting technique, charts can get quite complex. Each trading day has four data points' i.e the OHLC. If we are looking at a 10 day chart, we need to visualize 40 data points (1 day x 4 data points per day). So you can imagine how complex it would be to visualize 6 months or a year's data.

As you may have guessed, the regular charts that we are generally used to – like the column chart, pie chart, area chart etc does not work for technical analysis. The only exception to this is the line chart.

The regular charts don't work mainly because they display one data point at a given point in time. However Technical Analysis requires four data points to be displayed at the same time.

Below are some of the chart types:

1. Line chart
2. Bar Chart

### 3. Japanese Candlestick

The focus of this module will be on the Japanese Candlesticks however before we get to candlesticks, we will understand why we don't use the line and bar chart.

#### 3.2 – The Line and Bar chart

The line chart is the most basic chart type and it uses only one data point to form the chart. When it comes to technical analysis, a **line chart is formed by plotting the closing prices of a stock or an index**. A dot is placed for each closing price and the various dots are then connected by a line.

If we are looking 60 day data then the line chart is formed by connecting the dots of the closing prices for 60 days.



The line charts can be plotted for various time frames namely monthly, weekly, hourly etc. So, if you wish to draw a weekly line chart, you can use weekly closing prices of securities and likewise for the other time frames as well.

**The advantage of the line chart is its simplicity.** With one glance, the trader can identify the generic trend of the security. However the disadvantage of the line chart is also its simplicity. Besides giving the analysts a view on the trend, the line chart does not provide any additional detail. Plus the line chart takes into consideration only the closing prices ignoring the open, high and low. For this reason traders prefer not to use the line charts.

**The bar chart** on the other hand is a bit more versatile. A bar chart displays all the four price variables namely open, high, low, and close. A bar has three components.

1. The central line – **The top of the bar indicates the highest price the security has reached.** The bottom end of the bar indicates the lowest price for the same period.
2. The left mark/tick – indicates the open
3. The right mark/tick – indicates the close

For example assume the OHLC data for a stock as follows:

Open – 65

High – 70

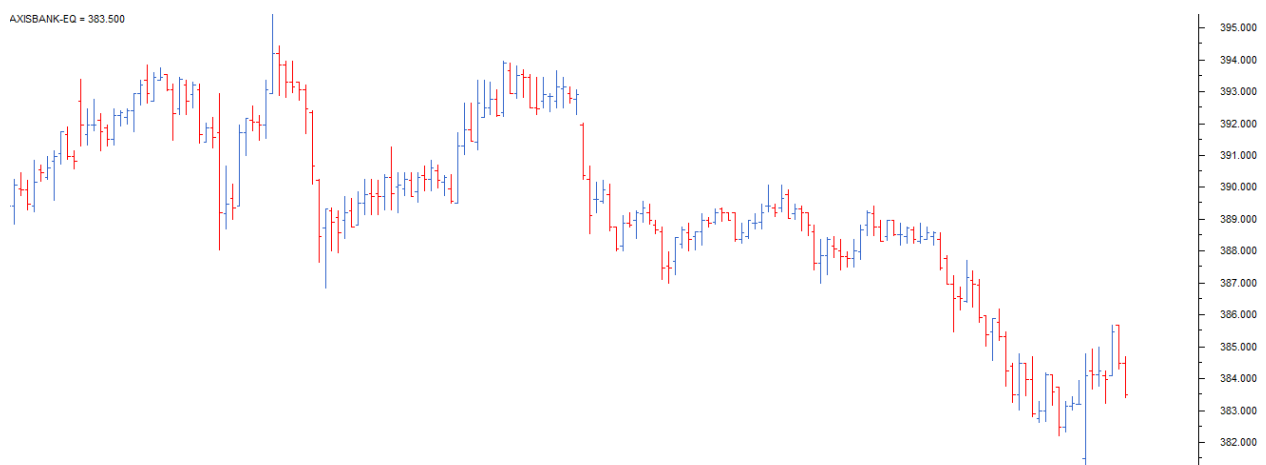
Low – 60

Close – 68

For the above data, the bar chart would look like this:



As you can see, in a single bar, we can plot four different price points. If you wish to view 5 days chart, as you would imagine we will have 5 vertical bars. So on and so forth.



Note the position of the left and right mark on the bar chart varies based on how the market has moved for the given day.

If the left mark, which represents the opening price is placed lower than the right mark, it indicates that the close is higher than the open (close > open), hence a positive day for the markets. For example consider this: O = 46, H = 51, L = 45, C = 49. To indicate it is a bullish day, the bar is represented in blue color.



Likewise if the left mark is placed higher than the right mark it indicates that the close is lower than the open (close < open), hence a negative day for markets. For example consider this: O = 74, H=76, L=70, C=71. To indicate it is a bearish day, the bar is represented in red color.



The length of the central line indicates the range for the day. A range can be defined as the difference between the high and low. Longer the line, bigger the range, shorter the line, smaller is the range.

While the bar chart displays all the four data points it still lacks a visual appeal. This is probably the biggest disadvantage of a bar chart. It becomes really hard to spot potential patterns brewing when one is looking at a bar chart. The complexity increases when a trader has to analyze multiple charts during the day.

Hence for this reason the traders do not use bar charts. However it is worth mentioning that there are traders who prefer to use bar charts. But if you are starting fresh, I would strongly recommend the use of Japanese Candlesticks. Candlesticks are the default option for the majority in the trading community.

### 3.3 – History of the Japanese Candlestick

Before we jump in, it is worth spending time to understand in brief the history of the Japanese Candlesticks. As the name suggests, the candlesticks originated from Japan. The earliest use of candlesticks dates back to the 18<sup>th</sup> century by a Japanese rice merchant named **Homma Munehisa**.

Though the candlesticks have been in existence for a long time in Japan, and are probably the oldest form of price analysis, the western world traders were clueless about it. It is believed that sometime around 1980's a trader named **Steve Nison** accidentally discovered candlesticks, and he actually introduced the methodology to the rest of the world. He authored the first ever book on candlesticks titled "Japanese Candlestick Charting Techniques" which is still a favorite amongst many traders.

Most of the pattern in candlesticks still retains the Japanese names; thus giving an oriental feel to technical analysis.

### 3.4 – Candlestick Anatomy

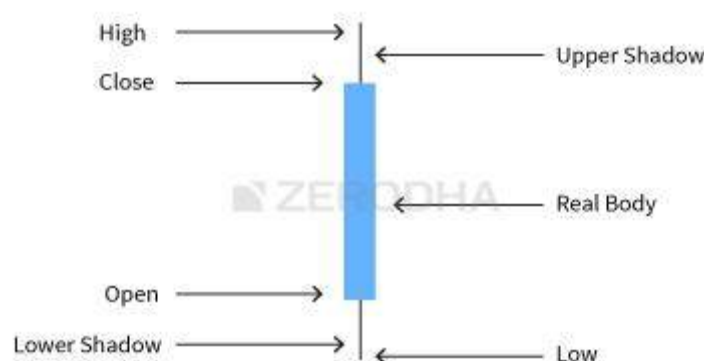
While in a bar chart the open and the close prices are shown by a tick on the left and the right sides of the bar respectively, however in a candlestick the open and close prices are displayed by a rectangular body.

In a candle stick chart, candles can be classified as a bullish or bearish candle usually represented by blue/green/white and red/black candles respectively. Needless to say, the colors can be customized to any color of your choice; the technical analysis software allows you to do this. In this module we have opted for the blue and red combination to represent bullish and bearish candles respectively.

Let us look at the **bullish candle**. The candlestick, like a bar chart is made of 3 components.

1. The Central real body – The real body, rectangular in shape connects the opening and closing price
2. Upper shadow – Connects the high point to the close
3. Lower Shadow – Connects the low point to the open

Have a look at the image below to understand how a bullish candlestick is formed:



This is best understood with an example. Let us assume the prices as follows..

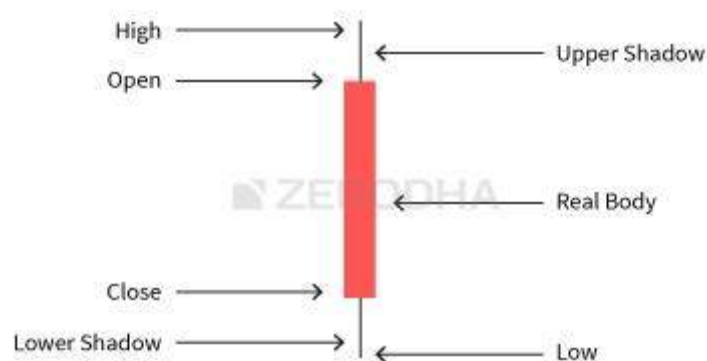
Open = 62  
High = 70  
Low = 58  
Close = 67



Likewise, the bearish candle also has 3 components:

1. The Central real body – The real body, rectangular in shape which connects the opening and closing price. However the opening is at the top end and the closing is at the bottom end of the rectangle
2. Upper shadow – Connects the high point to the open
3. Lower Shadow – Connects the Low point to the close

This is how a bearish candle would look like:



This is best understood with an example. Let us assume the prices as follows..

Open = 456  
High = 470  
Low = 420  
Close = 435



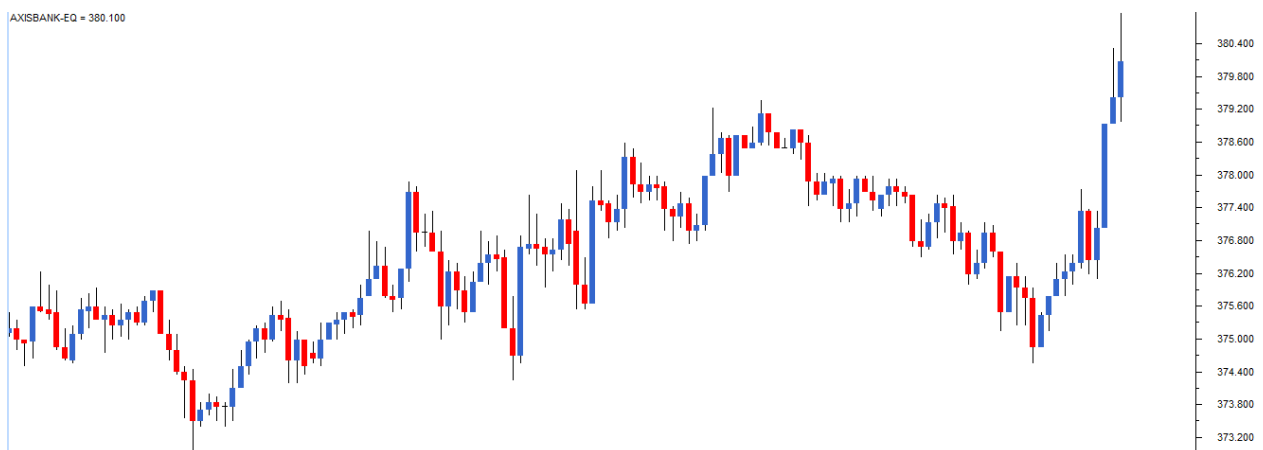
Here is a little exercise to help you understand the candlestick pattern better. Try and plot the candlesticks for the given data.

Day	Open	High	Low	Close
Day 1	430	444	425	438
Day 2	445	455	438	450
Day 3	445	455	430	437

If you find any difficulty in doing this exercise, feel free to ask your query in the comments at the end of this chapter.

Once you internalize the way candlesticks are plotted, reading the candlesticks to identify patterns becomes a lot easier.

This is how the candlestick chart looks like if you were to plot them on a time series. The blue candle indicates bullishness and red indicates bearishness.





Also note, a long bodied candle depicts strong buying or selling activity. A short bodied candle depicts less trading activity and hence less price movement.

To sum up, candlesticks are easier to interpret in comparison to the bar chart. Candlesticks help you to quickly visualize the relationship between the open and close as well as the high and low price points.

### 3.5 – A note on time frames

A time frame is defined as the time duration during which one chooses to study a particular chart. Some of the popular time frames that technical analysts use are:

- Monthly Charts
- Weekly charts
- Daily or End of day charts
- Intraday charts – 30 Mins, 15 mins and 5 minutes

One can customize the time frame as per their requirement. For example a high frequency trader may want to use a 1 minute chart as opposed to any other time frame.

Here is a quick note on different types of time frames.

Time Frame	Open	High	Low	Close	No of Candles
Monthly	The opening price on the first day of the month	Highest price at which the stock traded during the entire month	Lowest price at which the stock traded during the entire month	The closing price on the last day of the month	12 candles for the entire year
Weekly	Monday's Opening Price	Highest price at which the stock traded during the entire week	Lowest price at which the stock traded during the entire week	The closing price on Friday	52 candles for the entire year
Daily or EOD	Opening price of the day	Highest price at which the stock traded during the day	Lowest price at which the stock traded during the entire day	The closing price of the day	One candle per day, 252 candles for the entire year

Intraday 30 minutes	The opening price at the beginning of the 1st minute	Highest price at which the stock traded during the 30 minute duration	Lowest price at which the stock traded during the 30 minute duration	The closing price as on the 30th minute	Approximately 12 candles per day
Intraday 15 minutes	The opening price at the beginning of the 1st minute	Highest price at which the stock traded during the 15 minute duration	Lowest price at which the stock traded during the 15 minute duration	The closing price as on the 15th minute	25 candles per day
Intraday 5 minutes	The opening price at the beginning of the 1st minute	Highest price at which the stock traded during the 5 minute duration	Lowest price at which the stock traded during the 5 minute duration	The closing price as on the 5th minute	75 candles per day

As you can see from the table above as and when the time frame reduces, the number of candles (data points) increase. Based on the type of trader you are, you need to take a stand on the time frame you need.

The data can either be information or noise. As a trader, you need to filter information from noise. For instance a long term investor is better off looking at weekly or monthly charts as this would provide information. While on the other hand an intraday trader executing 1 or 2 trades per day is better off looking at end of day (EOD) or at best 15 mins charts. Likewise for a high frequency trader, a 1 minute charts can convey a lot of information.

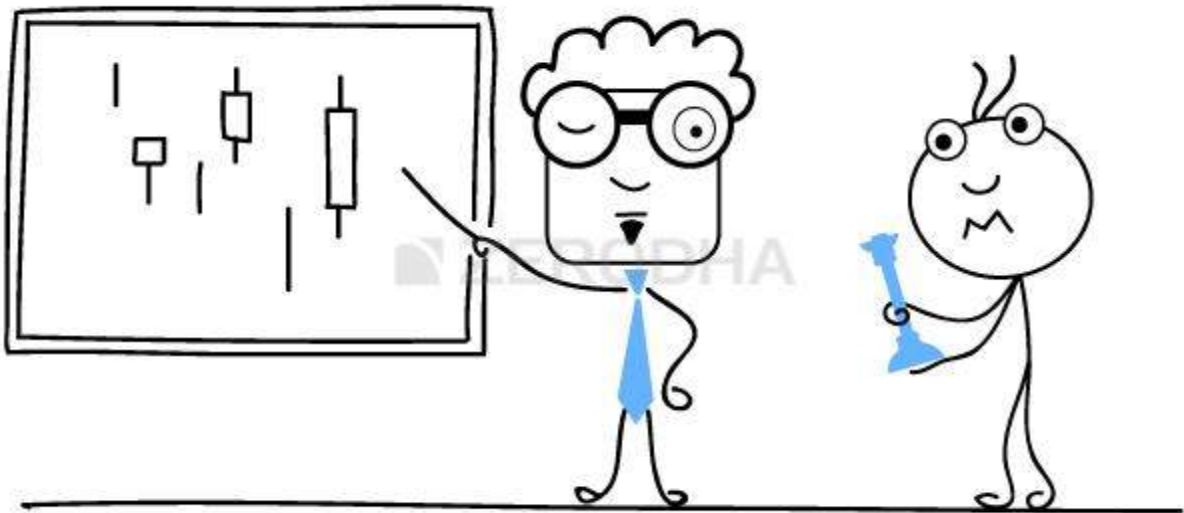
**So based on your stance as a trader you need to choose a time frame.** This is extremely crucial for your trading success, because a successful trader looks for information and discards the noise.

### Key takeaways from this chapter

1. Conventional chart type cannot be used for technical analysis as we need to plot 4 data points simultaneously
2. Line chart can be used to interpret trends but besides that no other information can be derived

3. Bar charts lacks visual appeal and one cannot identify patterns easily. For this reason bar charts are not very popular
4. There are two types of candlesticks – Bullish candle and Bearish candle. The structure of the candlestick however remains the same
5. When close > open = It is a Bullish candle. When close < open = It is a Bearish candle
6. Time frames play a very crucial role in defining the trading success. One has to choose this carefully
7. The number of candle increases as and when the frequency increases
8. A traders should be in a position to discard noise from relevant information

## Getting Started with Candlesticks



### 4.1 – History tends to repeat itself – The big assumption

As mentioned earlier one of the key assumptions in technical analysis is that, we rely on the fact that the history tends to repeats itself. This probably is one of the most important assumptions in Technical Analysis.

It would make sense to explore this assumption in greater detail at this juncture as candlestick patterns are heavily dependent on it.

Assume today, the 7<sup>th</sup> of July 2014 there are few things happening in a particular stock. Let us call this factor:

1. **Factor 1** – The stock has been falling for the last 4 consecutive trading sessions
2. **Factor 2** –Today (7<sup>th</sup> July 2014) is the 5<sup>th</sup> session and the stock is falling on relatively lower volumes
3. **Factor 3** – The range in which the stock trades today is quite small compared to the last four days.

With these factors are playing in the background, let us assume that on the next day (8<sup>th</sup> July 2014) the fall in stock gets arrested and in fact the stock rallies towards a positive close. So, as an outcome of the 3 factors the stock went up on the 6<sup>th</sup> day.

Time passes and let's say after a few months, the same set of factors is observed for 5 consecutive trading sessions. What would you expect for the 6<sup>th</sup> day?

According to the assumption – **History tends to repeat itself**. However we need to make an addendum to this assumption. When a set of factors that has panned out in the past tends to repeat itself in the future, we expect the same outcome to occur, as was observed in the past, provided the factors are the same.

Therefore, based on this assumption even this time round we can expect the stock price to go up on the 6<sup>th</sup> trading session.

## 4.2 – Candlestick patterns and what to expect

The candlesticks are used to identify trading patterns. Patterns in turn help the technical analyst to set up a trade. The patterns are formed by grouping two or more candles in a certain sequence. However, sometimes powerful trading signals can be identified by just single candlestick pattern.

Hence, candlesticks can be broken down into single candlestick pattern and multiple candlestick patterns.

Under the single candlestick pattern we will be learning the following...

1. Marubozu
  1. Bullish Marubozu
  2. Bearish Marubozu
2. Doji
3. Spinning Tops
4. Paper umbrella
  1. Hammer
  2. Hanging man
5. Shooting star

Multiple candlestick patterns are a combination of multiple candles. Under the multiple candlestick patterns we will learn the following:

1. Engulfing pattern
  1. Bullish Engulfing
  2. Bearish Engulfing
2. Harami
  1. Bullish Harami
  2. Bearish Harami
3. Piercing Pattern
4. Dark cloud cover

5. Morning Star
6. Evening Star

Of course you must be wondering what these names mean. As I had mentioned in the previous chapter, some of the patterns retain the original Japanese name.

Candlestick patterns help the trader develop a complete point of view. Each pattern comes with an in built risk mechanism. Candlesticks gives an insight into both entry and stop loss price.

### 4.3 – Few assumptions specific to candlesticks

Before we jump in and start learning about the patterns, there are few more assumptions that we need to keep in mind. These assumptions are specific to candlesticks. Do pay a lot of attention to these assumptions as we will keep referring back to these assumptions quite often later.

At this stage, these assumptions may not be very clear to you. I will explain them in greater detail as and when we proceed. However, do keep these assumptions in the back of your mind:

- **Buy strength and sell weakness** – Strength is represented by a bullish (blue) candle and weakness by a bearish (red) candle. Hence whenever you are buying ensure it is a blue candle day and whenever you are selling, ensure it's a red candle day.
- **Be flexible with patterns (quantify and verify)** – While the text book definition of a pattern could state a certain criteria, there could be minor variations to the pattern owing to market conditions. So one needs to be a bit flexible. However one needs to be flexible within limits, and hence it is required to always quantify the flexibility.
- **Look for a prior trend** – If you are looking at a bullish pattern, the prior trend should be bearish and likewise if you are looking for a bearish pattern, the prior trend should be bullish.

In the next chapter, we will begin with learning about single candlestick patterns.

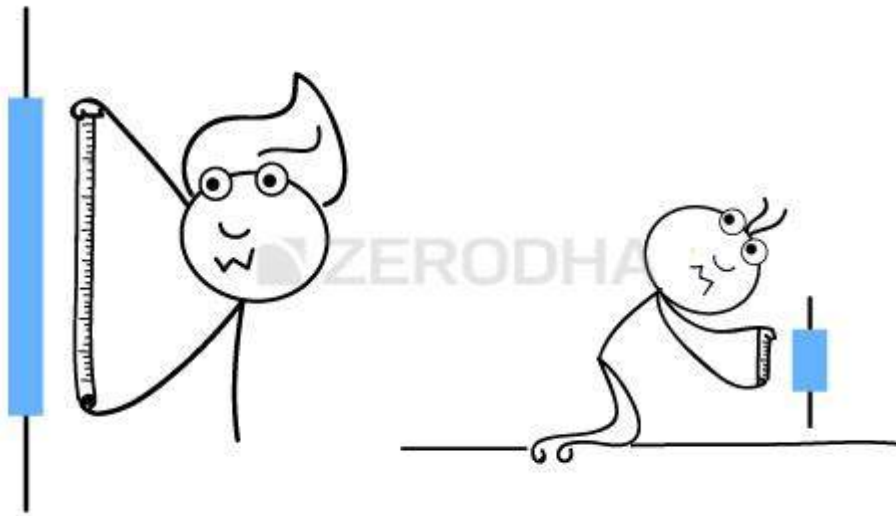
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### Key takeaways from this chapter

1. History tends to repeat itself – we modified this assumption by adding the factor angle
2. Candlestick patterns can be broken down into single and multiple candlestick patterns
3. There are three important assumptions specific to candlestick patterns

1. Buy strength and sell weakness
2. Be flexible – quantify and verify
3. Look for a prior trend.

## Single Candlestick patterns (Part 1)



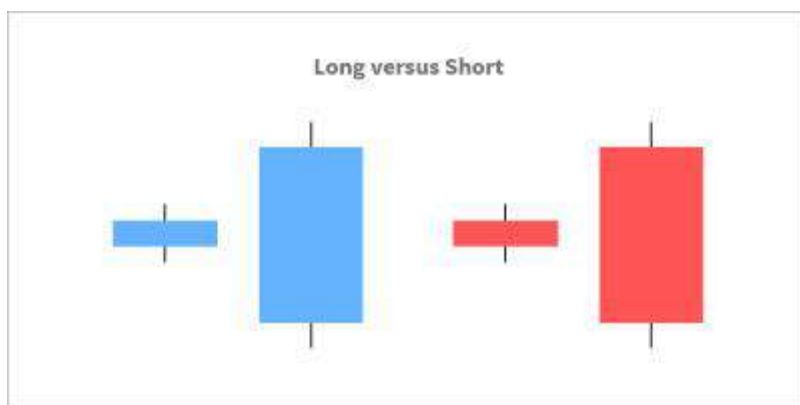
### 5.1 – Overview

As the name suggests, a single candlestick pattern is formed by just one candle. So as you can imagine, the trading signal is generated based on 1 day's trading action. The trades based on a single candlestick pattern can be extremely profitable provided the pattern has been identified and executed correctly.

One needs to pay some attention to the length of the candle while trading based on candlestick patterns. The length signifies the range for the day. In general, the longer the candle, the more intense is the buying or selling activity. If the candles are short, it can be concluded that the trading action was subdued.

The following picture gives a perspective on the long/short – bullish, and bearish candle.





The trades have to be qualified based on the length of the candle as well. One should avoid trading based on subdued short candles. We will understand this perspective as and when we learn about specific patterns.

## 5.2 – The Marubozu

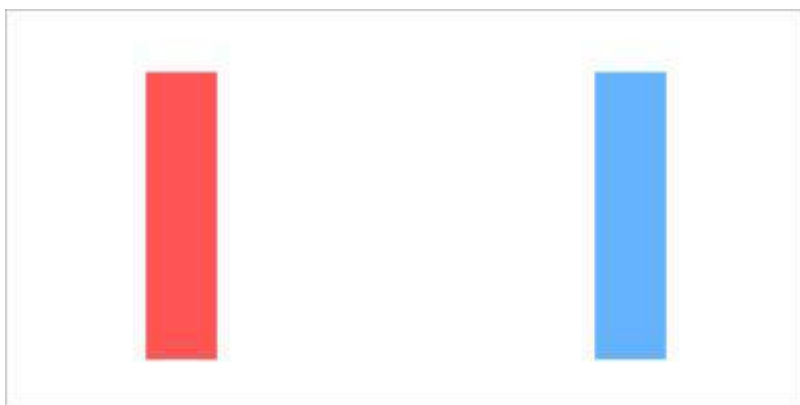
The Marubozu is the first single candlestick pattern that we will understand. The word Marubozu means “Bald” in Japanese. We will understand the context of the terminology soon. There are two types of marubozu – the bullish marubozu and the bearish marubozu.

Before we proceed, let us lay down the three important rules pertaining to candlesticks. We looked at it in the previous chapter; I’ve reproduced the same for quick reference:

1. Buy strength and sell weakness
2. Be flexible with patterns (verify and quantify)
3. Look for prior trend

Marubozu is probably the only candlestick pattern which violates rule number 3 i.e look for prior trend. A Marubozu can appear anywhere in the chart irrespective of the prior trend, the trading implication remains the same.

The text book defines Marubozu as a candlestick with no upper and lower shadow (therefore appearing bald). A Marubozu has just the real body as shown below. However there are exceptions to this. We will look into these exceptions shortly.



The red candle represents the bearish marubuzo and the blue represents the bullish marubuzo.

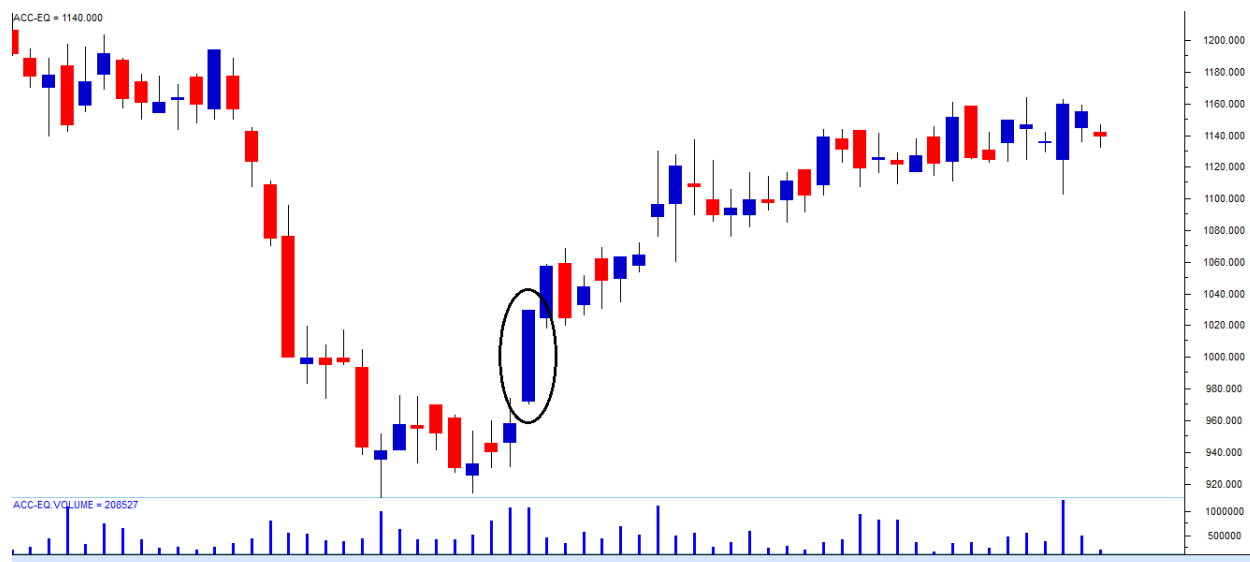


### 5.3 – Bullish Marubuzo

The absence of the upper and lower shadow in a bullish marubuzo implies that the low is equal to the open and the high is equal to the close. Hence whenever the, **Open = Low and High = close**, a bullish marubuzo is formed.

A bullish marubuzo indicates that there is so much buying interest in the stock that the market participants were willing to buy the stock at every price point during the day, so much so that the stock closed near its high point for the day. It does not matter what the prior trend has been, the action on the marubuzo day suggests that the sentiment has changed and the stock is now bullish.

The expectation is that with this sudden change in sentiment there is a surge of bullishness and this bullish sentiment will continue over the next few trading sessions. Hence a trader should look at buying opportunities with the occurrence of a bullish marubuzo. The **buy price** should be around the closing price of the marubuzo.



In the chart above (ACC Limited), the encircled candle is a bullish marubozu. Notice the bullish marubozu candle does not have a visible upper and a lower shadow. The OHLC data for the candle is: Open = 971.8, High = 1030.2, Low = 970.1, Close = 1028.4

Please notice, as per the text book definition of a marubozu **Open = Low, and High = Close**. However in reality there is a minor variation to this definition. The variation in price is not much when measured in percentage terms, for example the variation between high and close is 1.8 which as a percentage of high is just 0.17%. **This is where the 2<sup>nd</sup> rule applies – Be flexible, Quantify and Verify.**

With this occurrence of a marubozu the expectation has turned bullish and hence one would be a buyer of the stock. The trade setup for this would be as follows:

Buy Price = Around 1028.4 and Stoploss = 970.0

**As it is evident, candlestick patterns do not give us a target.** However we will address the issue of setting targets at a later stage in this module.

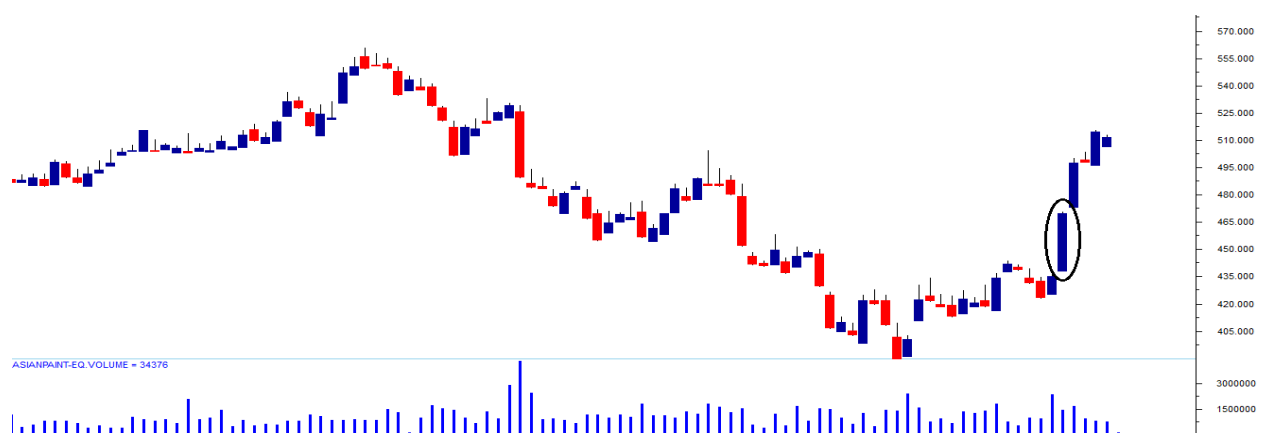
Having decided to buy the stock, when do we actually buy the stock? The answer to this depends on your risk appetite. Let us assume there are two types of trader with different risk profiles – the risk taker and the risk averse.

**The risk taker** would **buy the stock on the same day** as the marubozu is being formed. However the trader needs to validate the occurrence of a marubozu. Validating is quite simple. Indian markets close at 3:30 PM. **So, around 3:20 PM one needs to check if the current market price (CMP) is approximately equal to the high price for the day, and the opening price of the day is approximately equal to the low price the day.** If this condition is satisfied, then you know the day is forming a marubozu and therefore you can buy the stock around the closing price. **It is also very important to note that the risk taker is buying on a bullish/blue candle day, thereby following rule 1 i.e buy on strength and sell on weakness.**

The **risk averse** trader would **buy the stock on the next day** i.e the day after the pattern has been formed. **However before buying the trader needs to ensure that the day is a bullish day to comply with the rule number 1. This means the risk averse buyer can buy the stock only around the close of the day. The disadvantage of buying the next day is that the buy price is way above the suggested buy price, and therefore the stoploss is quite deep.** However as a trade off the risk averse trader is buying only after doubly confirming that the bullishness is indeed established.

As per the ACC's chart above, both the risk taker and the risk averse would have been profitable in their trades.

Here is another example (Asian Paints Ltd) where both the risk taker, and the risk averse trader would have been profitable.



Here is an example where the risk averse trader would have benefited :



Notice in the chart above, a bullish marubuzo has been encircled. **The risk taker would have initiated a trade to buy the stock on the same day around the close, only to book a loss on the next day.** However the risk averse would have avoided buying the stock entirely because the next day happened to be a red candle day. **Going by the rule, we should buy only on a blue candle day and sell on a red candle day.**

## 5.4 – The Stoploss on Bullish Marubuzo

What if after buying, the market reverses its direction and the trade goes wrong? Like I had mentioned earlier, candlestick patterns comes with a inbuilt risk management mechanism. In case of a bullish marubuzo, **the low of the stock acts as a stoploss.** So after you initiate a buy trade , in case the markets moves in the opposite direction, you should exit the stock if price breaches the low of the marubuzo.

Here is an example where the bullish marubuzo qualified as a buy for both the risk averse and the risk taker. The OHLC is : O = 960.2, H = 988.6, L = 959.85, C = 988.5.



But the pattern eventually failed and one would have booked a loss. The stoploss for this trade would be the low of marubuzo, i.e 959.85.

**Booking a loss is a part of the game.** Even a seasoned trader goes through this. However the best part of following the candlestick is that the losses are not allowed to run indefinitely. There is a clear agenda as to what price one has to get out of a trade provided the trade starts to move in the opposite direction. In this particular case booking a loss would have been the most prudent thing to do as the stock continued to go down.

**Of course there could be instances where the stoploss gets triggered and you pull out of the trade. But the stock could reverse direction and start going up after you pulled out of the trade. But unfortunately this is also a part of the game and one cannot really help it.** No matter what happens, the trader should stick to the rules and not find excuses to deviate from it.



### 5.3 – Bearish Marubuzo

Bearish Marubuzo indicates extreme bearishness. Here the open is equal to the high and close the is equal to low. Open = High, and Close = Low.

A bearish marubuzo indicates that there is so much selling pressure in the stock that the market participants actually sold at every price point during the day, so much so that the stock closed near its low point of the day. It **does not matter what the prior trend has been, the action on the marubuzo day suggests that the sentiment has changed and the stock is now bearish.**

The expectation is that this sudden change in sentiment will be carried forward over the next few trading sessions and hence one should look at **shorting opportunities.** The sell price should be around the closing price of the marubuzo.



In the chart above (BPCL Limited), the encircled candle indicates the presence of a bearish marubuzo. Notice the candle does not have an upper and a lower shadow. The OHLC data for the candle is as follows:

Open = 355.4, High = 356.0, Low = 341, Close = 341.7

As we had discussed earlier a minor variation between the OHLC figures leading to small upper and lower shadows is ok as long as it is within a reasonable limit.

The trade on the bearish marubuzo would be to short BPCL approximately at 341.7 **with a stoploss at the high point of the candle.** In this case the stoploss price is 356.0. Of course at this stage we still haven't dealt with setting targets, and we will figure that out much later in this module.

Do remember this, once a trade is initiated you should hold on to it until either the target is hit or the stoploss is breached. If you attempt to do something else before any one of these event triggers, then most likely your trade could go bust. So staying on course of the plan is extremely crucial.

Trade can be initiated based on the risk appetite of the person. The risk taker can initiate a short trade on the same day around the closing. Of course, he has to make sure that the candle is forming a bearish marubuzo. To do this at 3:20PM the trader has to confirm if the open is approximately equal to the high and the current market price is equal to the low price. If the condition is validated, then it is a bearish marubuzo and hence a short position can be initiated.

If the trader is risk averse, he can wait till the next day's closing. The short trade will go through only by 3:20PM next day after ensuring that the day is a red candle day. This is also to ensure that we comply with 1<sup>st</sup> rule – Buy strength, and Sell weakness.

In the BPCL chart above, both risk taker and risk averse would have been profitable.

Here is another chart, Cipla Limited, where the bearish marubuzo has been profitable for both risk taker, and a risk averse trader. Remember these are short term trades and one needs to be quick in booking profits.



Here is a chart which show bearish marubuzo pattern which would have not worked out for the risk taker but a risk averse trader would have entirely avoided initiating the trade, thanks to rule 1.



## 5.4 – The trade trap

Earlier in this chapter we did discuss about the length of the candle. One should avoid trading during an extremely small (below 1% range) or long candle (above 10% range).

A small candle indicates subdued trading activity and hence it would be difficult to identify the direction of the trade. On the other hand a long candle indicates extreme activity. The problem with lengthy candles would be the placement of stoploss. The stoploss would be deep and in case the trade goes wrong the penalty to pay would be painful. For this reason, one should avoid trading on candles that are either too short or too long.

### Key takeaways from this chapter

1. Remember the rules based on which candlesticks work
2. Marubuzo is the only pattern which violates rule number 3 i.e Look for prior trend
3. A bullish marubuzo indicates bullishness
  1. Buy around the closing price of a bullish marubozu
  2. Keep the low of the marubuzo as the stoploss
4. A bearish marubuzo indicates bearishness
  1. Sell around the closing price of a bearish marubozu
  2. Keep the high of the marubuzo as the stoploss
5. An aggressive trader can place the trade on the same day as the pattern forms
6. Risk averse traders can place the trade on the next day after ensuring that it obeys rule number 1 i.e Buy strength, and Sell weakness
7. An abnormal candle lengths should not be traded
  1. Short candle indicates subdued activity
  2. Long candle indicates extreme activity, however placing stoploss becomes an issue.



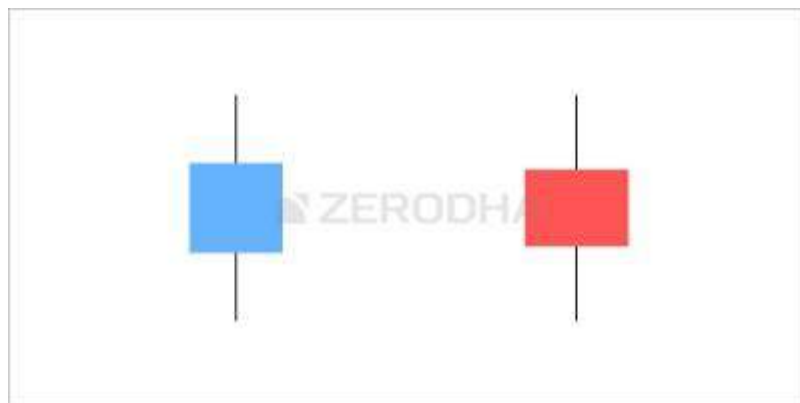
## Single Candlestick patterns (Part 2)



### 6.1 – The Spinning Top

The spinning top is a very interesting candlestick. Unlike the Marubuzo, it does not give the trader a trading signal with specific entry or an exit point. However the spinning top gives out useful information with regard to the current situation in the market. The trader can use this information to position himself in the market.

A spinning top looks like the candle shown below. Take a good look at the candle. What observations do you make with regard to the structure of the candle?



Two things are quite prominent...

- The candles have a small real body
- The upper and lower shadow are almost equal

What do you think would have transpired during the day that leads to the creation of a spinning top? On the face of it, the spinning top looks like a humble candle with a small real body, but in reality there were a few dramatic events which took place during the day.

Let us follow these events:

1. **Small real body** – This indicates that the open price and close price are quite close to each other. For instance the open could be 210 and the close could be 213. Or the open could be 210 and close at 207. Both these situations lead to the creation of a small real body because a 3 point move on a 200 Rupee stock is not much. Because the open and close price points are nearby to one another, the color of the candle does not really matter. It could be a blue or a red candle, what really matters is the fact that the open prices and close prices are near to one another.
2. **The upper shadow** – The upper shadow connects the real body to the high point of the day. If it is a red candle, the high and open are connected. If it is blue candle, the high and close are connected. If you think about the real body in conjunction with the upper shadow ignoring the lower shadow what do you think had happened? The presence of the upper shadow tells us that the bulls did attempt to take the market higher. However they were not really successful in their endeavor. If the bulls were truly successful, then the real body would have been a long blue candle and not really a short candle. Hence this can be treated as an attempt by the bulls to take the markets higher but they were not really successful at it.
3. **The lower shadow** – The lower shadow connects the real body to the low point of the day. If it is a red candle, the low and close are connected. If it is a blue candle, the low and open are connected. If you think about the real body in conjunction with the lower shadow ignoring the upper shadow what do you think had happened? This is pretty much the same thing that happened with the bulls. The presence of the lower shadow tells us that the bears did attempt to take the market lower. However they were not really successful in their endeavor. If the bears were truly successful, then the real body would have been long red candle and not really a short candle. Hence this can be treated as an attempt by the bears to take the markets lower but they were not really successful.

Now think about the spinning top as a whole along with all its components i.e real body, upper shadow, and lower shadow. The bulls made a futile attempt to take the market higher. The bears tried to take the markets lower and it did not work either. Neither the bulls nor the bears were able to establish any influence on the market as this is evident with the small real body. Thus Spinning tops are indicative of a market where indecision and uncertainty prevails.

If you look at a spinning top in isolation it does not mean much. **It just conveys indecision as both bulls and bears were not able to influence the**

**markets.** However when you see the spinning top with respect to the trend in the chart it gives out a really powerful message based on which you can position your stance in the markets.

## 6.2 – Spinning tops in a downtrend

What if the spinning tops were to occur when the stock is in a down trend?

In a down trend, the bears are in absolute control as they manage to grind the prices lower. With the spinning top in the down trend the bears could be consolidating their position before resuming another bout of selling. Also, the bulls have attempted to arrest the price fall and have tried to hold on to their position, though not successfully. After all, if they were successful the day would have resulted in a good blue candle and not really a spinning top.

So what stance would you take considering that there are spinning tops in a down trend. The stance depends on what we expect going forward. Clearly there are two foreseeable situations with an equal probability:

1. Either there will be another round of selling
2. Or the markets could reverse its directions and the prices could increase

Clearly, with no clarity on what is likely to happen, the trader needs to be prepared for both the situations i.e reversal and continuation.

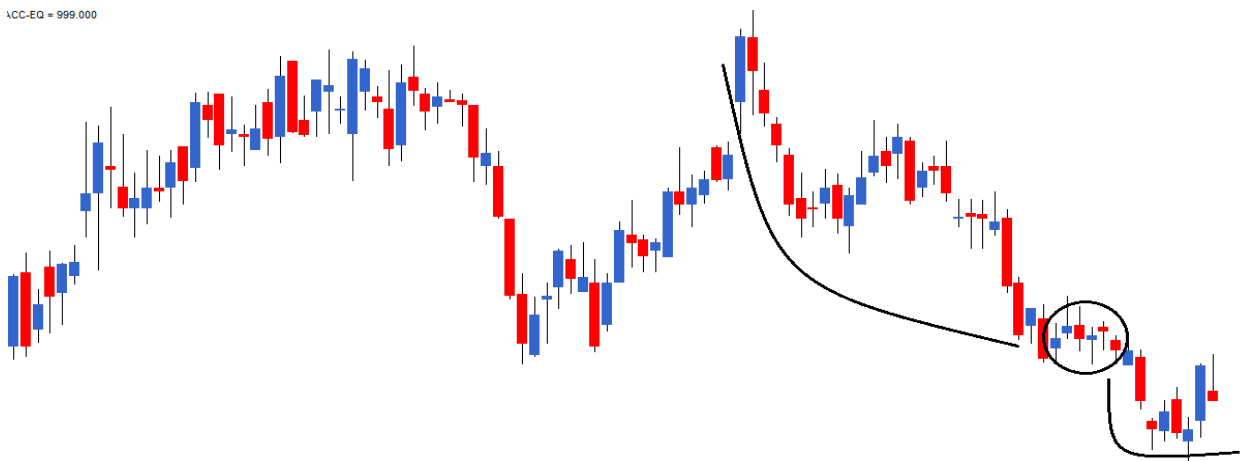
If the trader has been waiting for an opportunity to go long on the stock, probably this could be his opportunity to do so. However to play safe he could test the waters with only half the quantity. If the trader wants to buy 500 shares, he could probably enter the trade with 250 shares and could wait and watch the market. If the market reverses its direction, and the prices indeed start going up then the trader can average up by buying again. If the prices reverse; most likely the trader would have bought the stocks at the lowest prices.

If the stock starts to fall, the trader can exit the trade and book a loss. At least the loss is just on half the quantity and not really on the entire quantity.

Here is a chart, which shows the downtrend followed by a set of spinning tops. The stock rallied post the occurrence of the spinning top.



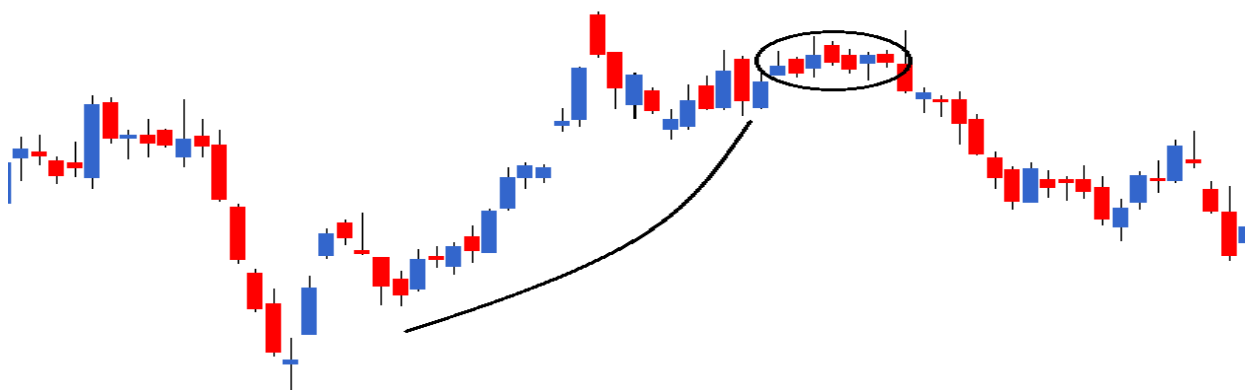
Here is another chart which shows the continuation of a down trend after the occurrence of spinning tops.



So, think about the spinning top as “The calm before the storm”. The storm could be in the form of a continuation or a reversal of the trend. In which way the price will eventually move is not certain, however what is certain is the movement itself. One needs to be prepared for both the situations.

## 6.2 – Spinning tops in an uptrend

A spinning top in an uptrend has similar implications as the spinning top in a down trend, except that we look at it slightly differently. Look at the chart below, what can you see and what would be the inference?



An obvious observation is the fact that there is an **uptrend** in the **market**, which **implies the bulls have been in absolute control over the last few trading sessions**. However with the occurrence of the recent spinning tops the situation is a bit tricky:

1. The **bulls are no longer in control**, if they were, spinning tops would not be form on the charts
2. With the formation of spinning tops, **the bears have made an entry to the markets. Though not successful**, but the emphasis is on the fact that the bulls gave a leeway to bears

Having observed the above, what does it actually mean and how do you position yourself in the market?

1. The spinning top basically **conveys indecision in the market** i.e neither the bulls nor the bears are able to influence the markets.
2. Placing the above fact in the context of an uptrend we can conclude two things..
  1. The bulls could be **consolidating their position before initiating another leg of up move**
  2. Or the bulls are fatigued and **may give way to** bears. Hence a correction could be around the corner.
3. The chances of both these events taking place is equal i.e **50%**

Having said that, what should you do? The chances of both events playing out are equal, how are you going to take a stance? Well, in such a situation you should prepare for both the outcomes!

Assume you had bought the stock before the rally started; this could be your chance to book some profits. However, you do not book profits on the entire quantity. Assume you own 500 shares; you can use this opportunity to book profits on 50% of your holding i.e 250 shares. Two things can happen after you do this:

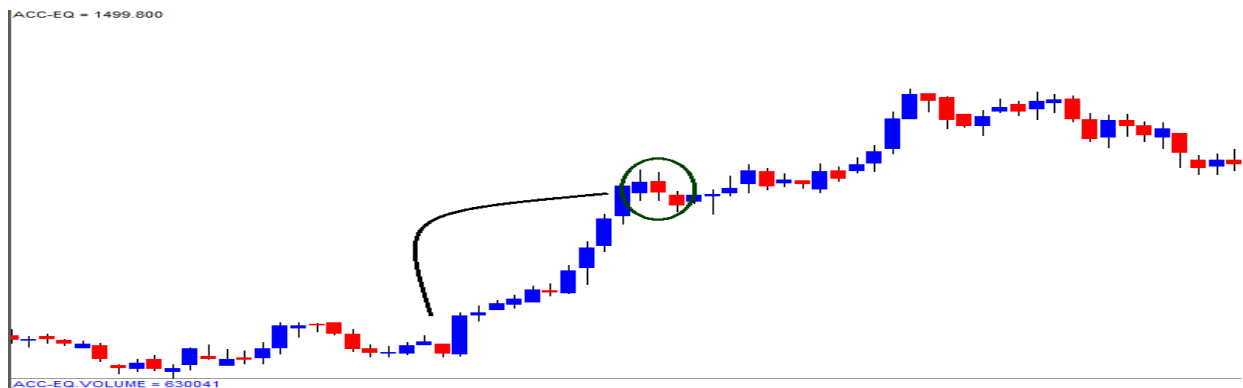
1. The bears make an entry – When this happens the market starts to slide down, and as you have booked 50% profits at a higher price, and can now choose to book

profits on the balance 50% as well. Your net selling price will anyway be higher than the current market price.

2. The bulls make an entry – It turns out that the bulls were indeed taking a pause and the rally continues, at least you are not completely out of the market as you still have the balance 50% of your holdings invested in the markets

The stance you take helps you tackle both the outcomes.

Here is a chart which shows an uptrend and after the occurrence of spinning tops, the stock rallied. By being invested 50%, you can continue to ride the rally.

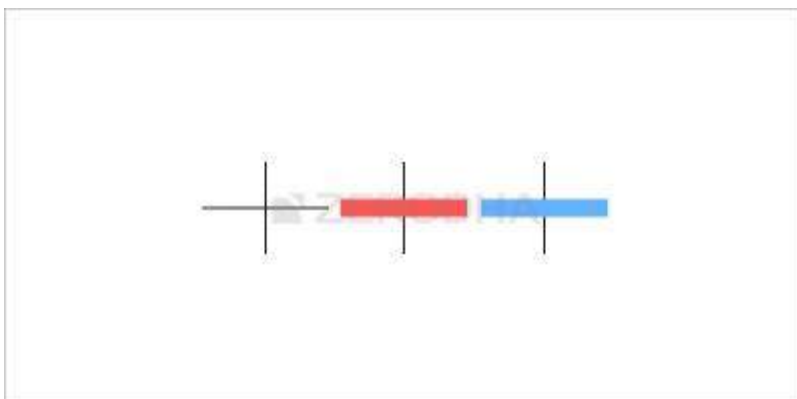


To sum up, the spinning top candle shows confusion and indecision in the market with an equal probability of reversal or continuation. Until the situation becomes clear the traders should be cautious and they should minimize their position size.



### 6.3 – The Dojis

The Doji's are very similar to the spinning tops, except that it does not have a real body at all. This means the open and close prices are equal. Doji's provide crucial information about the market sentiments and is an important candlestick pattern.



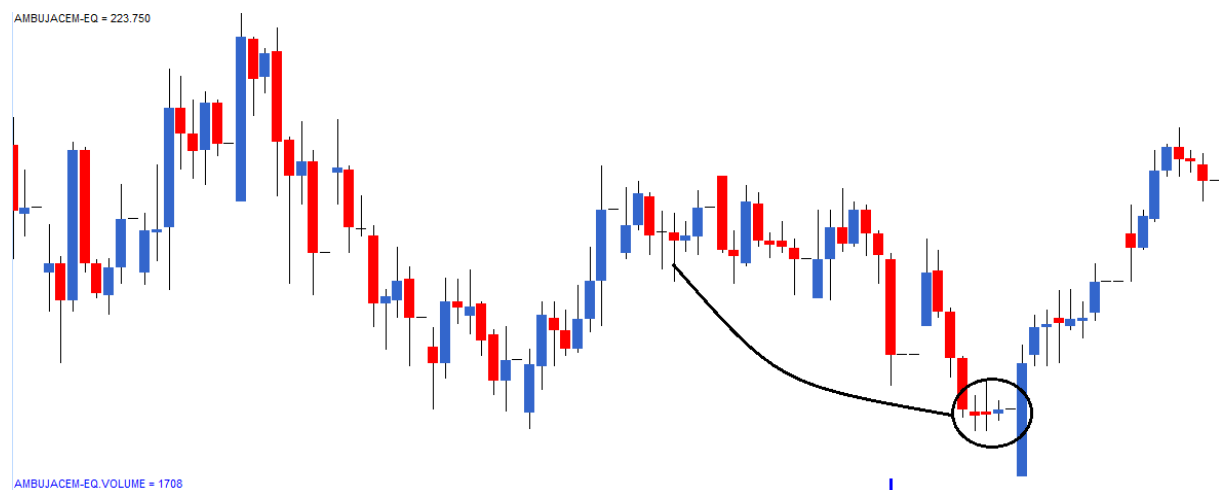
The classic definition of a doji suggests that the open price should be equal to the close price with virtually a non-existent real body. The upper and lower wicks can be of any length.

However, keeping in mind **the 2<sup>nd</sup> rule i.e 'be flexible, verify and quantify'** even if there is a wafer thin body, the candle can be considered as a doji.

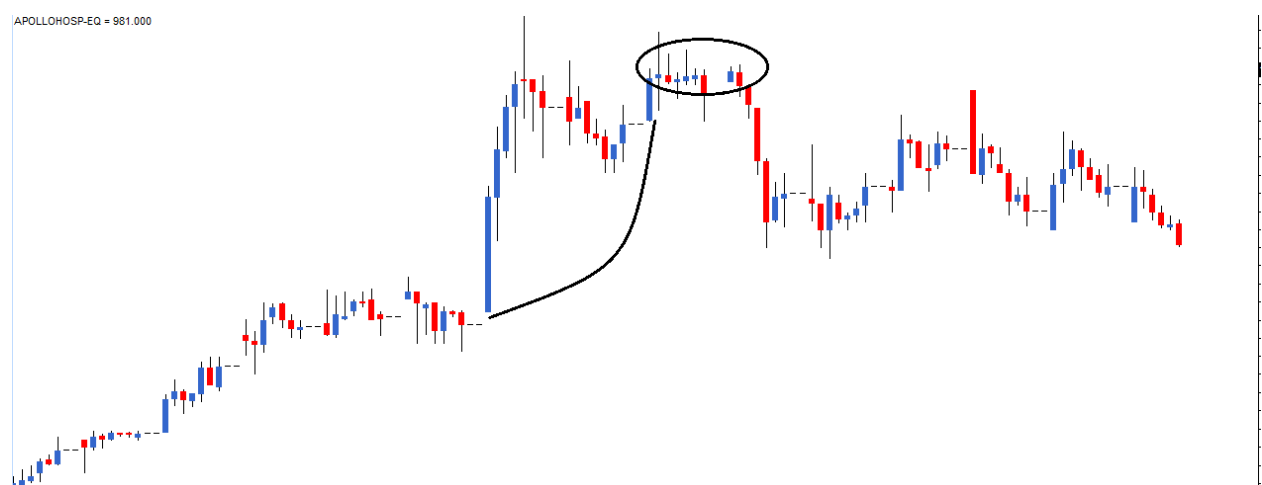
Obviously the color of the candle does not matter in case of a wafer thin real body. What matters is the fact that the open and close prices were very close to each other.

The Dojis have similar implications as the spinning top. **Whatever we learnt for spinning tops applies to Dojis as well.** In fact more often than not, **the dojis and spinning tops appear in a cluster indicating indecision in the market.**

Have a look at the chart below, where the dojis appear in a downtrend indicating indecision in the market before the next big move.



Here is another chart where the doji **appears after a healthy up trend after which the market reverses its direction and corrects.**



So the next time you see either a Spinning top or a Doji individually or in a cluster, remember there is indecision in the market. The market could swing either ways and you need to build a stance that adapts to the expected movement in the market.

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### Key takeaways from this chapter

1. A spinning top has a small real body. The upper and lower shadows are almost equal in length
2. The colour of the spinning top does not matter. What matters is the fact that the open and close prices are very close to each other
3. Spinning tops convey indecision in the market with both bulls and bears being in equal control
4. Spinning top at the top end of the rally indicates that either the bulls are taking a pause before they can resume the uptrend further or the bears are preparing to break the trend. In either case, the trader's stance has to be cautious. If the trader's intent is to buy, he is better off buying only half the quantity and he should wait for the markets to move in his direction
5. Spinning top at the bottom end of the rally indicates that either the bears are taking a pause before they can resume the down trend further or the bulls are preparing to break the trend and take the markets higher. Either case, the trader's stance has to be cautious. If the trader's intent is to buy, he is better off buying only half the quantity and he should wait for the markets to make the move
6. Doji's are very similar to spinning tops. Doji also convey indecision in the market. By definition dojis do not have a real body. However in reality, even if a wafer thin body appears it is acceptable
7. A trader's stance based on dojis is similar to stance taken when a spinning top occurs.

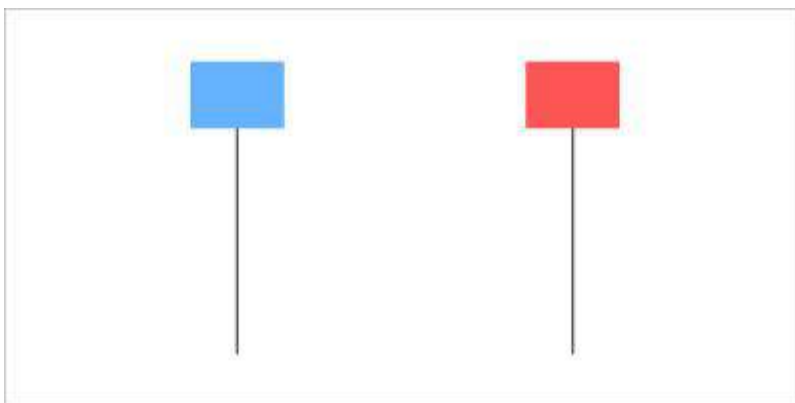


## Single Candlestick patterns (Part 3)



### 7.1 – Paper Umbrella

The paper umbrella is a single candlestick pattern which helps traders in setting up directional trades. The interpretation of the paper umbrella changes based on where it appears on the chart.



A paper umbrella consists of two trend reversal patterns namely the hanging man and the hammer. The hanging man pattern is bearish and the hammer pattern is relatively bullish. A paper umbrella is characterized by a long lower shadow with a small upper body.

If the paper umbrella appears at the bottom end of a downward rally, it is called the '**Hammer**'.

If the paper umbrella appears at the top end of an uptrend rally, it is called the '**Hanging man**'.

To qualify a candle as a paper umbrella, the length of the lower shadow should be at least twice the length of the real body. This is called the '**shadow to real body ratio**'.

Let us look at this example: Open = 100, High = 103, Low = 94, Close = 102 (bullish candle).

Here, the length of the real body is **Close - Open i.e  $102 - 100 = 2$**  and the length of the lower shadow is **Open - Low i.e  $100 - 94 = 6$** . As the length of the lower shadow is more than twice of the length of the real body; hence we can conclude that a paper umbrella has formed.

## 7.2 - The Hammer formation

The bullish hammer is a significant candlestick pattern that occurs at the bottom of the trend. A hammer consists of a small real body at the upper end of the trading range with a long lower shadow. The longer the lower shadow the more bullish the pattern.

The chart below shows the presence of two hammers formed at the bottom of a down trend.



Notice the blue hammer has a very tiny upper shadow, which is acceptable considering the "Be flexible - quantify and verify" rule.

A hammer can be of any color as it does not really matter as long as it qualifies 'the shadow to real body' ratio. However, it is slightly more comforting to see a blue colored real body.

**The prior trend for the hammer should be a down trend.** The prior trend is highlighted with the curved line. The thought process behind a hammer is as follows:

1. The market is in a down trend, where the bears are in absolute control of the markets
2. During a downtrend, every day the market would open lower compared to the previous day's close and again closes lower to form a new low
3. On the day the hammer pattern forms, the market as expected trades lower, and makes a new low
4. However at the low point, there is some amount of buying interest that emerges, which pushes the prices higher to the extent that the stock closes near the high point of the day
5. The price action on the hammer formation day indicates that the bulls attempted to break the prices from falling further, and were reasonably successful
6. This action by the bulls has the potential to change the sentiment in the stock, hence one should look at buying opportunities

The trade setup for the hammer is as follows:

1. A hammer formation suggests a long trade
2. The trader's entry time depends on the risk appetite of the trader. If the trader is a risk taker, he can buy the stock the same day. Remember, the color of the real body in hammer does not matter; hence there is no violation to the Rule 1. If the trader is risk averse, he can buy the stock the day after the pattern has formed only after ensuring that the day is a blue candle day
1. Risk takers can qualify the day as a hammer by checking the following condition at 3:20PM on the hammer day..
  1. Open and close should be almost the same (within 1-2% range)
  2. Lower shadow length should be at least twice the length of real body
  3. If both these conditions are met, then the pattern is a hammer and the risk taker can go long
2. The risk averse trader should evaluate the OHLC data on the 2<sup>nd</sup>. If it's a blue candle, the trade is valid and hence he can go long
3. The low of the hammer acts as the stoploss for the trade

The chart below shows the formation of a hammer where both the risk taker and the risk averse would have set up a profitable trade. This is a 15 minutes intraday chart of Cipla Ltd.

CIPLA-EQ = 451.800



The trade set up would be as follows:

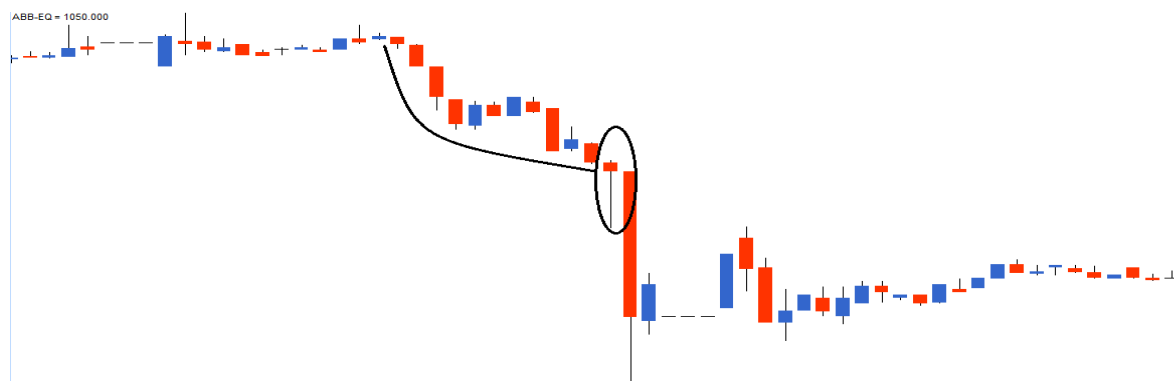
Buy Price for a risk taker – He takes the trade on the Hammer candle itself at – Rs.444/-

Buy price for a risk averse – He takes the trade on the next candle after evaluating that the candle is blue at – Rs. 445.4/-

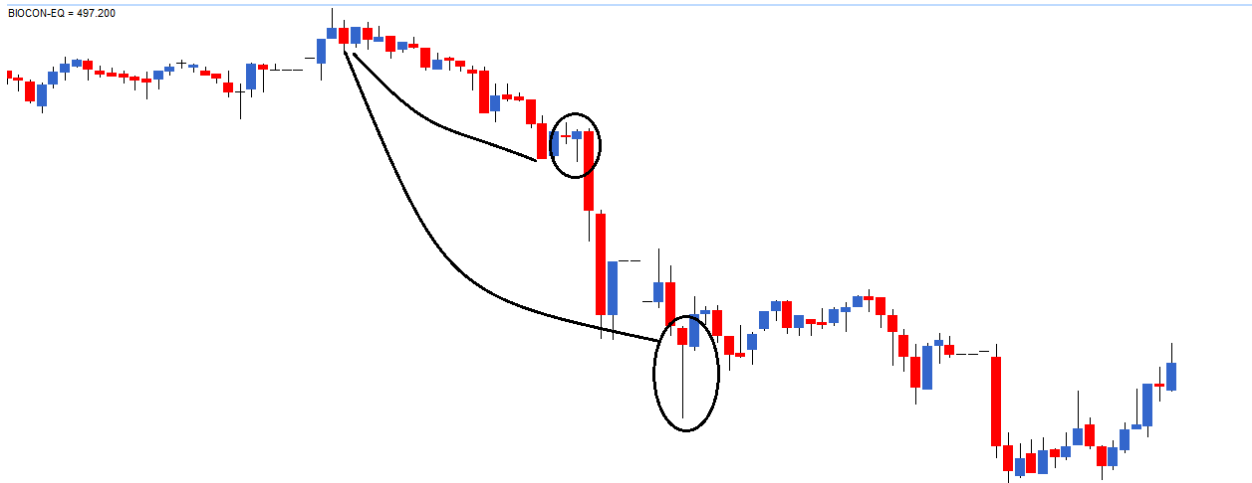
Stoploss for both the traders is at Rs.441.5/-, which is the low of the hammer formation.

Do notice how the trade has evolved, yielding a desirable intraday profit.

Here is another chart where the risk averse trader would have benefited by virtue of the 'Buy strength and Sell weakness' rule.



Here is another interesting chart with two hammer formation.



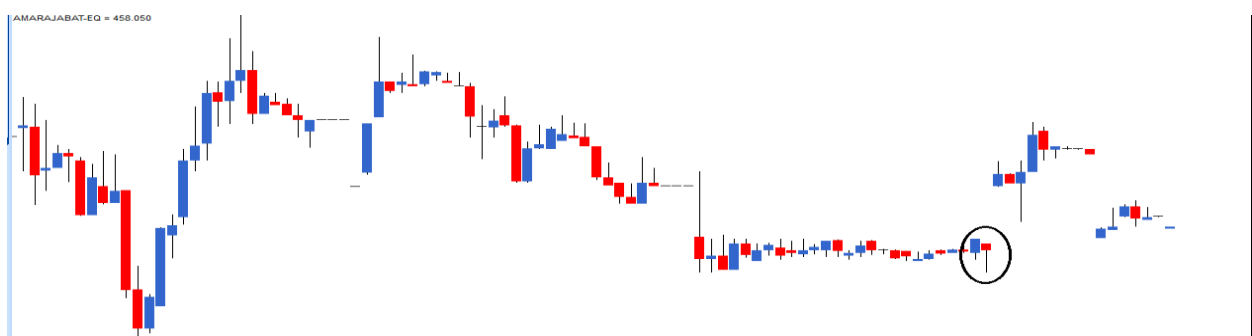
Both the hammers qualified on the pre conditions of a hammer i.e :

1. Prior trend to be a down trend
2. Shadow to real body ratio

On the first hammer, the risk averse trader would have saved himself from a loss making trade, thanks to Rule 1 of candlesticks. However, the second hammer would have enticed both the risk averse and risk taker to enter a trade. After initiating the trade, the stock did not move up, it stayed nearly flat and cracked down eventually.

Please note once you initiate the trade you stay in it until either the stop loss or the target is reached. You should not tweak the trade until one of these events occurs. The loss in this particular trade (first hammer) is inevitable. But remember this is a calculated risk and not a mere speculative risk.

Here is another chart where a perfect hammer appears, however it does not satisfy the prior trend condition and hence it is not defined pattern.



### 7.3 – The Hanging man

If a paper umbrella appears at the top end of a trend, it is called a Hanging man. The bearish hanging man is a single candlestick, and a top reversal pattern. A hanging man signals a market high. The hanging man is classified as a hanging man **only if is preceded by an uptrend**. Since the hanging man is seen after a high, the bearish hanging man pattern signals selling pressure.



A hanging man can be of any color and it does not really matter as long as it qualifies 'the shadow to real body' ratio. The prior trend for the hanging man **should be an uptrend**, as highlighted by the curved line in the chart above. The thought process behind a hanging man is as follows:

1. The market is in an uptrend, hence the bulls are in absolute control
  2. The market is characterized by new highs and higher lows
  3. The day the hanging man pattern appears, the bears have managed to make an entry
  4. This is emphasized by a long lower shadow of the hanging man
  5. The entry of bears signifies that they are trying to break the strong hold of the bulls
- Thus, the hanging man makes a case for shorting the stock. The trade set up would be as follows:

1. For the risk taker, a short trade can be initiated the same day around the closing price
2. For the risk averse, a short trade can be initiated at the close of the next day after ensuring that a red candle would appear
1. The method to validate the candle for the risk averse, and risk taker is exactly the same as explained in the case of a hammer pattern

Once the **short** has been initiated, the **high of the candle works as a stoploss** for the trade.



In the chart above, BPCL Limited has formed a hanging man at 593. The OHLC details are –

Open = 592, High = 593.75, Low = 587, Close = 593. Based on this, the trade set up would be as follows:

- The risk taker, initiates the short trade on the day the pattern appears (at 593)
- The risk averse, initiates the short trade on the next day at closing prices after ensuring it is a red candle day
- Both the risk taker and the risk averse would have initiated their respective trades
- The stoploss price for this trade would be the high price i.e above 593.75

The trade would have been profitable for both the risk types.

## 7.4 –My experience with a paper umbrella

While both the hammer and the hanging man are valid candlestick patterns, my dependence on a hammer is a little more as opposed to a hanging man. All else equal, if there were two trading opportunities in the market, one based on hammer and the other based on hanging man I would prefer to place my money on hammer. The reason to do so is simply based on my experience in trading with both the patterns.

My only concern with a hanging man is the fact that if the bears were indeed influential during the day, why did the price go up after making a low? This according to me re establishes the bull's supremacy in the market.

I would encourage you to develop your own thesis based on observations that you make in the markets. This will not only help you calibrate your trade more accurately but also help you develop structured market thinking.



## 7.5 – The shooting star



The shooting star is the last single candlestick pattern that we will learn about before we move to multiple candlestick patterns. **The price action on the shooting star is quite powerful**, thus making the shooting star a very popular candlestick pattern to trade.

The shooting star looks just like an inverted paper umbrella.



**Unlike a paper umbrella, the shooting star does not have a long lower shadow. Instead it has a long upper shadow where the length of the shadow is at least twice the length of the real body.** The colour of the body does not matter, but the pattern is slightly more reliable if the real body is red. **The longer the upper wick, the more bearish is the pattern.** The small real body is a common feature between the shooting star and the paper umbrella. Going by the text book definition, the shooting star should not have a lower shadow, however a small lower shadow, as seen in the chart above is considered alright. The shooting star is a bearish pattern; **hence the prior trend should be bullish.**

The thought process behind the shooting star is as follows:

- The stock is in an uptrend implying that the bulls are in absolute control. When bulls are in control, the stock or the market tends to make a new high and higher low
- On the day the shooting star pattern forms, the market as expected trades higher, and in the process makes a new high



- However at the high point of the day, there is a selling pressure to an extent where the stock price recedes to close near the low point of the day, thus forming a shooting star
- The selling indicates that the bears have made an entry, and they were actually quite successful in pushing the prices down. This is evident by the long upper shadow
- The expectation is that the bears will continue selling over the next few trading sessions, hence the traders should look for shorting opportunities

Take a look at this chart where a shooting star has been formed right at the top of an uptrend.



The OHLC data on the shooting star is; open = 1426, high = 1453, low = 1410, close = 1417. The short trade set up on this would be:

1. The risk taker will initiate the trade at 1417, basically on the same day the shooting star forms
1. The risk taker initiates the trade the same day after ensuring that the day has formed a shooting star. To confirm this the trader has to validate:
  1. If the current market price is more or less equal to the low price
  2. The length of the upper shadow is at least twice the length of the real body
2. The risk averse will initiate the trade on the next day, only after ensuring that the 2<sup>nd</sup> day a red candle has formed
2. Once the trade has been initiated, the stoploss is to be placed at the high of the pattern. In the case the stop loss is at 1453

As we have discussed this before, once a trade has been set up, we should wait for either the stoploss or the target to be triggered. It is advisable not to do anything else, except for maybe trailing your stoploss. Of course, we still haven't discussed about trailing stoploss yet. We will discuss it at later stage.

Here is a chart where both the risk taker and the risk averse would have made a remarkable profit on a trade based on shooting star.



Here is an example, where both the risk averse and the risk taker would have initiated the trade based on a shooting star. **However the stoploss has been breached.** Do remember, when the stop loss triggers, the trader will have to exit the trade, as the trade no longer stands valid. More often than not exiting the trade is the best thing to do when the stoploss triggers.



Key takeaways from this chapter

1. A paper umbrella has a long lower shadow and a small real body. The lower shadow and the real body should maintain the 'shadow to real body' ratio. In case of the paper umbrella the lower shadow should be at least twice the length of the real body

2. Since the open and close prices are close to each other, the color of the paper umbrella should not matter
3. If a paper umbrella appears at the bottom of a down trend, it is called the 'hammer'
4. If the paper umbrella appears at the top end of an uptrend, it is called the hanging man
5. The hammer is a bullish pattern and one should look at buying opportunities when it appears
6. The low of the hammer acts as the stop loss price trade
7. The hanging man is a bearish pattern which appears at the top end of the trend, one should look at selling opportunities when it appears
8. The high of the hanging man acts as the stop loss price for the trade
9. The shooting star is a bearish pattern which appears at the top end of the trend. One should look at shorting opportunities when a shooting star appears
10. The high of the shooting star will be the stop loss price for the trade.

## Multiple candlestick patterns (Part 1)



### 8.1 – The Engulfing Pattern

In a single candlestick pattern, the trader needed just one candlestick to identify a trading opportunity. However when analyzing multiple candlestick patterns, the trader needs 2 or sometimes 3 candlesticks to identify a trading opportunity. This means the trading opportunity evolves over a minimum of 2 trading sessions.

The engulfing pattern is the first multiple candlestick pattern that we need to look into. The engulfing pattern needs 2 trading sessions to evolve. In a typical engulfing pattern, you will find a small candle on day 1 and a relatively long candle on day 2 which appears as if it engulfs the candle on day 1. If the engulfing pattern appears at the bottom of the trend, it is called the “Bullish Engulfing” pattern. If the engulfing pattern appears at the top end of the trend, it is called the “Bearish Engulfing” pattern.

### 8.2 – The Bullish Engulfing Pattern

The bullish engulfing pattern is a two candlestick pattern which appears at the bottom of the down trend. As the name suggests, this is a bullish pattern which prompts the trader to go long. The two day bullish engulfing pattern is encircled in the chart below. The prerequisites for the pattern are as follows:

1. The prior trend should be a downtrend
2. The first day of the pattern (P1) should be a red candle reconfirming the bearishness in the market
3. The candle on the 2<sup>nd</sup> day of pattern (P2) should be a blue candle, long enough to engulf the red candle

BIOCON-EQ = 501.800



The thought process behind the bullish engulfing pattern is as follows:

1. The market is in down trend with prices steadily moving down
2. On the first day of the pattern (P1), the market opens low and makes a new low. This forms a red candle in the process
3. On the second day of the pattern (P2), the stock opens near the closing prices of P1, and attempts to make a new low. However, at this low point of the day there is a sudden buying interest, which drives the prices to close higher than the previous day's open. This price action forms a blue candle
4. The price action on P2 also suggests that bulls made a very sudden and strong attempt to break the bearish trend and they did so quite successfully. This is evident by the long blue candle on P2
5. The bears would not have expected the bull's sudden action on P2 and hence the bull's action kind of rattles the bears causing them some amount of nervousness
6. The bullishness is expected to continue over the next few successive trading sessions, driving the prices higher and hence the trader should look for buying opportunities

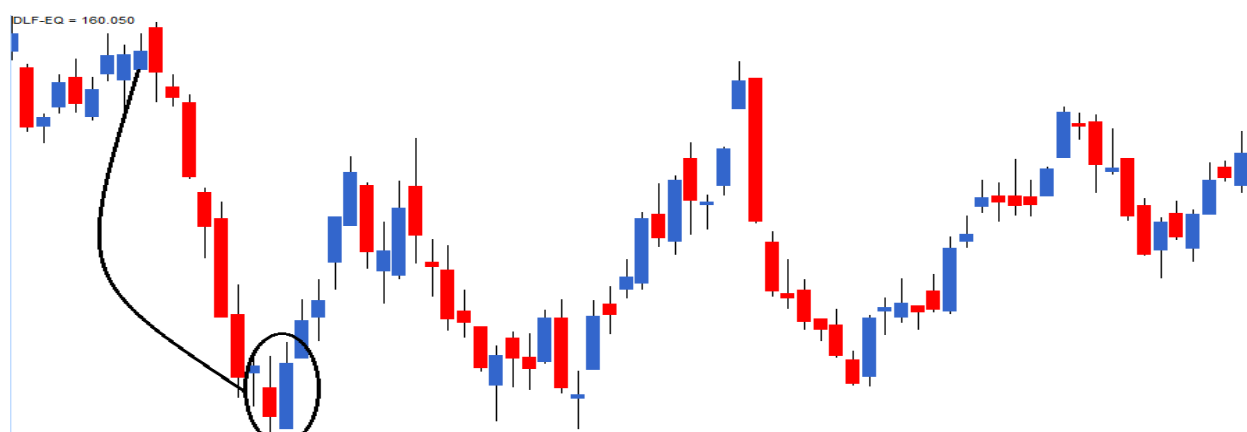
The trade set up for the bullish engulfing pattern is as follows:

1. The bullish engulfing pattern evolves over two days
2. The suggested buy price is around the close price of blue candle i.e on P2
  - Risk taker initiates the trade on P2 itself after ensuring P2 is engulfing P1
  - The risk averse initiates the trade on the next day i.e the day after P2 around the closing price, after confirming the day is forming a blue candle

- If the day after P2 is a red candle day, the risk averse trader will ignore the trade, owing to rule 1 of candlesticks (Buy strength and Sell weakness)
- On a personal note, in multiple candlestick patterns where the trade evolves over 2 or more days it is worth to be a risk taker as opposed to a risk averse trader
- 3. The stop loss for the trade would be at the lowest low between P1, and P2

Needless to say, once the trade has been initiated you will have to wait until the target has been hit or the stoploss has been breached. Of course, one can always trail the stop loss to lock in profits.

Have a look at DLF's chart below; the bullish engulfing pattern is encircled.



The OHLC on **P1** – Open = 163, High = 168, Low = 158.5, Close = 160. On **P2** the OHLC details are – Open = 159.5, High = 170.2, Low = 159, Close = 169.

The trade set up for the bullish engulfing pattern is as follows:

1. The risk taker would go long on P2 at 169. He can do this by validating P2 as an engulfing pattern. To validate P2 as an engulfing patterns there are 2 conditions:
  - One, the current market price at 3:20PM on P2 should be higher than P1's open.
  - Second, the open on P2 should be equal to or lower than P1's close
2. The risk averse will initiate the trade, the day after P2 only after ensuring that the day is a blue candle day. So if the P1 falls on a Monday, the risk averse would be initiating the trade on Wednesday, around 3:20 PM. However, as I had mentioned earlier, while trading based on multiple candlestick pattern, it may be worth initiating the trade on pattern completion day itself i.e P2
3. The stop loss on this trade will be the lowest low between P1 and P2. In this example, lowest low falls on P1 at 158.5

In this example, both the risk averse and the risk taker would have been profitable.

Here is an example of a perfect bullish engulfing pattern formed on Cipla Ltd, the risk averse trader would have completely missed out a great trading opportunity.



There is often a lot of confusion on whether the candle should engulf just the real body or the whole candle, including the lower and upper shadows. In my personal experience, as long as the real bodies are engulfed, I would be happy to classify the candle as a bullish engulfing pattern. Of course, candlestick sticklers would object to this but what really matters is how well you hone your skills in trading with a particular candlestick pattern.

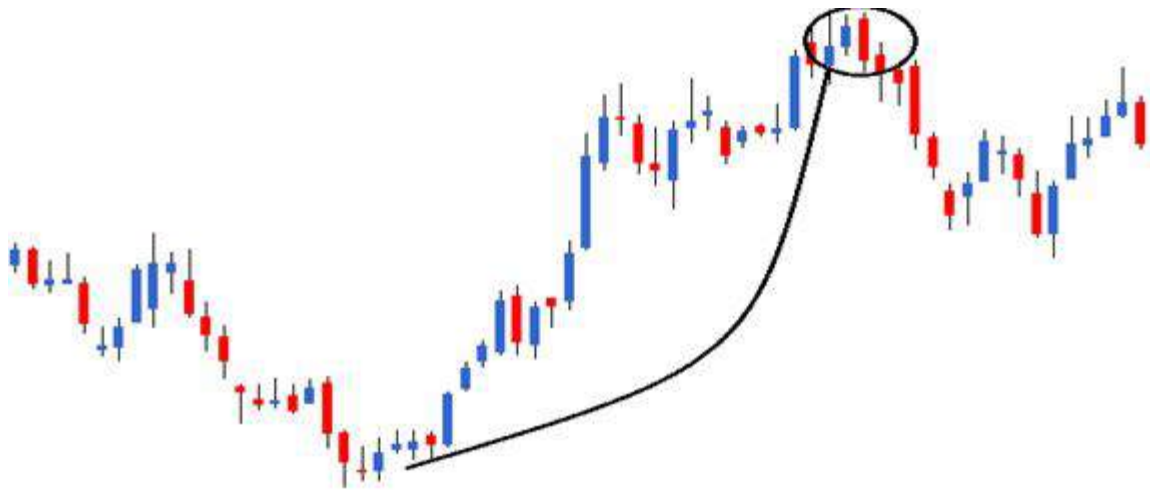
So going by that thought, I'd be happy to classify the following pattern as a bullish engulfing pattern, even though the shadows are not engulfed.



### 8.3 – The bearish engulfing pattern

The bearish engulfing pattern is a two candlestick pattern which appears at the top end of the trend, thus making it a bearish pattern. The thought process remains very similar to the bullish engulfing pattern, except one has to think about it from a shorting perspective.

Take a look at the chart below, the two candles that make up the bearish engulfing pattern is encircled. You will notice:



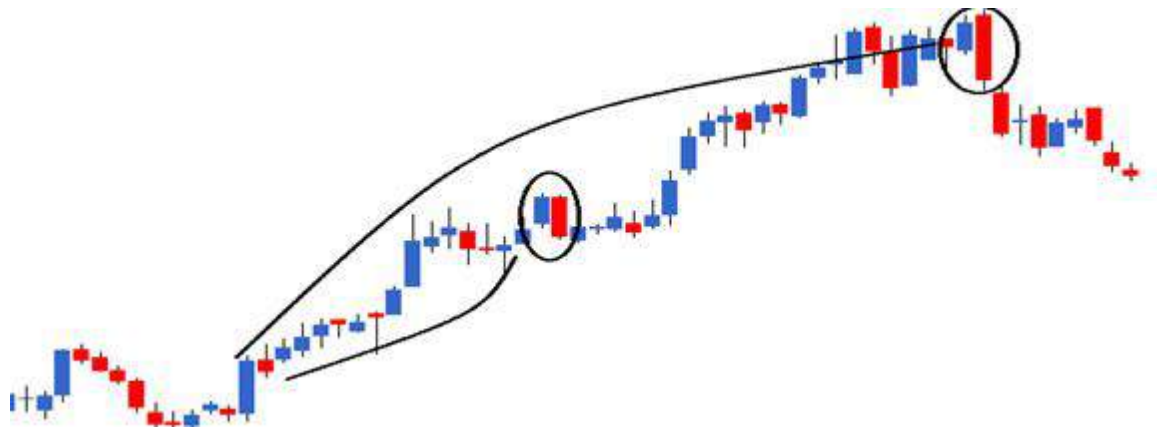
1. To begin with the bulls are in absolute control pushing the prices higher
2. On P1, as expected the market moves up and makes **a new high**, reconfirming a **bullish trend in the market**
3. On P2, as expected the market opens higher and attempts to make a new high. However at this high point selling pressure starts. **This selling comes unexpected and hence tends to displace the bulls**
4. The sellers push the prices lower, so much so that the stock closes below the previous day's (P1) open. This creates nervousness amongst the bulls
5. The strong sell on P2 indicates that the bears may have successfully broken down the bull's stronghold and the market may continue to witness selling pressure over the next few days
6. The idea is to short the index or the stock in order to capitalize on the expected downward slide in prices

The trade set up would be as follows:

1. The bearish engulfing pattern suggests a **short trade**
2. The risk taker initiates the trade on the same day after validating two conditions
  - The open on P2 is higher than P1's close
  - The current market price at 3:20 PM on P2 is lower than P1's open price. If the two conditions are satisfied, then it would be logical to conclude that it is a bearish engulfing pattern
3. The risk averse will initiate the trade on the day after P2 only after ensuring that the day is a red candle day
4. Since the bearish engulfing pattern is a 2 day pattern, **it makes sense to be a risk taker**. However this purely depends on the individual's risk appetite



Take a look at the chart below of Ambuja Cements. There are two bearish engulfing patterns formed. The first pattern on the chart (encircled, starting from left) did not work in favor of a risk taker. However the risk averse would have completely avoided taking the trade. The second bearish engulfing pattern would have been profitable for both the risk taker and the risk averse.



The OHLC data for the bearing engulfing pattern (encircled at the top end of the chart) is as below:

P1: Open – 214, High – 220, Low – 213.3, Close – 218.75

P2: Open – 220, High – 221, Low – 207.3, Close – 209.4

The trade setup for the short trade, based on the bearish engulfing pattern is as follows:

1. On P2 by 3:20 PM the risk taker would initiate the short trade at 209 after ensuring P1, and P2 together form a bearish engulfing pattern
2. The risk averse will initiate the trade, the day after P2 only after ensuring that the day is a red candle day
3. The stoploss in both the cases will be the highest high of P1 and P2, which in this case is at 221.

Both the risk averse and the risk taker would have been profitable in this particular case.

#### 8.4 – The presence of a doji

Now here is a very interesting chart. From my own personal experience I can tell you, charts like the one shown below are highly profitable. One should not miss such trading opportunities

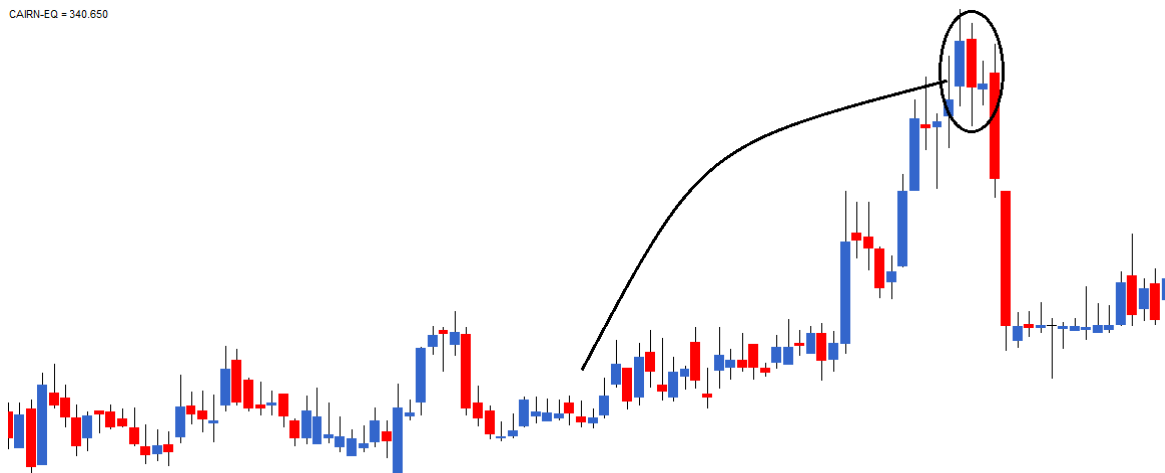
Take a look at the chart, what are the things that catch your attention?

1. An obvious uptrend as highlighted

2. A bearish engulfing pattern right at the top end of the upward rally
3. A doji formation on the day following P2

What implication would a doji have in this chart?

CAIRN-EQ = 340.650



Let us inspect this chart event by event:

1. A prolonged uptrend in the chart confirms the bulls are in absolute control
2. On P1 a blue candle is formed, reconfirming the bull's dominance in the markets
3. On P2 markets open higher and make a new high comforting the bulls. However at the high point a strong surge to sell builds up, to an extent that the prices closes below P1's opening prices
4. This trading action on P2 sets in a bit of panic to bulls, but they are not shaken yet
5. On day 3, let us call it as P3, though the opening is weak it is not much lower compared to P2's close. This is not too comforting for the bulls, as they expect the markets to be stronger.
6. During P3 the market attempts to move higher (Doji's upper shadow) however the high is not sustained. Even the low is not sustained and eventually the day closes flat forming a Doji. As you may recall, Dojis indicate indecision in the market
7. On P2 bulls panicked and on P3 bulls were uncertain
8. Panic with uncertainty is the perfect recipe for a catastrophe. Which explains the long red candle following the Doji

From my own personal trading experience I can tell you that whenever a doji follows a recognizable candlestick pattern, the opportunity created is bigger. Besides illustrating this point, I also want to draw your attention to chart analysis methodology. Notice in this particular chart, we did not just look at what was happening on P1 or P2 but we went beyond that and actually combined two different patterns to develop a comprehensive view on the market.

## 8.5 – The Piercing Pattern

The piercing pattern is very similar to the bullish engulfing pattern with a very minor variation. In a bullish engulfing pattern the P2's blue candle engulfs P1's red candle completely. However in a piercing pattern P2's blue candle partially engulfs P1's red candle, however the engulfing should be between 50% and less than 100%. You can validate this visually or calculate the same. For example if P1's range (Open – Close) is 12, P2's range should be at least 6 or higher but below 12.



As long as this condition is satisfied, everything else is similar to the bullish engulfing including the trade set up. Here a risk taker would initiate the trade on P2 around the close. The risk averse would initiate the trade, the day after P2 only after ensuring a blue candle is formed. The stoploss would be the low of the pattern.

Have a look at the following chart:

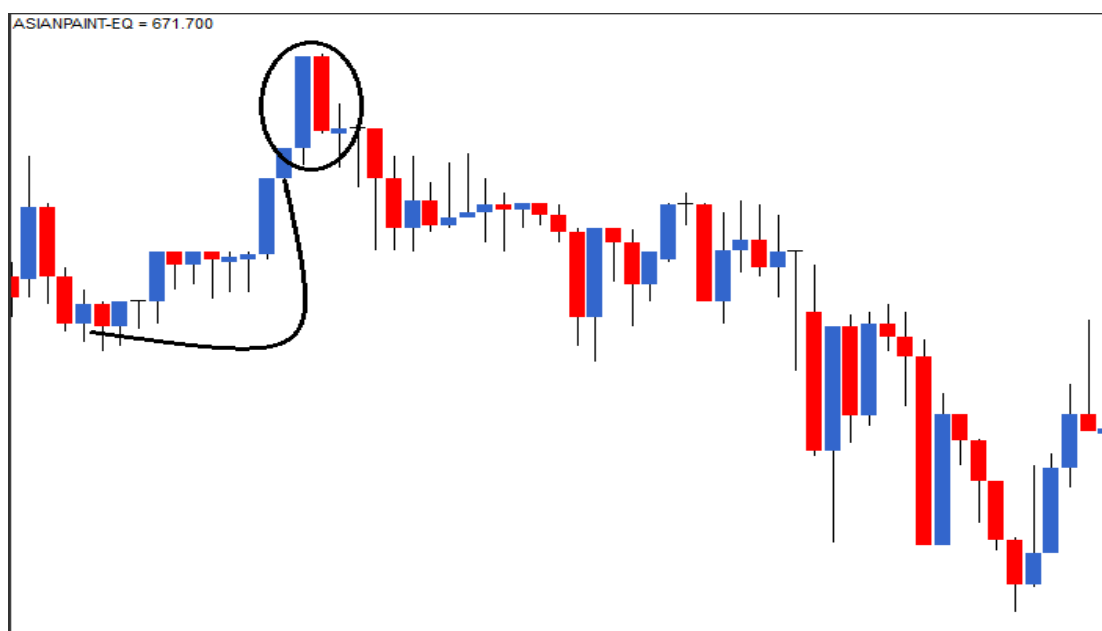


Here P2's blue candle engulfs just under 50% of P1's red candle. For this reason we do not consider this as a piercing pattern.



## 8.6 – The Dark Cloud Cover

The dark cloud cover is very similar to the bearish engulfing pattern with a minor variation. In a bearish engulfing pattern the red candle on P2 engulfs P1's blue candle completely. However in a dark cloud cover, the red candle on P2 engulfs about 50 to 100% of P1's blue candle. The trade set up is exactly the same as the bearish engulfing pattern. Think about the dark cloud cover as the inverse of a piercing pattern.



## 8.7 – A perspective on selecting a trade

Typically stocks in the same sector have similar price movement. For example, think about TCS and Infosys or ICICI Bank and HDFC bank. Their price movement is similar because these companies are more or less of the same size, have similar business, and the same external factors that affect their business. However this does not mean their stock price movement would match point to point. For example if there is negative news in the banking sector, banking stocks are bound to fall. In such a scenario if the stock price of ICICI Bank falls by 2%, it is not really necessary that

HDFC Bank's stock price should also fall exactly 2%. Probably HDFC Bank stock price may fall by 1.5% or 2.5%. Hence the two stocks may form 2 different (but somewhat similar) candlestick patterns such as a bearish engulfing and dark cloud cover at the same time.

Both these are recognisable candlestick patterns but if I were to choose between the two patterns to set up a trade, I would put my money on the bearish engulfing pattern as opposed to a dark cloud cover. This is because the bearishness in a bearish engulfing pattern is more pronounced (due to the fact that it engulfs the previous day's entire candle). On the same lines I would choose a bullish engulfing pattern over a piercing pattern.

However there is an exception to this selection criterion. Later in this module I will introduce a 6 point trading checklist. A trade should satisfy at least 3 to 4 points on this checklist for it to be considered as a qualified trade. Keeping this point in perspective, assume there is a situation where the ICICI Bank stock forms a piercing pattern and the HDFC Bank stock forms a bullish engulfing pattern. Naturally one would be tempted to trade the bullish engulfing pattern, however if the HDFC Bank stock satisfies 3 checklist points, and ICICI Bank stock satisfies 4 checklist points, I would go ahead with the ICICI Bank stock even though it forms a less convincing candlestick pattern.

On the other hand, if both the stocks satisfy 4 checklist points I will go ahead with the HDFC Bank trade.

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### Key takeaways from this chapter

1. Multiple candlestick patterns evolve over two or more trading days
2. The bullish engulfing pattern evolves over two trading days. It appears at the bottom end of downtrend. Day one is called P1 and day 2 is called P2
3. In a bullish engulfing pattern, P1 is a red candle, and P2 is a blue candle. P2's blue candle completely engulfs P1's red candle
4. A risk taker initiates a long trade at the close of P2 after ensuring P1 and P2 together form a bullish engulfing pattern. A risk averse trader will initiate the trade the day after P2, near the close of the day
5. The stoploss for the bullish engulfing pattern is the lowest low between P1 and P2
6. The bearish engulfing pattern appears at the top end of an uptrend. P1's blue candle is completely engulfed by P2's red candle
7. A risk taker initiates a short trade at the close of P2 after ensuring P1 and P2 together form a bearish engulfing pattern. The risk averse trader will initiate the trade the day after P2, after confirming the day forms a red candle

8. The highest high of P1 and P2 forms the stoploss for a bearish engulfing pattern
9. The presence of a doji after an engulfing pattern tends to catalyze the pattern's evolution.
10. The piercing pattern works very similar to bullish engulfing pattern, except that P2's blue candle engulfs at least 50% and below 100% of P1's red candle
11. The dark cloud cover works similar to the bearish engulfing pattern, except that P2's red candle engulfs at least 50% and below 100% of P1's blue candle.

## Multiple Candlestick Patterns (Part 2)



### 9.1 – The Harami Pattern

Before you get thinking, the word 'Harami' does not stand for the word harami used in Hindi . Apparently it is old Japanese word for 'pregnant'. You'd appreciate the intuitiveness of this word, when you see the candlestick formation.

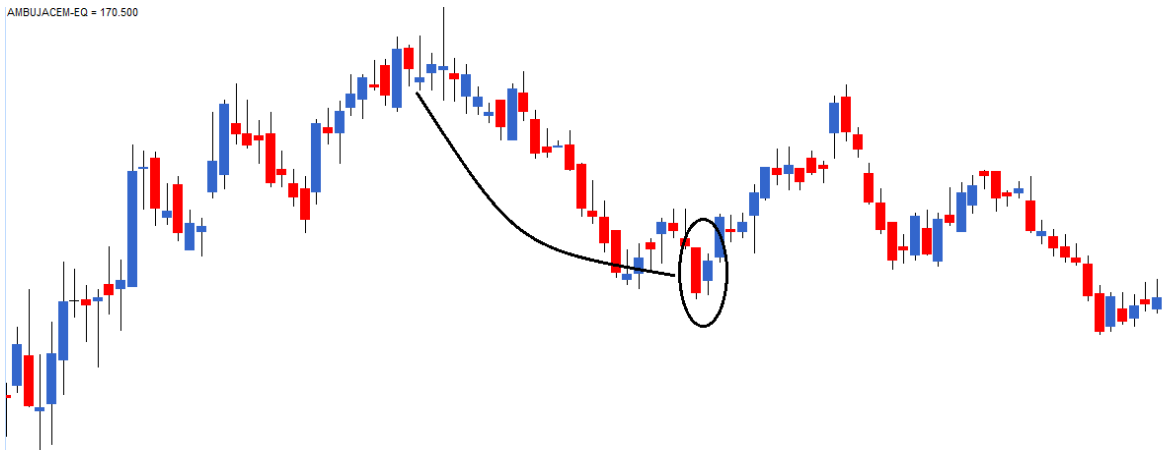
Harami is a two candle pattern. The first candle is usually long and the second candle has a small body. The second candle is generally opposite in colour to the first candle. On the appearance of the harami pattern a trend reversal is possible. There are two types of harami patterns – the bullish harami and the bearish harami.

### 9.2 – The Bullish Harami



As the name suggests, the bullish harami is a bullish pattern appearing at the bottom end of the chart. The bullish harami pattern evolves over a two day period, similar to the engulfing pattern.

In the chart below, the bullish harami pattern is encircled.



The thought process behind a bullish harami pattern is as follows:

1. The market is in a downtrend pushing the prices lower, therefore giving the bears absolute control over the markets
2. On day 1 of the pattern (P1) a red candle with a new low is formed, reinforcing the bear's position in the market
3. On day 2 of the pattern (P2) the market opens **at a price higher than the previous day's close**. On seeing a high opening price the bears panic, as they would have otherwise expected a lower opening price
4. The market gains strength on P2 and manages to **close on a positive note, thus forming a blue candle**. However **P2's closing price is just below the previous days (P1) open price**
5. The price action on P2 creates a small blue candle which appears contained (pregnant) within P1's long red candle
6. The small blue candle on a standalone basis looks harmless, but what really causes the panic is the fact that the bullish candle appears all of a sudden, when it is least expected
7. The blue candle not only encourages the bulls to build long positions, but also unnerves the bears
8. **The expectation is that panic amongst the bears will spread in an accelerated manner, giving a greater push to bulls**. This tends to push the prices higher. Hence one should look at going long on the stock.

The trade setup for the bullish harami is as follows:

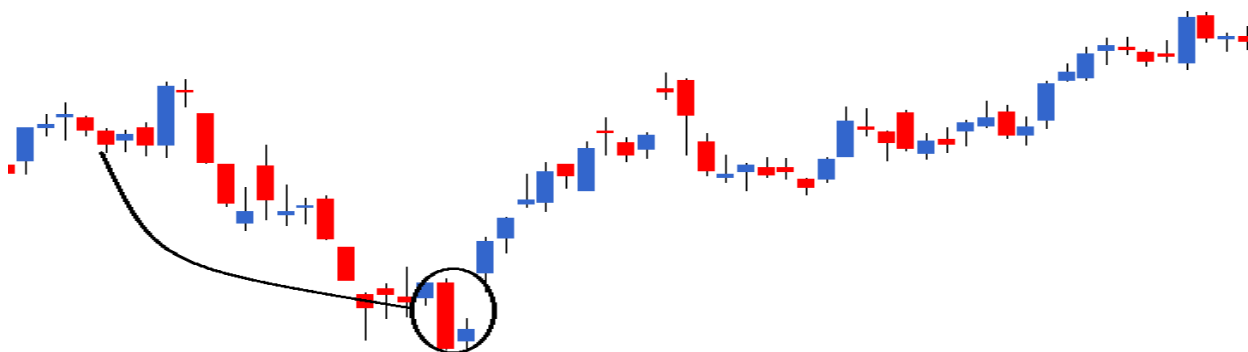
1. The idea is **to go long on the bullish harami** formation
2. Risk takers can initiate a **long trade around the close of the P2 candle**
3. Risk takers can validate the following conditions to confirm if P1, and P2 together form a bullish harami pattern:
  1. The opening on P2 should be higher than the close of P1
  2. The current market price at 3:20 PM on P2 should be less than P1's opening price



3. If both these conditions are satisfied then one can conclude that both P1 and P2 together form a bullish harami pattern
4. The risk averse can initiate a long trade at the close of the day after P2, only after confirming that the day is forming a blue candle
5. The lowest low of the pattern will be the stoploss for the trade

Here is a chart of Axis Bank; the bullish harami is encircled below:

AXISBANK-EQ = 1293.250



The OHLC details for the pattern are as follows:

P1 – Open = 868, High = 874, Low = 810, Close = 815

P2 – Open = 824, High = 847, Low = 818, Close = 835

The risk taker would initiate the long position at the close of P2 which is around 835. The **stop loss for** the trade would be lowest **low price between P1 and P2**; which in this case it is 810.

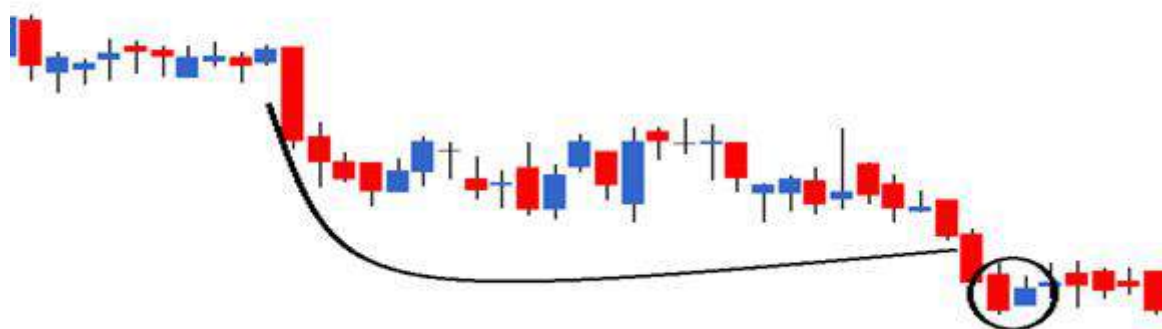
The risk averse will initiate the trade the day near the close of the day after P2, provided it is a blue candle day, which in this case is.

Once the trade has been initiated, the trader will have to wait for either the target to be hit or the stop loss to be triggered.

Here is a chart below where the encircled candles depict a bullish harami pattern, but it is not. The prior trend should be bearish, but in this case the prior trend is almost flat which prevents us from classifying this candlestick pattern as a bullish harami.

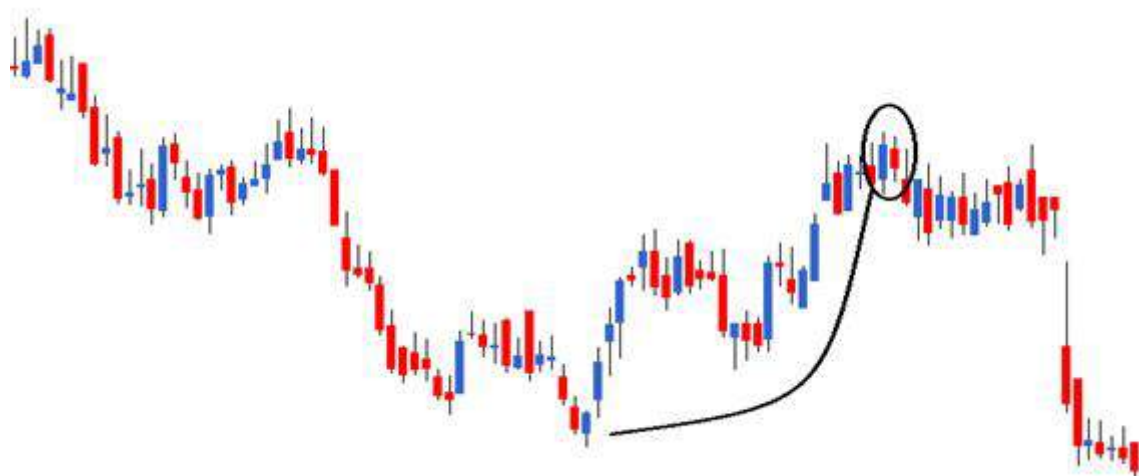


And here is another example where a bullish harami occurred but the stoploss on the trade triggered leading to a loss.



### 9.3 – The bearish harami

The bearish harami pattern appears at the **top end of an uptrend** which gives the trader a opportunity to initiate a short trade.



The thought process behind shorting a bearish harami is as follows:

1. The market is in an uptrend, placing the bulls in absolute control
2. On P1, the market trades higher, and makes a new high and closes positively forming a blue candle day. The trading action reconfirms the bulls dominance in the market
3. On P2 the market unexpectedly opens lower which displaces the bulls ,and sets in a bit of panic to bulls
4. The market continues to trade lower to an extent where it manages to close negatively forming a red candle day
5. The unexpected negative drift in the market causes panic making the bulls to unwind their positions
6. The expectation is that this negative drift is likely to continue and therefore one should look at setting up a short trade.

The trade setup for the short trade based on bearish harami is as follows:

1. The risk taker will short the market near the close of P2 after ensuring P1 and P2 together forms a bearish harami. To validate this, two conditions must be satisfied:
  1. The open price on P2 should be lower than the close price of P1
  2. The close price on P2 should be greater than the open price of P1
2. The risk averse will short the market the day after P2 after ensuring it forms a red candle day
3. The highest high between P1 and P2 acts as the stoploss for the trade.

Here is a chart of IDFC Limited where the bearish engulfing pattern is identified. The OHLC details are as follows:

P1 – Open = 124, High = 129, Low = 122, Close = 127

P2 – Open = 126.9, High = 129.70, Low, = 125, Close = 124.80



The risk taker will initiate the trade on day 2, near the closing price of 125. The risk averse will initiate the trade on the day after P2, only after ensuring it forms a red

candle day. In the above example, the risk averse would have avoided the trade completely.

The stop loss for the trade would be the highest high between P1 and P2. In this case it would be 129.70.

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### **Key takeaways from this chapter**

1. The harami pattern evolves over 2 trading sessions – P1 and P2.
2. Day 1 (P1) of the pattern forms a long candle and day 2(P2) of the pattern forms a small candle which appears as if it has been tucked inside the P1's long candle
3. A bullish harami candle pattern is formed at the lower end of a down trend. P1 is a long red candle, and P2 is a small blue candle. The idea is to initiate a long trade near the close of P2 (risk taker). A risk averse trader will initiate the long trade near the close of the day after P2 only after ensuring it forms a blue candle day
4. The stop loss on a bullish harami pattern is the lowest low price between P1 and P2
5. The bearish harami pattern is formed at the top end of an uptrend. P1 is a long blue candle, and P2 is a small red candle. The idea is to initiate a short trade near the close of P2 (risk taker). The risk averse will initiate the short near the close of the day only after ensuring it is a red candle day
6. The stop loss on a bearish harami pattern is the highest high price between P1 and P2.

## 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.



## 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 4<sup>th</sup> 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:
  1. P1 should be a red candle
  2. With a gap down opening, P2 should be either a doji or a spinning top
  3. 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 2<sup>nd</sup> 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 3<sup>rd</sup> day of the pattern (P3), the market opens gap down and progresses into a red candle. The long red candle indicates that the sellers 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:
  1. P1 should be a blue candle
  2. P2 should be a doji or a spinning top with a gap up opening
  3. 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.

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### **Key takeaways from this chapter**

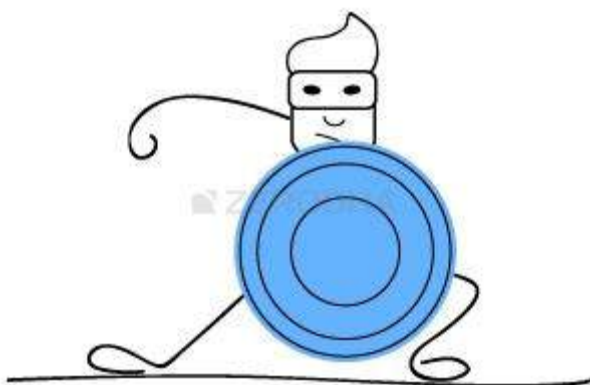
1. Star formation occurs over three trading sessions. The candle of P2 is usually a doji or a spinning top
2. If there is a doji on P2 in a star pattern, it is called a doji star (morning doji star, evening doji star) else it is just called the star pattern (morning star, evening star)
3. Morning star 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.

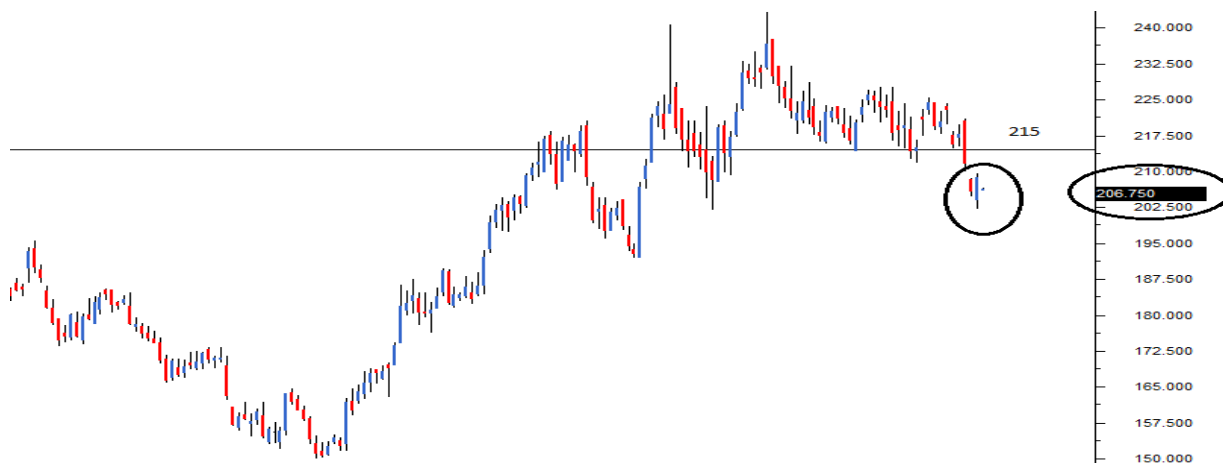


## 11.1 – The Resistance

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 likely hood 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 tool 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 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

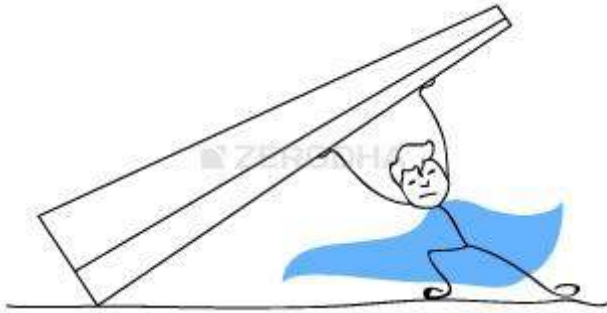
Hence for reasons stated above, when a trader is long he can look at resistance points to set targets and to set exit points for the trade.

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.

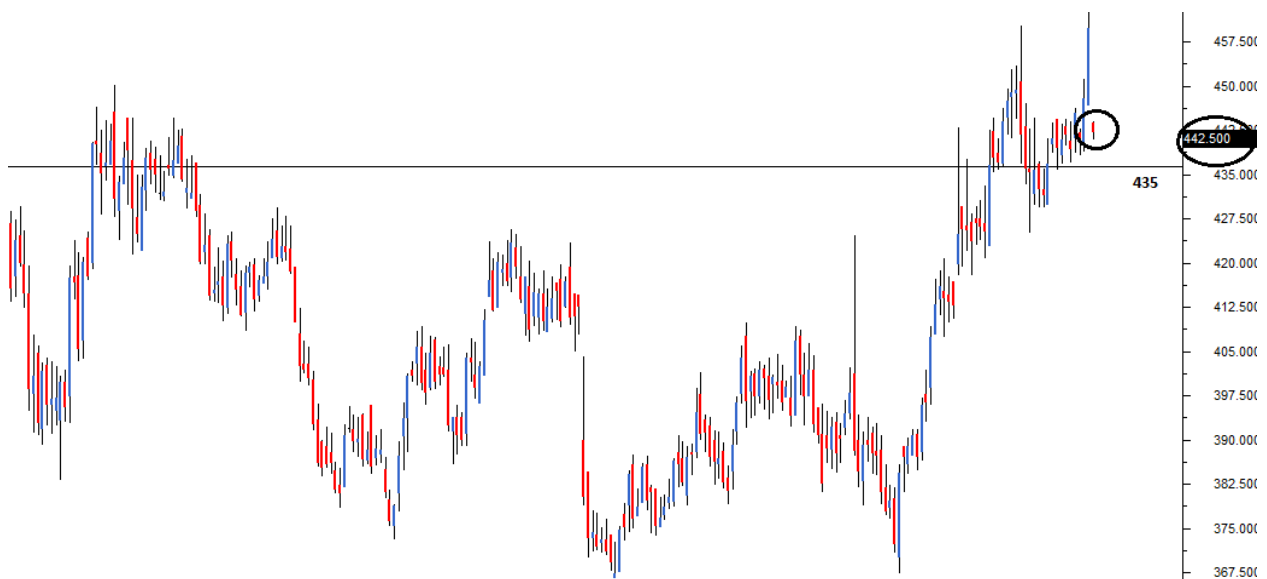


## 11.2 – The Support

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.

1. **Long term S&R – is useful for swing trading**
2. **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:**

1. Hesitated to move up further after a brief up move
2. Hesitated to move down further after a brief down move
3. 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 1<sup>st</sup> price action zone is identified on 2<sup>nd</sup> week on May, then it will be meaningful to identify the 2<sup>nd</sup> price action zone at any point after 4<sup>th</sup> 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:

1. The 1st circle highlights a price action zone where there is a sharp reversal of price
2. The 2nd circle highlights a price action zone where price is sticky

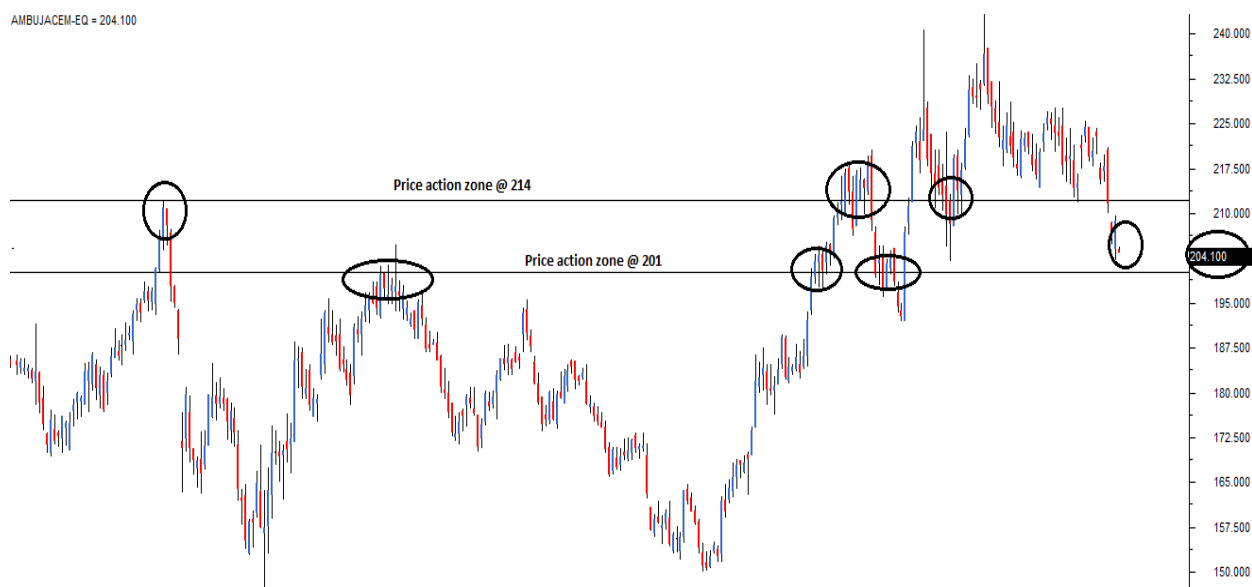
3. The 3<sup>rd</sup> circle highlights a price action zone where there is a sharp reversal of price
4. The 4<sup>th</sup> circle highlights a price action zone where price is sticky
5. The 5<sup>th</sup> circle highlights the current market price of Cipla – 442.5

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.

## 11.4 – 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
1. 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**
1. For a long trade, the low of the pattern should be around the support
2. 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.

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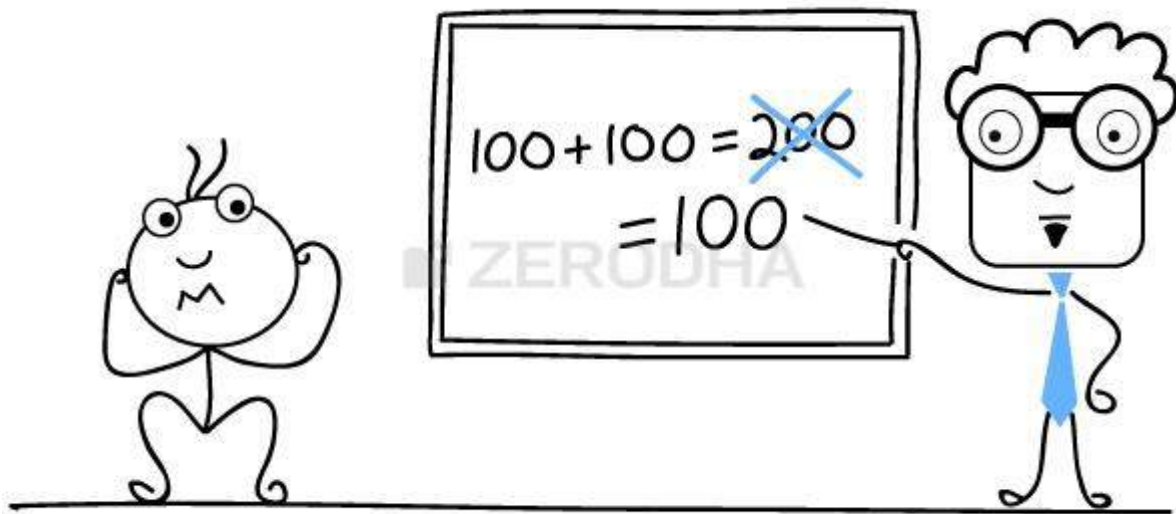
### **Key takeaways from this chapter**

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 should help you understand how volumes add up on a typical trading day:

Sl No	Time	Buy Quantity	Sell Quantity	Price	Volume	Cumulative Volume
01	9:30 AM	400	400	62.20	400	400

02	10:30 AM	500	500	62.75	500	900
03	11:30 AM	350	350	63.10	350	1,250
04	12:30 PM	150	150	63.50	150	1,400
05	1:30 PM	625	625	63.75	625	2,025
06	2:30 PM	475	475	64.20	475	2,500
07	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 5<sup>th</sup> 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	689.50	25	689.50	689.75	40	634.90	689.85	634.90	626.65	1272737	0	57443	60226	689.42	
AMARAJABAT..	2.17	496.50	278	496.50	496.70	91	486.20	502.50	486.20	485.90	251213	0	30501	32160	496.76	
THOMASCOO...	1.26	137.00	670	137.00	137.05	1	136.00	141.00	134.00	135.30	908927	0	70253	144193	136.93	
ITC-EQ	0.45	356.10	1145	356.10	356.30	289	356.00	357.20	348.55	354.50	2710598	0	323394	635449	356.28	
OPLA-EQ	0.14	441.40	45	441.45	441.50	114	442.55	443.20	435.00	440.80	642951	0	86804	114350	441.36	
TCS-EQ	-0.13	2522.70	29	2522.85	2522.70	3	2544.90	2545.00	2490.10	2526.00	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	18289	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...	Volum...	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	
THOMASCOO...	0.00	136.95	525	136.15	136.50	250	136.00	141.00	134.00	136.95	1127454	0	49217	125862	136.93	
ITC-EQ	0.00	356.00	390	355.35	356.60	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	551.65	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 below you will find a summary of how to use volume information:

Sl No	Price	Volume	What is the expectation?
01	Increases	Increases	Bullish
02	Increases	Decreases	Caution – weak hands buying



03	Decreases	Increases	Bearish
04	Decreases	Decreases	Caution – weak hands selling

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

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?

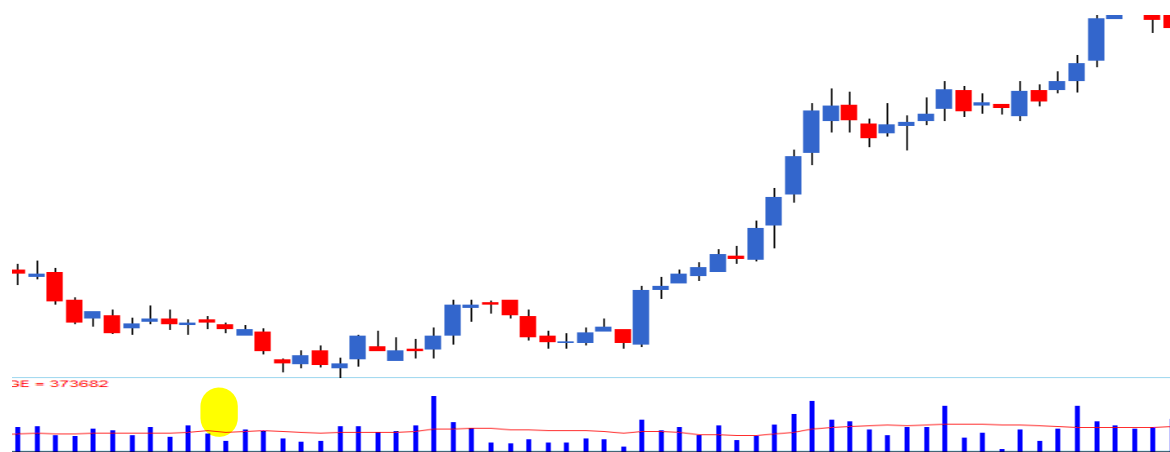
**As a practice, traders usually compare today’s volume over the average of the last 10 days volume.** Generally the rule of thumb is as follows:

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?
  1. Because market participants are buying
  2. Are there any institutional buyers associated with the price increase?
    1. Not likely
    3. How would you know that there are no meaningful purchase by institutional investors
      1. 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?
    1. 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 4<sup>th</sup> row?

Think about it in on following terms:

1. Why is the price decreasing?
  1. Because market participants are selling.
  2. Are there any institutional sellers associated with the price decrease?
    1. Not likely
  3. How would you know that there are no meaningful sell orders by institutional investors
    1. 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?
    1. 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.
1. 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 2<sup>nd</sup> 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:

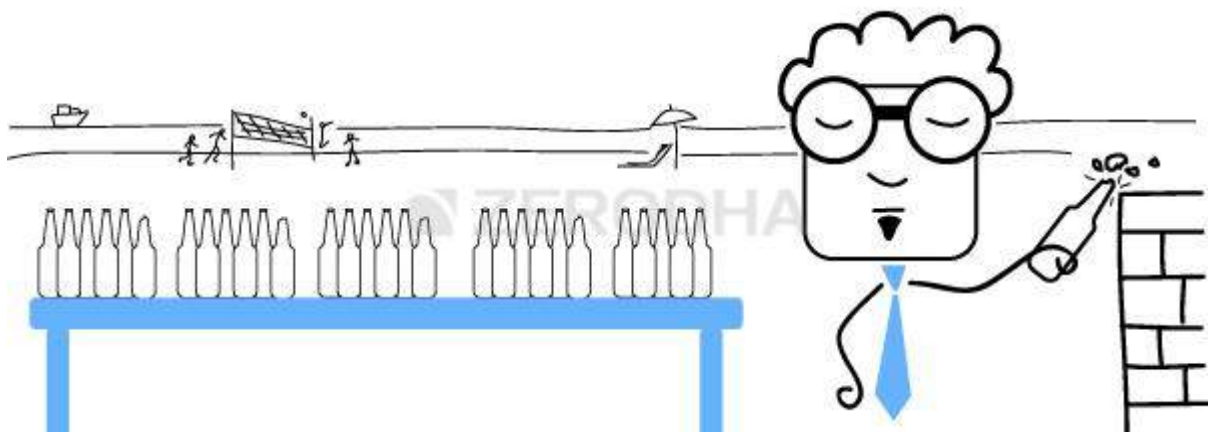
1. The stock should form a recognizable candlestick pattern
  2. S&R should confirm the trade. The stoploss price should be around S&R
    1. For a long trade, the low of the pattern should be around the support
    2. For a short trade, the high of the pattern should be around the resistance
  3. Volumes should confirm to the trade
    1. Presence of above average volumes on both buy and sell day
    2. 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:

Sl No	Person	No of Bottles
01	A	07
02	B	05
03	C	06
04	D	03

05	E	08
Total # of bottles consumed		29

Assume a 6<sup>th</sup> 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 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:

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
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$$= 1179.75 / 5$$

$$= 343.95$$

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:

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

$$= 1212.3 / 5$$

$$= 242.5$$

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

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

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
<b>Total</b>	<b>1223.3</b>

$$= 1223.3 / 5$$

$$= 244.66$$

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 (28<sup>th</sup> July), and discarded the oldest data (21<sup>st</sup> July) to calculate the 5 day average. On 29<sup>th</sup>, we would include 29<sup>th</sup> data and exclude 22<sup>nd</sup> data, on 30<sup>th</sup> we would include 30<sup>th</sup> data point but eliminate 23<sup>rd</sup> 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.

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,

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
<b>Total</b>	<b>1214.5</b>

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 22<sup>nd</sup> July is as important as the data point on 28<sup>th</sup> July. However, when it comes to markets, this may not always be true

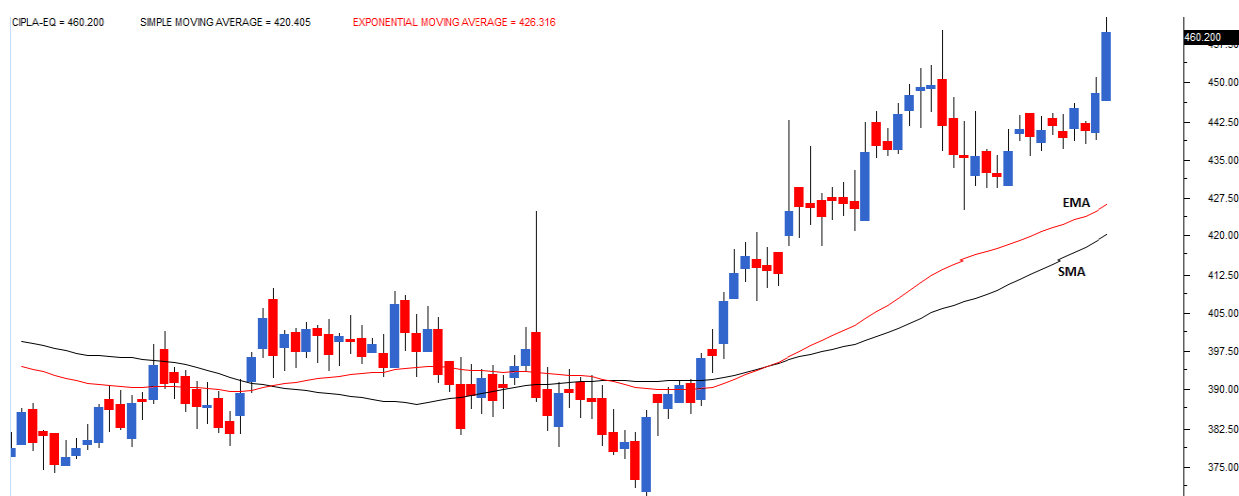
Remember the basic assumption of technical analysis – markets discount everything. This means the latest price that you see (on 28<sup>th</sup> July) discounts all the known and unknown information. This also implies the price on 28<sup>th</sup> is more sacred than the price on 25<sup>th</sup>.

Going by this, one would like to assign weightage to data points based on the 'newness' of the data. Therefore the data point on 28<sup>th</sup> July gets the highest weightage, 25<sup>th</sup> July gets the next highest weightage, 24<sup>th</sup> July gets the 3<sup>rd</sup> 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.

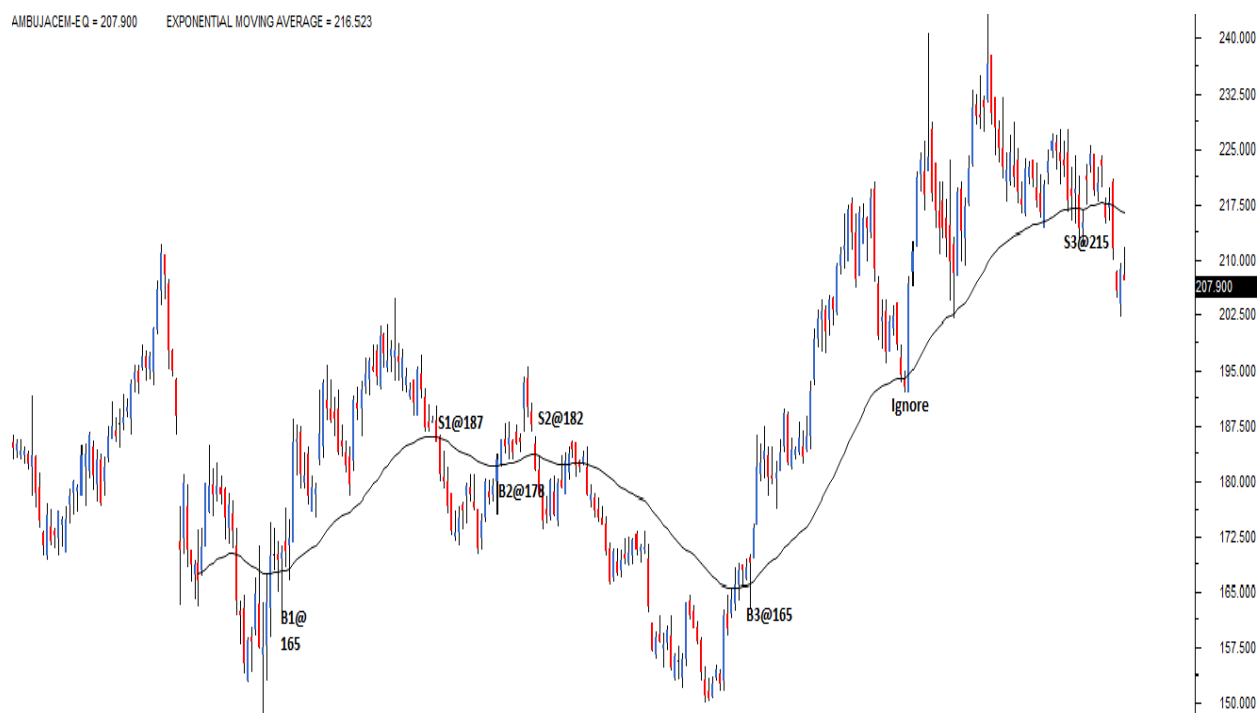
We can develop a simple trading system based on these conclusions. A trading system can be defined as a set of rules that help you identify entry and exit points.

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:

SI No	Buy Price	Sell Price	Gain/Loss	% Return
01	165	187	22	13%
02	178	182	04	2.2%
03	165	215	50	30%

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

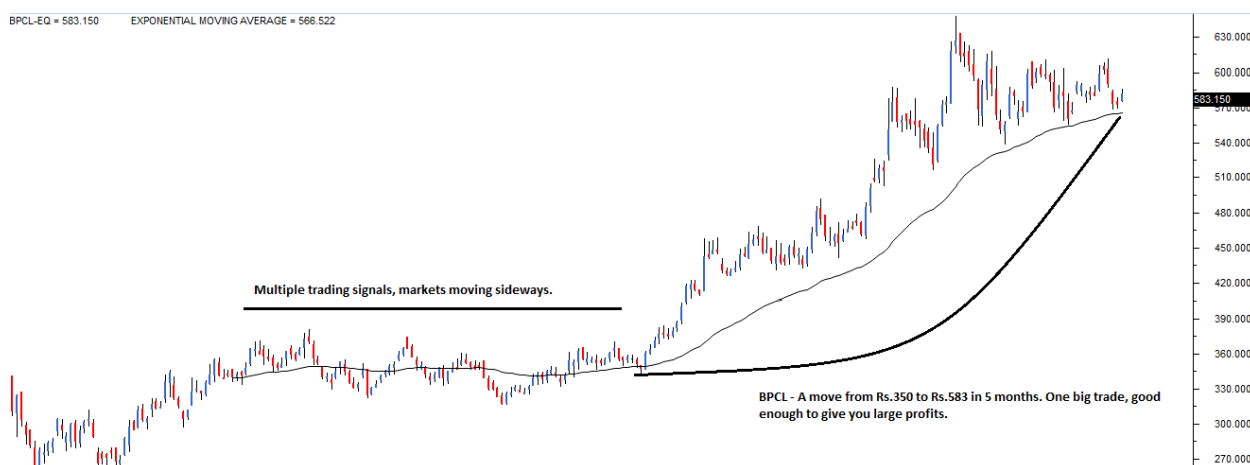
This leads us to a very important conclusion about the moving averages. Moving averages works brilliantly when there is a trend and fails to perform when the stock moves sideways. This basically means the 'Moving average' in its simplest form is a trend following system.

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

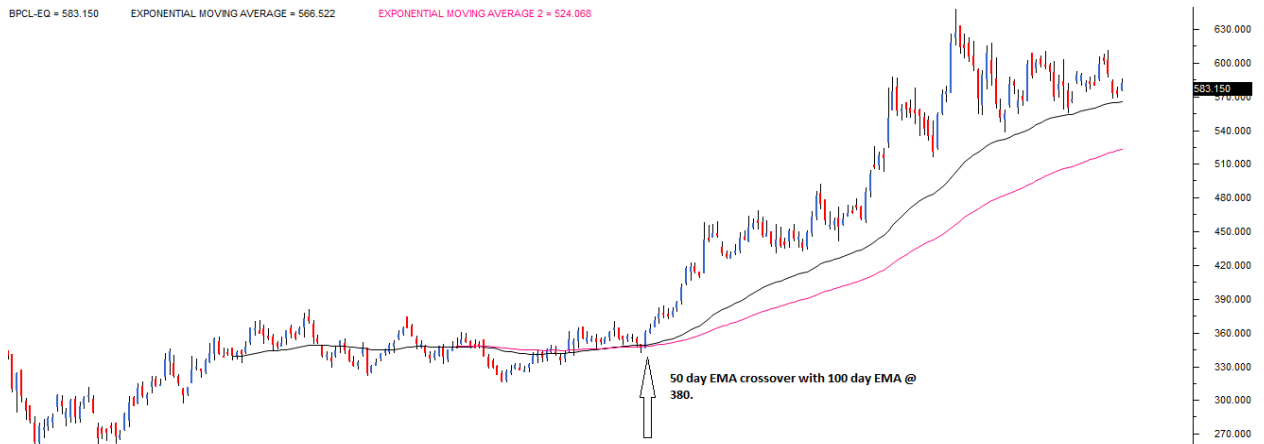
Let us apply the MA crossover system to the same BPCL example that we looked at. For ease of comparison, I have reproduced the BPCL's chart with a single 50 day MA.



Notice, when the markets were moving sideways, MA suggested at least 3 trading signals. However the 4<sup>th</sup> 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:

1. 9 day EMA with 21 day EMA – use this for short term trades ( upto few trading session)
2. 25 day EMA with 50 day EMA – use this to identify medium term trade (upto few weeks)
3. 50 day EMA with 100 Day EMA – use this to identify trades that lasts upto few months
4. 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.

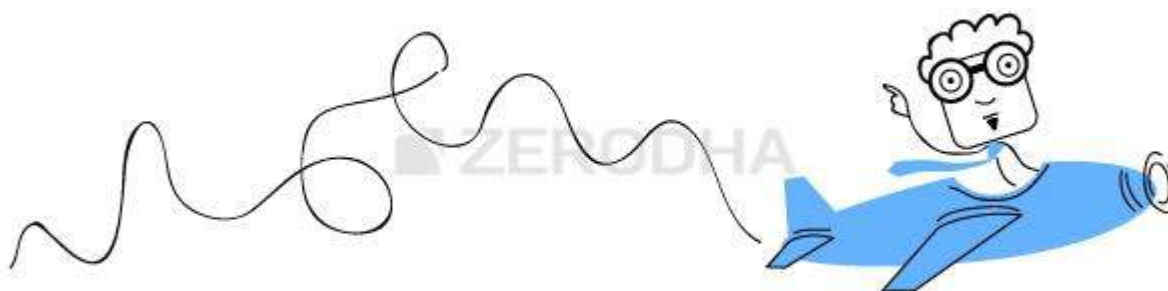
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### Key takeaways from this chapter

1. A standard average calculation is a quick approximation of a series of numbers
2. In an 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 overlaid 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:

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

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:

Sl No	Closing Price	Points Gain	Points Lost
-------	---------------	-------------	-------------

01	100	1	0
02	102	2	0
03	105	3	0
04	107	2	0
05	103	0	4
06	100	0	3
07	99	0	1
08	97	0	2
09	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 'look-back 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 your 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.

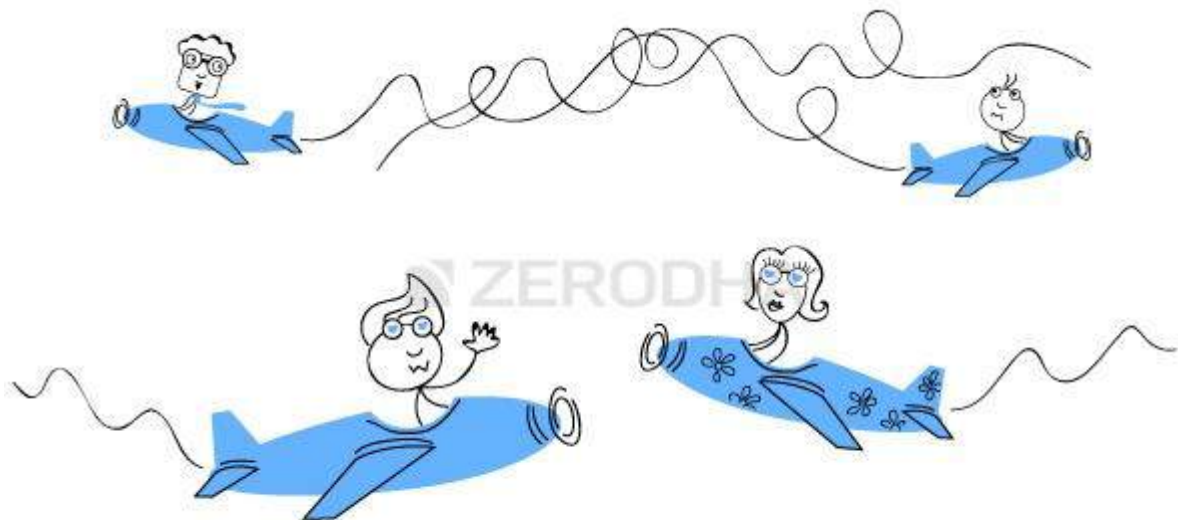
Finally, do remember RSI is not used often as a standalone indicator by traders, it is used along with other candlestick patterns and indicators to study the market.

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### **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 suggests, 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. Please note, both the EMA's are based on the closing prices. We subtract the 26 EMA from the 12 day EMA, to estimate the convergence and divergence (CD) value. A simple line graph of this is often referred to as the 'MACD Line'. Let us go through the math first and then figure out the applications of MACD.

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 1<sup>st</sup> 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 (6<sup>th</sup> Feb 2014) we calculate the MACD value
6.  $\text{MACD value} = [12 \text{ day EMA} - 26 \text{ day EMA}]$ . For example on 6<sup>th</sup> Feb 2014, 12 day EMA was 6153, and 26 day EMA was 6198, hence the MACD would be  $6153 - 6198 = -45$

When we calculate the MACD value over a series of 12 and 26 day EMAs and plot it as a line graph, we get the MACD line, which oscillates above and below the central line.

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



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

Given the MACD value, let's try and find the answer for a few obvious questions:

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

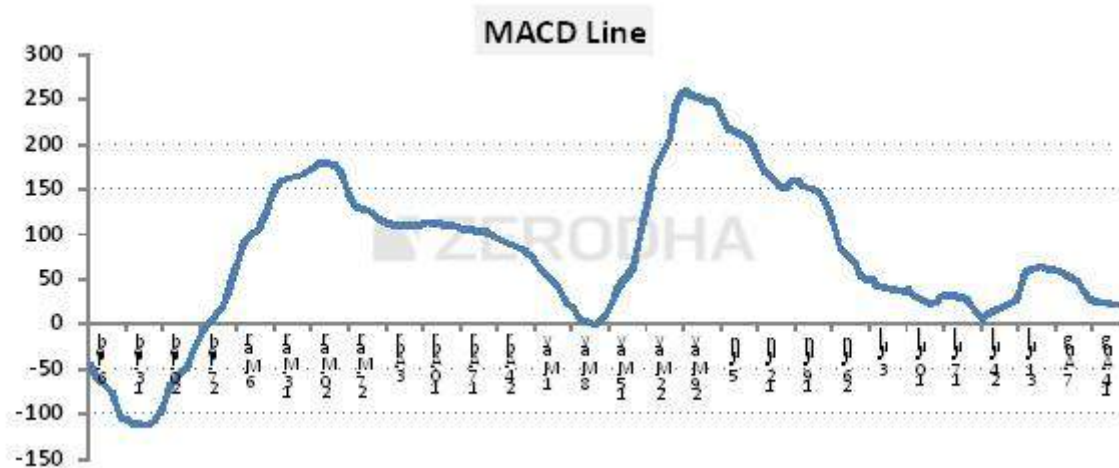
The sign associated with the MACD just indicates the direction of the stock's move. For example, if the 12 Day EMA is 6380, and 26 Day EMA is 6220 then the MACD value is +160. Now, under what circumstance do you think the 12 day EMA will be greater than the 26 day EMA? Well, we had looked into this in the moving average chapter. The shorter term average will generally be higher than the longer term only when the stock price is 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 indicates 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.

When the MACD 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, the more strength in the downward trend.

The difference between the two moving averages is called the MACD spread. The spread decreases when the momentum mellows down and increases when the momentum increases. To visualize convergence and the divergence traders usually plot the chart of the MACD value, often referred to as the MACD line.

The following is the MACD line chart of Nifty for data points starting from 1<sup>st</sup> Jan 2014 to 18<sup>th</sup> Aug 2014.



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

1. When the MACD Line crosses the center 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 27<sup>th</sup>Feb
2. When the MACD line crosses the center 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 (8<sup>th</sup> May, and 24<sup>th</sup> July) but the MACD just stopped at the zero line and reversed directions

Traders generally argue that while waiting for the MACD line to crossover the center line a bulk of the move would already be done and perhaps it would be late to enter a trade. 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 exponential moving average (EMA) of the MACD line. If you think about this, we now have two lines:

1. A MACD line
2. A 9 day EMA 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 center line cross over.

1. The sentiment is bullish when the MACD line crosses the 9 day EMA wherein MACD line is greater than the 9 day EMA. When this happens, the trader should look at buying opportunities
2. The sentiment is bearish when the MACD line crosses below the 9 day EMA wherein the MACD line is lesser than the 9 day EMA. 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 EMA 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 line lies below the signal line (9 day EMA) and suggests a short trade.

The 2<sup>nd</sup> vertical line from left, points to a crossover where the MACD line lies above the signal line, hence one should look at buying opportunity. So on and so forth.

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. You can notice this between the 1st two line starting from left.

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  $-2$ SD. 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
  1. For a long trade, the low of the pattern should be around the support
  2. For a short trade, the high of the pattern should be around the resistance
3. Volumes should confirm
  1. Ensure above average volumes on both buy and sell day
  2. Low volumes are not encouraging, hence do feel free to hesitate while taking trade where the volumes are low
4. Indicators should confirm
  1. Scale the size higher if the confirm
  2. 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 4<sup>th</sup> 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.

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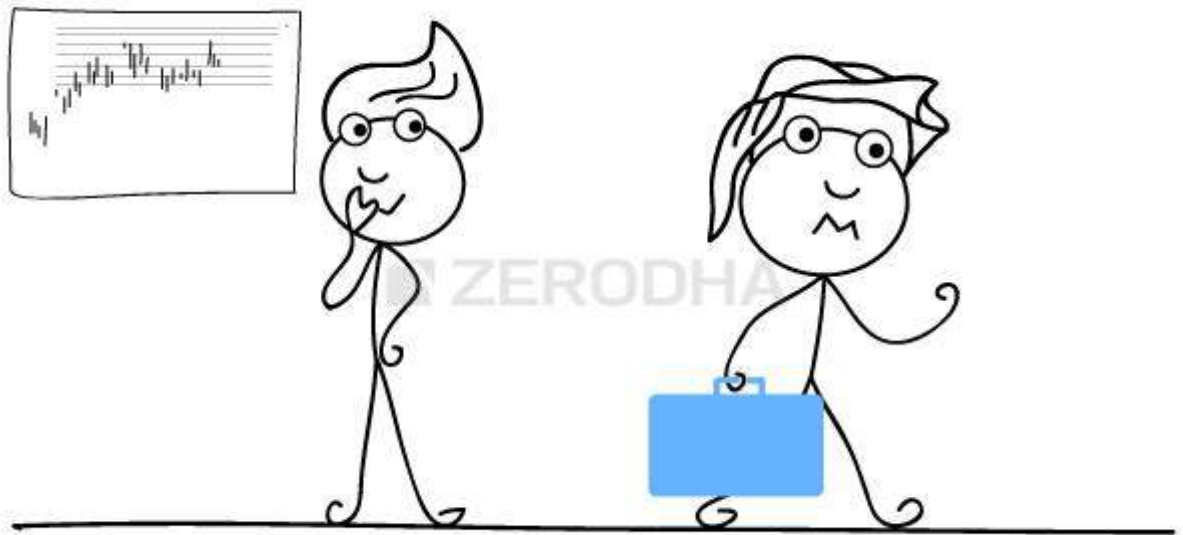
### **Key takeaways from this chapter**

1. A MACD is a trend following system
2. MACD consists of a 12 Day, 26 day EMA
3. MACD line is  $12d\text{ EMA} - 26d\text{ EMA}$
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 12<sup>th</sup> 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 succeeding 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 =  $61.8\% \times 109 = 67.36$

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:

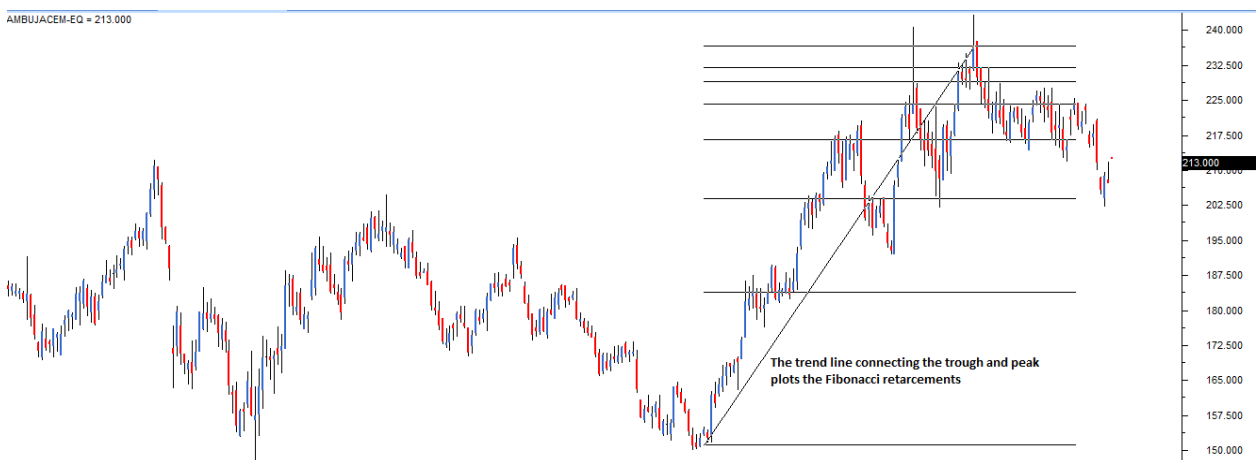
Step 1) Identify the immediate peak and trough. In this case the trough is at 150 and peak is at 240. The 90 point moves make it 100%.



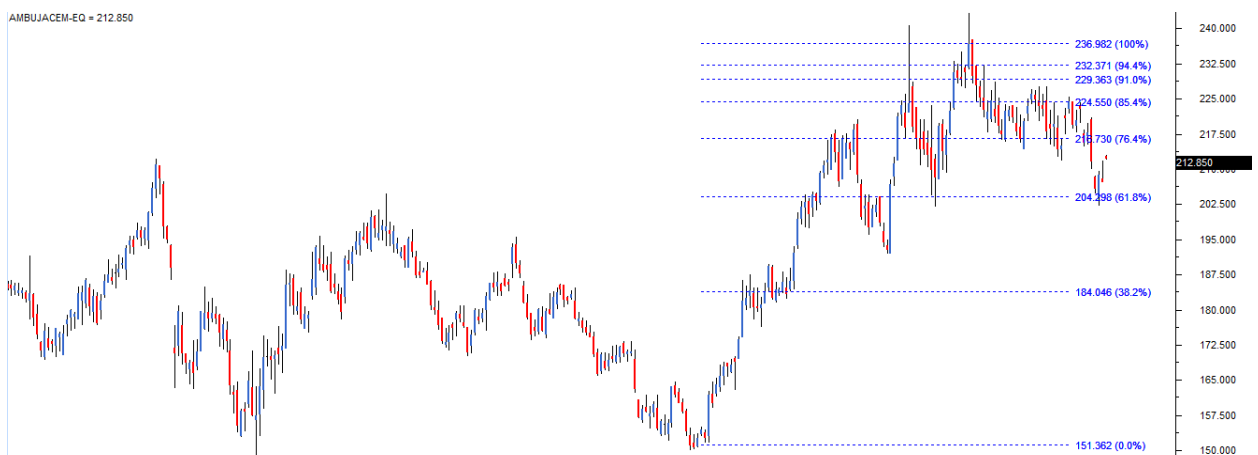
Step 2) Select the Fibonacci retracement tool from the chart tools



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.

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### Key takeaways from this chapter

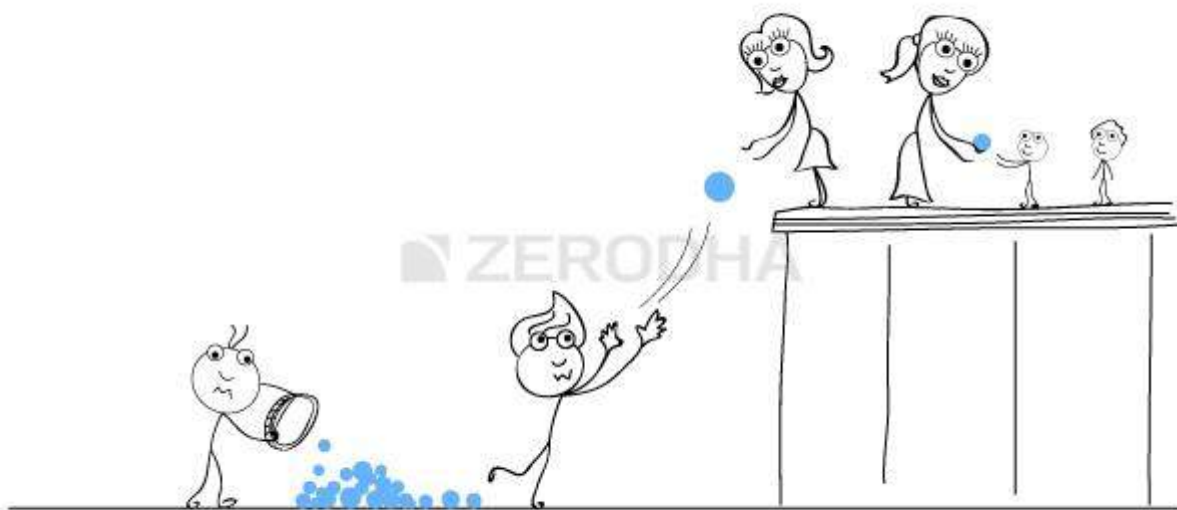
1. The Fibonacci series forms the basis for Fibonacci retracement
2. A Fibonacci series has many mathematical properties. These mathematical properties are prevalent in many aspects of nature
3. Traders believe the Fibonacci series has its application in stock charts as it identified potential retracement 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?
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01	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
02	Overall there are 3 broad market trends	Primary Trend, Secondary Trend, and Minor Trends
03	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
04	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
05	Minor Trends/Daily fluctuations	These are daily fluctuations in the market, some traders prefer to call them market noise
06	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
07	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

08	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
09	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 uptrend 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) thereby 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.

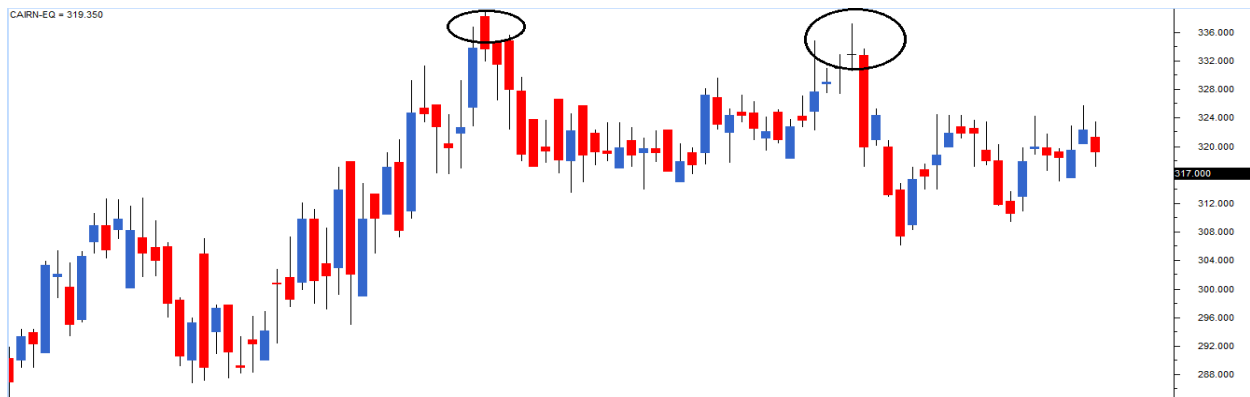
A double bottom formation is considered bullish, and hence one should look at buying opportunities. Here is a chart that shows a double bottom formation in Cipla Limited:



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 2<sup>nd</sup> 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

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.

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



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### **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

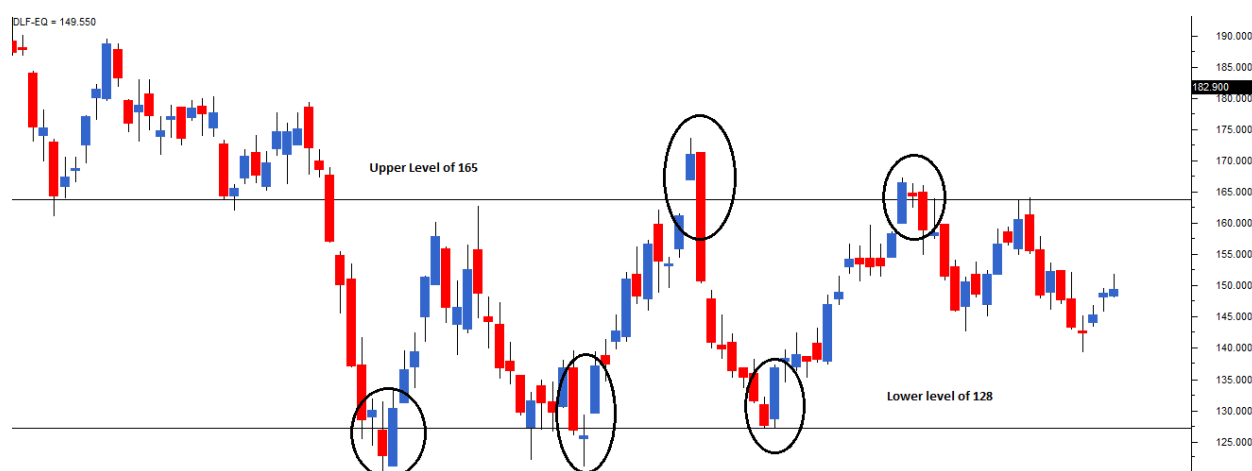
## The Dow Theory (Part 2)

### 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:



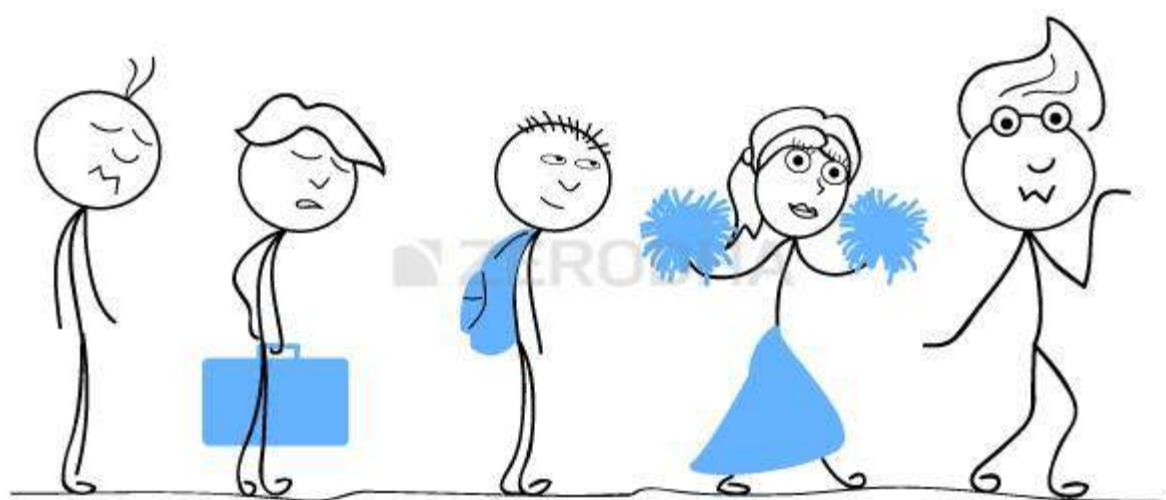
As you can see the stock hit the same upper (Rs.165) and the same lower (Rs.128) level multiple times, and continued to trade within the range. The area between the upper and lower level is called the width of the range. One of the easy trades to initiate in such a scenario would be to buy near the lower 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 1<sup>st</sup> breakout (starting from left) was

characterized by low volumes, and low momentum. The 2<sup>nd</sup> breakout was characterized by impressive volumes but lacked momentum.

However the 3<sup>rd</sup> 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.

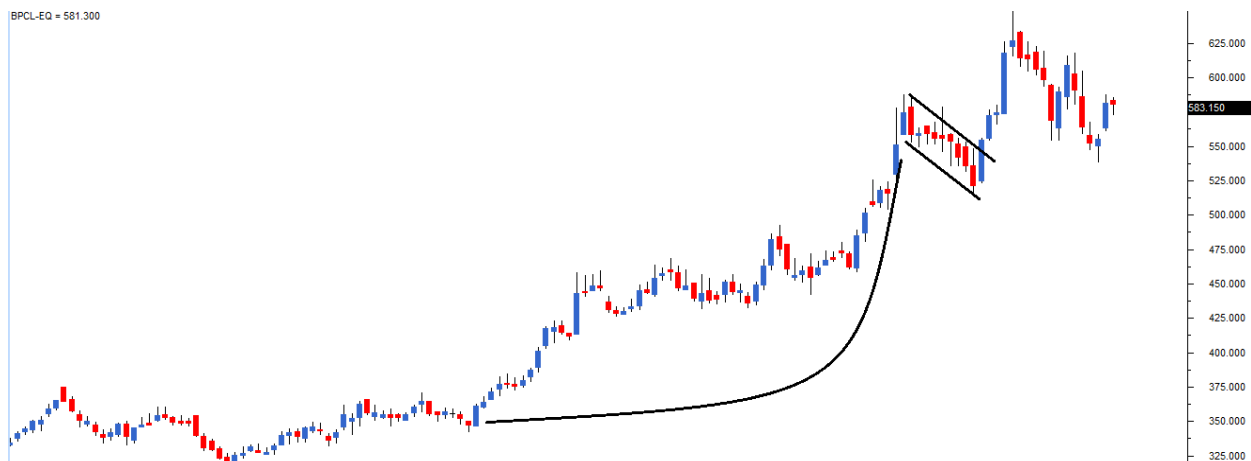
For example – Assume the stock is trading in a range between Rs.128 and Rs.165. The stock breaks out of the range and surges above Rs.165 and now trades at Rs.170. Then trader would be advised to go long 170 and place a stoploss at Rs.165.

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  $\text{Rs.}168 + 43 = 211$ .

### **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 move 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  $55.75 - 53.55 = 2.2$

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

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 characterised 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 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  $7/5 = 1.4$ . 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:  $7.17/7.18 \approx 1.0$

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 recognisable candlestick pattern
2. S&R should confirm to the trade. The stoploss price should be around S&R
  1. For a long trade, the low of the pattern should be around the support
  2. For a short trade, the high of the pattern should be around the resistance
3. Volumes should confirm
  1. Ensure above average volumes on both buy and sell day
  2. 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.
  1. Primary, secondary trends
  2. Double, triple, range formations
  3. Recognisable Dow formation
5. Indicators should confirm
  1. Scale the trade size higher if indicators confirm to your plan of action
  2. If the indicators do not confirm go ahead with the original plan
6. RRR should be satisfactory
  1. Think about your risk appetite and identify your RRR threshold
  2. For a complete beginner, I would suggest the RRR to be as high as possible as this provides a margin of safety
  3. 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.

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### **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. However, 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.

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 optimisation 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 1 minute 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
1. 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 indentify 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 recognisable 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**

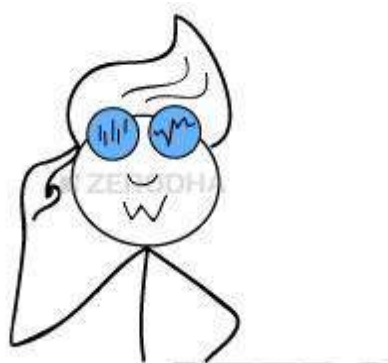
At this stage, I am usually left with 4-5 shortlisted stocks (out of the 50 stocks in my opportunity universe) which exhibit a recognisable candlestick pattern. I then proceed to evaluate these 4-5 charts in detail. Typically I spend at least 15 – 20 minutes on each chart. Here is what I do when looking 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
1. 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
1. The S&R level should coincide (as much as possible) with the stoploss of the trade (as defined by the candlestick pattern)

2. 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
1. 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)
1. To calculate RRR, I first establish the target by plotting either the support or resistance level
2. 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.



## 19.5 – 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 a 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 scalping 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 a 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



## Supplementary Notes 1



### Average Directional Index (ADX)

#### **About:**

The Average Directional Index (ADX), Minus Directional Indicator (-DI) and Plus Directional Indicator (+DI) represent a group of directional movement indicators that form a trading system developed by Welles Wilder. The Average Directional Index (ADX) measures trend strength without regard to trend direction. The other two indicators, Plus Directional Indicator (+DI) and Minus Directional Indicator (-DI), complement ADX by defining trend direction. Used together, chartists can determine both the *direction* and *strength* of the trend. *Source: stockcharts.com*

#### **What should you know?**

1. ADX system has three components – ADX, +DI, and -DI
2. ADX is used to measure the strength/weakness of the trend and not the actual direction
3. ADX above 25 indicates that the present trend is strong, ADX below 20 suggest that the trend lacks strength. ADX between 20 and 25 is a grey area
4. A buy signal is generated when ADX is 25 and the +DI crosses over -DI
5. A sell signal is generated when ADX is 25 and the -DI crosses over +DI

6. Once the buy or sell signal is generated, take the trade by defining the stop loss
7. The stop loss is usually the low of the signal candle (for buy signals) and the high of the signal candles ( for short signals)
8. The trade stays valid till the stoploss is breached (even if the +DI and –DI reverses the crossover)
9. The default look back period for ADX is 14 days

### On Kite:

Load the ADX indicator from studies. Kite gives you an option to change the look back period, by default the look back period is set



You can customize the color of all the three components of the ADX system. Click on 'create' to load the indicator –



By default the ADX indicator is loaded below the instrument. The black line represents ADX, ensure it is above 25 while looking for the crossovers.

## Alligator Indicator

### About:

An indicator designed to signal a trend absence, formation and direction. Bill Williams saw the alligator's behavior as an allegory of the market's one: the resting phase is turning into the price-hunting as the alligator awakes so that to come back to sleep after the feeding is over. The longer the alligator is sleeping the hungrier it gets and the stronger the market move will be. *Source: infimarkets.com*

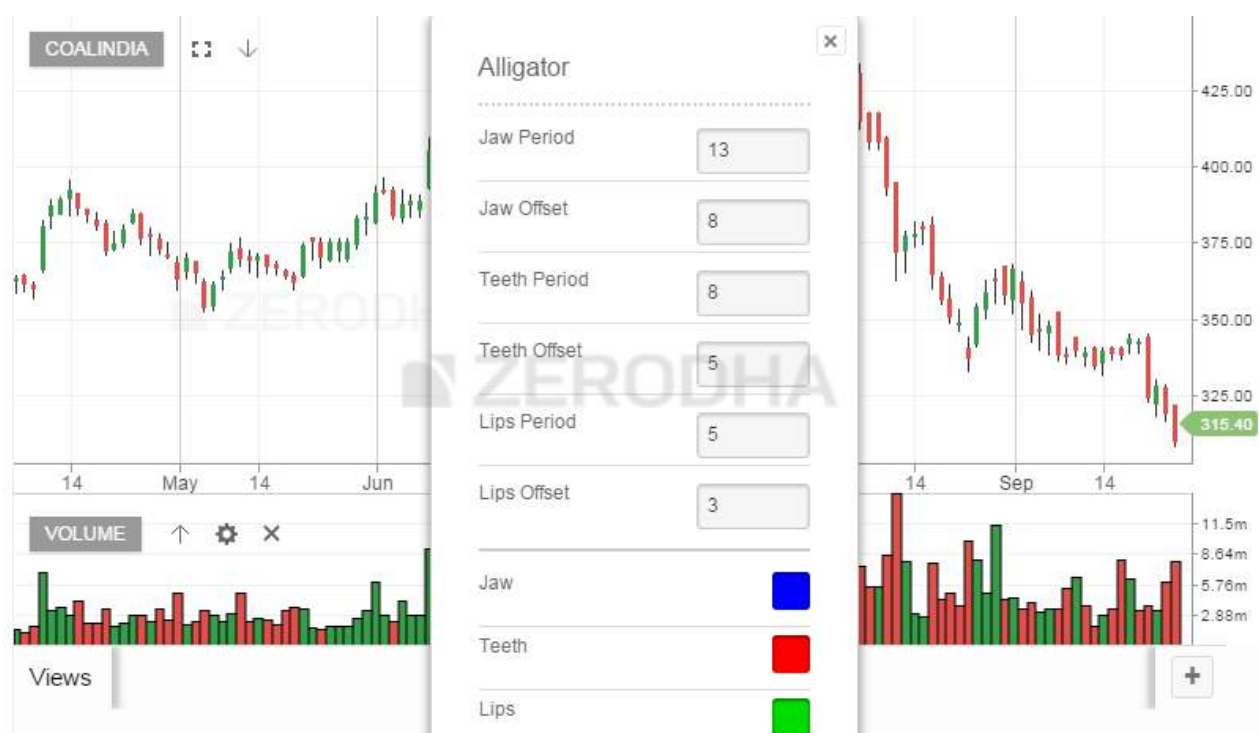
### What should you know?

1. The Alligator indicator is overlaid on the price chart
2. The indicator is made up of three simple moving averages – 13, 8, and 5 period averages are used
3. The 13 period MA refers to the Alligator's jaw, 8 period MA refers to the Alligator's teeth, and the 5 period MA refers to the Alligator's lips
4. By default 13 MA is colored blue, 8 MA is colored red, and 5 MA is colored green
5. A buy signal is generated when the following condition is satisfied –
  1. All three MA's are separated
  2. The price is above the 5MA, 5MA is above 8MA, and 8MA is above 13 MA
  3. Once the above condition is satisfied, it means that the asset is trending up

4. When the uptrend is established, it is upto the trader to identify a good entry point within this trend
6. A sell signal is generated when the following condition is satisfied –
  1. All three MA's are separated
  2. The price is below the 5MA, 5MA is below 8MA, and 8MA is below 13 MA
  3. Once the above condition is satisfied, it means that the asset is trending down
4. When the downtrend is established, it is upto the trader to identify a good entry point within this trend
7. Periods when the 13, 8, and 5 MA are intervened (or moving flat) is considered a 'no trader' zone and therefore the trader is advised to stay out of markets

### On Kite:

Load the Alligator indicator from the studies. As you can see the default values of the moving averages are loaded i.e 13, 8, and 5.



As you can see, the indicator input also loads the 'offset' values for each MA. These offset values are also loaded by default values. Offsetting or displacing the moving average reduces the number of whipsaws in the average. Needless to say that you can change the default values for moving average and offset to any value that you deem appropriate. Further you can even customize the color of each indicator to your preference.

Here is the snapshot of how the indicator looks when the indicator is overlaid on the chart. Do notice there are 2 instances when the sell condition is satisfied (highlighted in red) and 1 instance when the buy condition is satisfied (highlighted in blue).



## Aroon

### About:

Developed by Tushar Chande in 1995, Aroon is an indicator system that determines whether a stock is trending or not and how strong the trend is. "Aroon" means "Dawn's Early Light" in Sanskrit. Chande chose this name because the indicators are designed to reveal the beginning of a new trend. The Aroon indicators measure the number of periods since price recorded an x-day high or low. There are two separate indicators: Aroon-Up and Aroon-Down.

A 25-day Aroon-Up measures the number of days since a 25-day high. A 25-day Aroon-Down measures the number of days since a 25-day low. In this sense, the Aroon indicators are quite different from typical momentum oscillators, which focus on price relative to time. Aroon is unique because it focuses on time relative to price. Chartists can use the Aroon indicators to spot emerging trends, identify consolidations, define correction periods and anticipate reversals. *Source: stockcharts.com*

### What should you know?

1. The indicator measures the number of days since last high or low is made, hence the indicator is a measure of time relative to the price
2. Aroon consists of two component – Aroon up and Aroon Down
3. The default value for Aroon is 25 days. Aroon up measures the number of days since the last 25 day high occurred and Aroon down measures the number of days since the last 25 days low has occurred
4. Both Aroon up and Aroon down are plotted side by side
5. Aroon Up/Down is lower bound to zero and upper bound to 100
6. A buy is generated when Aroon up is above 50 and Aroon low is below 30

7. A sell is generated when Aroon down is above 50 and Aroon up is below 30

### On Kite:

Here is the snapshot of the indicator when loaded from studies –



As you can see the default period is 14, feel free to change this to any number you wish. 14 here represent the 'number of days'. Do remember if the period is 14, the Aroon measures the number of days since the stock made 14 days high/low.





As you can see both Aroon up and Aroon Down are plotted.

## Aroon Oscillator

Aroon Oscillator is an extension of the Aroon indicator. The Aroon Oscillator measures the difference between the Aroon up and Aroon down and plots the difference in the form of an oscillator. The oscillator swings between -100 to +100, with the '0' level as the center point.

The snapshot below shows the Aroon Oscillator loaded on to the chart –



A reading above zero means that Aroon-Up is greater than Aroon-Down, which implies that prices are making new highs more recently than new lows. Conversely, readings below zero indicate that Aroon-Down is greater than Aroon-Up. This implies that prices are recording new lows more recently than new highs.

As you can see, the Aroon Oscillator is either going to be positive or negative the vast majority of the time. This makes interpretation straight-forward. Time and price favor an uptrend when the indicator is positive and a downtrend when the indicator is negative. A positive or negative threshold can be used to define the strength of the trend. For example, a surge above +50 would reflect a strong upside move, while a plunge below -50 would indicate a strong downside move. *Source: stockcharts.com*

## Average True Range

### About:

Developed by J. Welles Wilder, the Average True Range (ATR) is an indicator that

measures volatility. As with most of his indicators, Wilder designed ATR with commodities and daily prices in mind. Commodities are frequently more volatile than stocks. They are often subject to gaps and limit moves, which occur when a commodity opens up or down its maximum allowed move for the session. A volatility formula based only on the high-low range would fail to capture volatility from gap or limit moves. Wilder created Average True Range to capture this “missing” volatility. It is important to remember that ATR does not provide an indication of price direction, just volatility. *Source: stockcharts.com*

### What should you know?

1. Average True Range (ATR) is an extension of True Range concept
2. ATR is not upper or lower bound, hence can take any value
3. ATR is stock price specific, hence for Stock 1 ATR can be in the range of 1.2 and Stock 2 ATR could be in the range of 150
4. ATR attempts to measure the volatility situation and not really the direction of the prices
5. ATR is used to identify stop loss as well
6. If the ATR of a stock is 48, then it means that on average the stock is likely to move 48 points either ways up or down. You can add this to the current day's range to estimate the day's range. For example the stock price is 1320, then the stock is likely to trade between  $1320 - 48 = 1272$  and  $1320 + 48 = 1368$
7. If the ATR for the next day decreases to say 40, then it means that the volatility is decreasing, and so is the expected range for the day
8. It is best to use ATR to identify the volatility based SL while trading. Assume you have initiated a long trade on the stock at 1325, then your SL should be at least 1272 or below since the ATR is 48
9. Likewise if you have initiated a short at 1320, then your stoploss should be at least 1368 or above
10. If these SL levels are outside your risk to reward appetite, then it's best to avoid such trade.

### On Kite:

As you can see, the default value of ATR is 14, which means to say that the system calculates the ATR for the last 14 days. Of course you can change this to any value to wish. Here is the snapshot –





Once you load the chart, ATR is plotted below the price chart as seen below –

So the next time you place a stoploss make sure you check the ATR value to see if stoploss level is relevant. You may also want to read more about volatility and its application (including volatility based SL) – [Click Here](#)

### **Average True Range Band**

The ATR bands are an extension of the ATR concept. The idea is to plot an envelope around the stock price to evaluate if the stock prices are behaving “normally” or trending in a particular direction. In order to do this, the ATR band calculates the upper and lower band.

#### **What should you know?**

1. The ATR band calculates and plots the upper and lower envelope around the stock price
2. To begin with a moving average of stock price is calculated
3. The ATR value is added to the moving average value, and this forms the upper envelop
4. The ATR value is subtracted to the moving average value, and this forms the lower envelop
5. If the stock price penetrates either the upper or lower envelop, then the expectation is that the stock price will continue to move in the same direction. For example if the stock price has penetrated above the upper envelop, the expectation is that the stock will continue to move higher
6. You can even use the ATR bands as an alternate to the Bollinger Band trading system. You can read more about the **Bollinger Band (section 15.2)**

#### **On Kite:**

When you load the ATR band from studies, you will be prompted for few inputs –

ATR Bands

Period

Shift

Field

Channel Fill ☒

ATR Bands Top

ATR Bands Bottom

ATR Bands Channel

Create

Period refers to the MA time frame; the default value is 5 days. You can change this to whichever time frame that you deem suitable. We would suggest you ignore 'shift' parameter. For the 'field' option select 'close', this means to say that you are plotting the MA values on the closing prices. The rest of the options are mainly aesthetic features, feel free to explore them. Once you click create, you will see the ATR bands plotted on the chart.



## Super trend

Before understanding the supertrend indicator, understanding the ATR is necessary as super trend employs ATR values to calculate the indicator values. The supertrend indicator is plotted over the price chart of the stock or the index. The indicator line changes its color between green and red based on the price moment in the underlying. Super trend does not predict the direction, rather once the direction is established it will guide you to initiate a position and suggests you to stay in the position till the trend sustains.

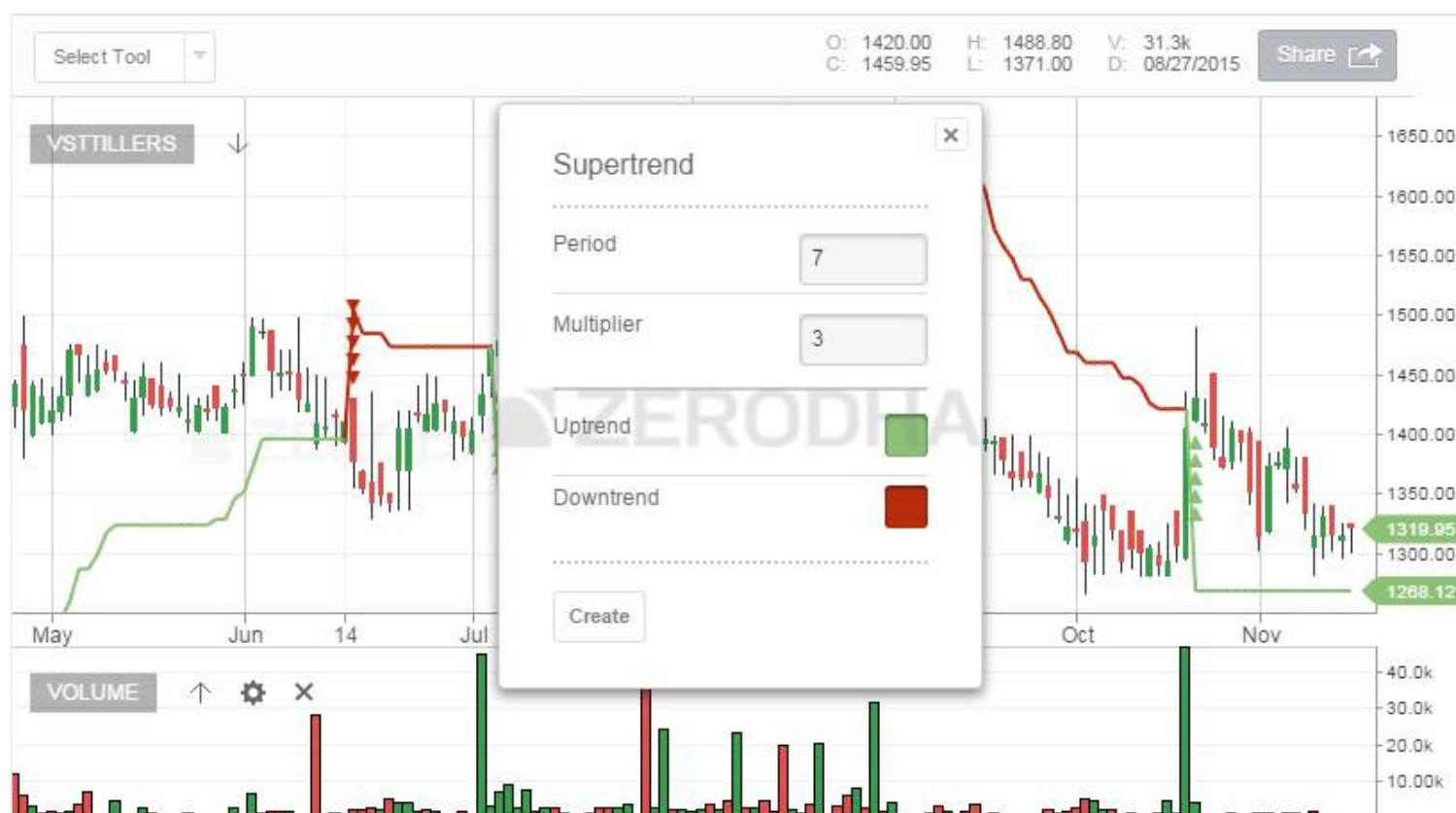
### What should you know?

1. When plotted, the supertrend indicator appears like a alternating green and red continuous line
2. A buy signal is generated when the stock/index price turns greater than the indicator value. At this stage, the indicator color turn green and you can also see a crossover of the price versus the indicator (price greater than indicator value)
3. Once the long position has been established, the trader is advised to hold the position till the price closes below the green line. So in a sense the green line helps as a trailing stoploss for the long position
4. A sell signal is generated when the stock/index price turns lesser than the indicator value. At this stage, the indicator color turn red and you can also see a crossover of the price versus the indicator (price lesser than indicator value)
5. The sell signal can be used to initiate a fresh short or exit long. Although waiting for the sell signal to exit the existing long position can sometime lead to taking a loss. So the trader should use his discretion here

- Once the short position has been established, the trader is advised to hold the position till the price closes below the green line. So in a sense the red line helps as a trailing stoploss for the short position
- Supertrend is basically used to identify a trend therefore it works best in a trending market
- The supertrend indicator when compared to a regular Moving Average trading system generates fewer false signals, for this reason the super trend indicator is preferred over a Moving Average trading system

#### On Kite:

When you select Supertrend indicator from the list of studies you will be prompted for two inputs – Period and Multiplier.



Period refers to the ATR number of days. The default value on Kite is 7, which means to say that the system will calculate the ATR value for the last 7 days. You can input any value you deem suitable.

The multiplier refers to a value by which the ATR will get multiplied. The default value on Kite is 3, so whatever is the value of ATR, it will get multiplied by 3. Multiplier is a crucial input for Super trend. If the multiplier value is too high, then lesser number of signals are generated. Likewise if the multiplier value is too small, then the frequency of signals increase, hence chances of generating false trading signals are quite high. I would suggest you keep this value between 3 and 4.

Once the indicator is plotted, this is how it appears on the chart –



Notice how the indicator changes the color as the price moves. Also, whenever the buy/sell signal is generated green and red arrows are generated (respectively) prompting the trader to go long or short on the stock.

## Volume weighted average price (VWAP)

VWAP is one of the one of the simplest indicators to use. It works on the principle of averaging the traded price in terms of volume traded. Let me give you an example of to help you understand this better.

Here is how Infy traded between 14:30 and 14:35 on 2<sup>nd</sup> Nov 2016 –

Time	High	Low	Close	Volume
2/11/2016 14:30	983.55	982.7	983	2586
2/11/2016 14:31	983.9	982.8	983.3	3569
2/11/2016 14:32	983.95	983	983.1	2475
2/11/2016 14:33	983.75	982.95	982.95	1773
2/11/2016 14:34	983.45	982.6	982.6	2676
2/11/2016 14:35	983.25	982.6	982.95	2863

The data is quite simple to understand, for example, at 14:32, 2475 shares were traded, it made a high of 983.95, low of 983, and closed the minute at 983.1.



Now, we use this data and compute the VWAP price. In order to do this, we calculate the following –

1. Typical price = which is the average price of High, Low, and close
2. Volume Price (VP) = we get this by multiplying the typical price with its volume
3. Total VP = This is a cumulative number, which is got by adding the current VP to the previous VP
4. Total volume = This is again a cumulative number, which is got by adding the current volume to the previous volume
5. VWAP = We get this VWAP number by dividing the Total VP by Total Volume. The resulting number indicates the average traded price, weighted by volume.

Let's do the math on Infy data –

Time	High	Low	Close	Volume	Typical Price	VP	Total VP	Total Vol
2/11/2016 14:30	983.55	982.7	983	2586	983.08	2,542,254	2,542,254	2
2/11/2016 14:31	983.9	982.8	983.3	3569	983.33	3,509,517	6,051,770	6
2/11/2016 14:32	983.95	983	983.1	2475	983.35	2,433,791	8,485,561	8
2/11/2016 14:33	983.75	982.95	982.95	1773	983.22	1,743,243	10,228,805	10
2/11/2016 14:34	983.45	982.6	982.6	2676	982.88	2,630,196	12,859,000	13
2/11/2016 14:35	983.25	982.6	982.95	2863	982.93	2,814,138	15,673,139	15

As you see, the VWAP is a dynamic number, changing based on how the trades flow in.

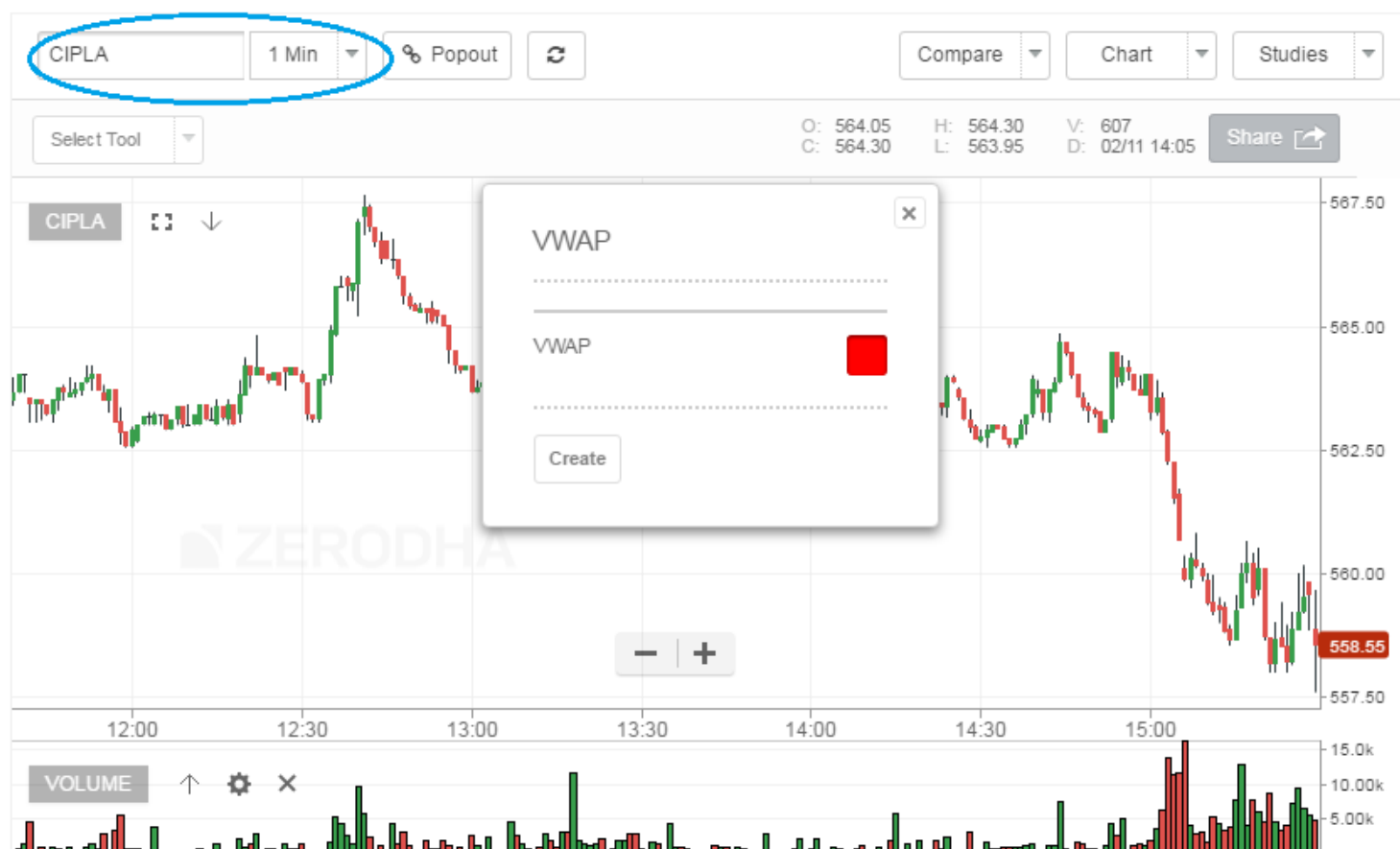
### How to use the VWAP?

1. VWAP is an intraday indicator, use it on minute charts. Often when you plot this, you will notice a jump at 9:15 AM, when compared to previous day's data. Ignore this jump as it means nothing
2. VWAP is an average and like any indicators employing averages, this too lags the current market price
3. VWAP is used for 2 main reasons – to get a sense of intraday direction and to get a sense of the efficiency of order execution
4. If the current price is below VWAP, then the general opinion is that the intraday trend is down
5. If the current price is above VWAP, then the general opinion is that the stock is trending higher
6. If the VWAP lies in between the high and low, then the expectation is that the stock will remain volatile
7. If you intend to short a stock, then it is considered an efficient fill if you short the stock at a price higher than VWAP

8. Likewise, if you intend to go long on a stock, then it is considered an efficient fill if you go long at a price lower than VWAP

**On Kite:**

Open the chart of your preference and select VWAP from the studies drop down –



Note, VWAP can be applied only on intraday time frame and cannot be applied on EOD data.

Once you select the time frame (1 min, 5 mins, 10 mins etc), the engine calculates the VWAP and plots it on the chart as an overlay.





You can now visualize the VWAP and the current market price and plan your trades accordingly.